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## The Bias of the World

### Theories of Unequal Exchange in History

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Lund Studies in Human Ecology 9

# The Bias of the World

Theories of Unequal Exchange  
in History

John Brodin



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\* All emphases in quotations are in the original unless otherwise indicated; 'ff.' (*folios*) implies 2-3 pages, whereas 4 or more pages have been written out in the most economical way; 'Chapter' refers to the present work, whereas 'Ch.' refers to the work cited.



# Introduction

The primary purpose of this thesis is to write a history of certain conceptions, theorists and theories of unequal exchange, which ought to be of interest to those wishing to understand the problematic of ‘ecological unequal exchange’. Its title is a quote from William Shakespeare’s *King John* (Act II, Scene 1) – “Commodity, the bias of the world” – and was thought not only a fit description of its theme, which concerns primarily the capitalist commodity economy (although Shakespeare may have had other things in mind), but also relates it to the titles of one of its objects of study, H. A. Innis’s *The Bias of Communication* (1951).

The term ‘unequal exchange’ became widespread in the 1970s through Marxist debate on underdeveloped countries and their falling terms of trade. The source and centre of the debate was the Greco-French economist, Arghiri Emmanuel. An often passionately hostile attention was paid his conclusions about the lack of international worker solidarity evident between low and high wage countries, and of which we can find daily evidence in the news on ‘illegal immigrants’. For all its proclaimed idealism in attacking international capital mobility, the current anti-globalisation movement and most environmentalism, for fear of Gethsemane, shuns any serious confrontation with the problematic of international worker mobility. If the problematic of unequal exchange is again relevant to discussions of globalisation and its discontents, it also has important predecessors.

Large sections of the history of unequal exchange theories have remained unwritten. Other portions have been well studied in themselves, but not, or not necessarily so, in the context of unequal exchange. What this study does, then, is to *retrieve* and *re-enact* a neglected aspect of intellectual history, presenting that history as it seems when this particular view is placed in the seat of honour. As such, it would not have been possible without its centre piece Emmanuel, who collected the loose threads lying about in history, weaving them into a useful fabric, or a coherent argument with a specific interpretative purpose. If he retrieved the cloth, this study attempts to retrieve some of the spinners and weavers. This is in itself a contribution to current discussions of unequal exchange, if only by putting them in perspective, and it would be dishonest to pretend otherwise.

The main positive argument, in this latter sense, is to advocate a conception of (ecological) unequal exchange, which places emphasis on retaining a differential of *consumption* of ecological goods and services for large masses of populations. It is, thus, one which places large-scale *appropriation* of total societal or bioproductive output, and the corresponding, socially ‘horizontal’, antagonistic relations, at centre-stage. It is, finally, one in which these social relations have some reverberation on relative *prices*, or the terms of trade. Such a delimitation is much more strict than common usage would allow, but it is, I would argue, one which retains what is most useful and original in the concepts history, and what makes it a problematic distinct from those found in other traditions. It is also one with clear relevance to global environmental problems, and to human ecology in general.

As Martinez-Alier (2002: 204), one of the contributors to current debates, has put it: “One peculiarity of human ecology is that, on the borders of rich countries, there are a sort of Maxwell’s Demons [...], which keep out most people from poor countries, thus being able to maintain extremely different per capita rates of energy and material consumption in adjoining territories”. The study of unequal exchange, as I would have it, is the study of these ‘demons’, their consequences and underlying mechanisms, notably as they include price phenomena. This is in place of another conception, which I would prefer to call ‘non-equivalent exchange’, focusing on the net transfer or transportation of such environmental, or in other cases labour, goods and services. That this even constitutes a difference appears to be far from

evident to most who have ecological unequal exchange on their agenda. If it is, there seems to be little awareness that the former sense is what theories of unequal exchange have been about, and it is to be hoped that the present work might add some clarification on this issue.

## Material and delimitations

‘Unequal exchange’ has been used in many more or less wide-ranging senses relating to inequalities or disproportionate gains or losses involved in economic exchange. The actual expression ‘unequal exchange’ in English may have originated among Ricardian socialists. One of them, John Francis Bray (1839; cf. Carr 1940), was quoted by Marx (1929) when arguing against Proudhon. In his and Engels’s German the corresponding expression translated ‘non-equivalent’ exchange, in which form it entered Russian in the 1920s through the work of Preobrazhensky (1965), and re-entered English. This is a more unambiguous term in Marxist literature, meaning a net transfer of, in this case, embodied labour hours or ‘value’, and is usually a simple analytical result of different capital intensities between branches of production. *Unequal* exchange was reintroduced in modern economic debate via the French, ‘échange inégal’, and gained its present popularity only following the publication of Emmanuel (1962, 1969a, 1972a), where it was explicitly presented in contrast to the idea of a mere non-equivalence.

The ensuing heated debates and misunderstandings have meant that the term has become common property, while at the same time losing its more specific content. Thus, the earliest responses by Bettelheim (1962, 1969a) began by trying to reintegrate it as a subcategory of ‘non-equivalent exchange’ in the above sense, or unequal exchange in the ‘broad’ sense as he had it. In this sense of a net-transfer of labour values it has gained wide currency in Marxist literature over the years. Sometimes similarly and sometimes differently, Amin (1970, 1973, 1974, 1976) used it both to mean an exchange when wage-differentials were greater than productivity differentials, and in the sense of ‘double factorial terms of trade’ differing from unity. Magnusson (1978) distinguished mercantilist economic thought (roughly 16<sup>th</sup> through 18<sup>th</sup> centuries) from later thought by saying that it took exchange to be unequal. Boss (1990), on the other hand, found ‘non-equivalent exchange’ to originate with their physiocratic and classical critics. Love (1980) found the origin of ‘the’ theory of unequal exchange in the writings of the Argentinean economist Prebisch, who never used the term, in a general sense relating to the terms of trade between a centre and a periphery. Bunker (1985) invoked the term with reference to an exchange of unequal embodied ‘energy values’, a sense found in the work of Odum. It also figures in many often more emotive senses of ‘unfair’ or monopolistic trade, exploitation or protectionism in general, or in the political speeches of Fidel Castro (quoted in Bernal 1980: 167, & Koont 1987: 15). Indeed, on a rather preliminary level, much of the effort behind this work has simply gone into taking stock of material at all speaking about ‘unequal exchange’. As may already have become evident, or soon will, there can be no claim to completeness.<sup>1</sup>

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<sup>1</sup> A more comprehensive manuscript on the history of unequal exchange, of which the present thesis retains notably the aspects of more relevance to human ecology, has been deposited in the library of the Human Ecology Division, Lund University. I aim to keep an electronic version available at an updated address in the Wikipedia article on ‘unequal exchange’. This manuscript is divided into five parts, the first of which concentrates on the eternal recurrence of the same mercantilist doctrine, and the emergence survival of the idea of non-equivalent trade in classical economics. It opens with an interpretation of the mercantilist doctrine of the balance of trade and employment as the expression of an oral tradition in trade and economic policy, that pays greater attention to realism than to systematics, and of the English debates of the 1620s as the ‘fencing’ of this tradition with the spread and cheapening of paper. The ‘absurdity’ on a national plane of selling more than one buys is confirmed by simple reason and in most of political economy from Physiocracy and forth, but its persistence in practice suggests that this absurdity is not the fault of mercantilist reason but a feature of the market economy itself, as

Catalogues and databases available via the Lund University Library (*e.g.*, COPAC, Digital Dissertations, Econlit, Karlsruhe Virtual Catalogue, JSTOR, Libris, Sudoc), have been used proficiently to try to take stock and identify relevant works. Searches on Google have been conducted on several occasions ('hits' in rounded figures 2006-02-28), *e.g.*, for the exact expressions 'unequal exchange' (72,000), 'non-equivalent exchange' (160), 'intercambio desigual' (51,000), 'échange inégal' (30,000), 'scambio ineguale' (14,000), 'ungleicher Tausch' (500), 'ulige bytte' (200), 'ongelijke ruil' (200), 'ojämmt utbyte' (140). While thousands of these have been ransacked, I have tried keeping to published materials. Even with systematic study and no direct language barriers, there are other restrictions to such an approach. *Geographically* following it through would require compensation for the inherent Anglo-Saxon bias in most such search engines. The most notable shortcoming is perhaps the relative neglect implied of thinking in the technologically and economically less developed regions of the world, although the bias may be less for the internet than that of conventional publications or databases. Debate may of course be as intense or more in less developed countries, where not as many publications or internet sites exist. On the other hand, technical and economic advantage tends to coincide with economic opportunities to busy oneself with elaborate theorising. It is nevertheless instructive that the sites in Spanish outnumber those in French, and that, apart from English, Germanic languages are so much less prominent than Romanic. Taken as an index of current debates, it implies with respect to the coverage attempted by myself, that there is more to be done or found on Spanish (including Latin American) and Italian debates. *Chronologically*, however, the recent flood of publications, particularly on the internet, is not proportional to the historical or theoretical importance of these contributions. As was said initially, one of the points of this thesis is to give some historical perspective to current debates, both in terms of their theoretical and historical importance.

There are nevertheless some common features in this area, which one may wish to classify into three or four different branches of thought on unequal exchange: mercantilist, classical-Marxist, and ecological, in addition perhaps to a general centre-periphery framework. One of these features is that more or less all of the theories mentioned are outside mainstream economics. For in the classical world of economics, there cannot really be losers in trade, every free exchange being basically equal, conveying mutual benefits that in its most radical form cannot even be disproportionately allocated. From this perspective, mercantilism could be seen as the ugly duckling or Cinderella of political economy and Marxism its black sheep, ecological economics too untried, perhaps, and the centre-periphery perspective too peripheral. The chosen field for this thesis, then, is with ideas or theories of international exchange outside the latter-century mainstream according to which every free exchange is necessarily advantageous to both the exchanging parties. Outside the textbooks of political economy, however, there lies a world in which equal exchange is the exception. Speaking, with minor exceptions, of *international* exchange narrows the field considerably to an

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suggested by Keynes and especially Emmanuel. The second part covers Marxist theories of non-equivalent exchange and, in addition to the material presented on Bauer and Grossmann in Chapter 2 below, includes a fuller treatment of Preobrazhensky, East Asian, and Eastern bloc theorists that are summarised at the beginning of that chapter. It also notes the participation in the 1960s of Western debaters such as Mandel, Bettelheim and Emmanuel. The third part centres on the peripheral theorists covered in Chapters 1 and 3-5 of the present thesis, but includes also a chapter on Baran and the dependency tradition of Frank, Marini and Wallerstein. The fourth is devoted to Emmanuel with a somewhat more extensive treatment along the lines of Chapters 6-8 below, but notably including also a survey and an interpretation of the Marxist debates he evoked in France (*e.g.*, Bettelheim, Denis, Palloix) and elsewhere (*e.g.*, Kidron), as well as a critical review of the alternative versions proposed by scholars such as Amin and Saigal, Roemer, Braun and especially Andersson, who will be taken up more briefly in Chapter 10 below. The fifth, and final, part concentrates on ecological theorists of unequal exchange, including parts of Chapter 1 and all of Chapters 9-11 below.

Occidental tradition, whose historical origin is sometimes identified with ‘mercantilism’. This does not imply that the idea is absent from other or earlier traditions, although it may take rather different forms (cf. Bolton 2002, Boorstin 1986, Collard 2001, Collard & H eritier 2000, Donlan 1989, Godelier 1968, 1999, L evi-Strauss 1963, 1969, Mauss 2002, Rodriguez & Pastor 2000). Having pointed to these other traditions here may habituate the mind to the idea of unequal exchange in possibly similar oral or non-monetary systems also within the Occidental tradition.

If writers and moral philosophers demonstrate a need and tend to underline the importance of maintaining equality in exchange, it suggests that it was not taken for granted in common parlance. In the legal terminology of the Shari’ah, ‘riba’ has been defined as “an increment, which, in an exchange or sale of a commodity, accumulates to the owner or lender without giving in return an equivalent counter-value or recompense (*Iwad*) to the other party.” (Sarakhsi 1906-07, VII: 109). Arabic debate on *riba al-fadl* and *riba al-buyu* has nevertheless been removed from the list of themes covered in the present work, even in its possible modern form. It was largely from the Muslim world that the West inherited Greek learning, science and moral philosophy, and the emphasis on equality can be found as well in Scholastic economics. A point which could have been more elaborated, however, is that the mercantilist conception of trade as basically unequal can largely be understood as an *oral tradition*, whose ubiquitous acceptance corresponds to a closer attention to the ‘facts of life’ than do subsequent traditions, but by contrast falls short when it comes to abstract exposition of its ideas in more formal models. When ‘fenced’ by print, the oral tradition appears in its different national varieties in increasingly elaborate modelling. With time, the formal elegance and purity of those models become perceived as more important than their usefulness and realism. Orality succumbs to literacy or print. In the meantime, however, some extraordinary texts have been produced, which profit from elements of both tendencies, notably Adam Smith’s *Wealth of Nations*. Indeed, the idea of unequal exchange did not wholly disappear from normal science until after the ‘Jevonian’ or marginalist revolution of the 1870s. This period is characterised by numerous discontinuities, not least the one referring to extended communications and transports, which simultaneously change the character of previous tendencies, the whole world in a sense imploding on the mind, and forcing upon it a Nietzschean ‘reappraisal of all values’. As has been noted of Roman Law, however, the indestructibility of matter is nothing compared to the indestructibility of mind, and many of the newer ideas about unequal exchange often seem to be a rehashing of old ones. But perhaps the opportunity has also opened to overcome the previous choice between realism and generality of presentation.

The vagueness in the term ‘unequal exchange’ has a counterpart in the understanding of ‘mercantilism’, a conception which resists being obediently contained in the conventional time period assigned to it, and has a tendency to reappear again and again in various forms of ‘neo-mercantilism’. It seems ultimately to be of greater historical importance than Marxism, and immensely more so than ecology, having in many respects formulated the main ideas to be reiterated in them. The mercantilist section would soon grow out of proportion to the rest if treated with equal reverence, even if restricted to British writers. I have instead decided to focus on the late mercantilist Cantillon, whose economic ‘land theory of value’ can be seen as including a corresponding theory of unequal exchange of land, which predates ecological versions by two centuries.

Apart from the basic conceptions of trade inequality among mercantilists, ideas of non-equivalent or unequal exchange can be found both among the French physiocratic economists of the 18<sup>th</sup> century (*e.g.*, Quesnay), and the British classical economists (*e.g.*, Smith). Although Ricardo himself figures as necessary background, and regretful though this may be, the present work has not allowed full study of Ricardian socialists, taking up only the work of

Fitzhugh, which, excepting political stance, has many similarities with later dependency analysis, allows comparisons with other writers in the periphery of the British Empire, and finally also had many ecological concerns.

The much-researched Marx has suffered the same neglect here, in spite of recent attempts to filter out a 'social metabolist' reading of his work. The same is unfortunately true also of much of later Marxian traditions which eventually transgress the strictly Occidental tradition. For the purposes of this thesis I have chosen to focus on some important central Europeans such as Bauer and Grossmann, to the neglect of Preobrazhensky and postwar Soviet, Eastern European, Japanese and Chinese debates. That contemporary debates on unequal exchange originated in a Marxist framework is beyond doubt, originally an outgrowth of the classical economic 'labour theory of value', or more specifically, as Boss (1990) has argued, are an aspect of 'theories of surplus and transfer'. The differences between 'unequal' and 'non-equivalent' exchange (cf. below), immediately suggested isolating the interpretation of Emmanuel's 'unequal exchange' from much of the rest of Marxist 'non-equivalent exchange'. In spite of its historical interest, the latter often appears of little direct interest to human ecologists other than as a cautionary tale about focusing on purely theoretical standards of value and measurement (but cf. Lonergan 1988). Whatever the merit of this argument, in the end it has become necessary for reasons of presentation, and in the present thesis this has meant neglecting not only the Eastern sphere debates, but also most of post-Emmanuelian debates (see, *e.g.*, Andersson 1976, Evans 1984, Raffer 1987, Koont 1987, and cf. note 1).

The inclusion of certain transatlantic perspectives on the centre-periphery relation initially suggested itself by the centrality of both the British Empire and British political economy. Perhaps not always fitting the concept of 'unequal exchange', many have nevertheless been so fitted by posterity in one way or another. In addition to Fitzhugh, the category brings together writers with a geographical spread from Innis in Canada to Prebisch in Argentina, and could have included much North and Latin American 'dependency' writing. Both Innis's 'staple thesis' and Prebisch's contribution to the terms of trade debate have been evoked as unequal exchange theories in ecological discussions of the dependency ilk. The West Indian Lewis is important as a theorist and historian in the context of unequal exchange, and makes a valuable addition also because of the neglect ecologists have so far shown him. (The reason, I suspect, is that he does not fit in with standard preconceptions.) These writers allow comparisons relevant for the link often seen between producing raw materials and suffering from an unequal exchange or bargaining position, and also to the discussion of ecological unequal exchange.

Some such comparisons were made notably by Emmanuel himself, who remains a central character in any history of theories of unequal exchange and the central character in my own. Since his intellectual contributions have never been afforded full appreciation or study in the often heated reaction to and rejection of his work – and certainly have met with little or no understanding among ecological economists – I have taken this job upon me. My treatment of the debates themselves has unfortunately suffered from this choice, but future studies will hopefully find it easier to treat it dispassionately if the different theoretical (and ideological) stances have first been clearly spelt out. I would argue that lack of recognition of Emmanuel's theoretical originality has made previous estimations biased against him, perhaps illustrating that theoretical novelty tends to be accepted, or at all *seen*, only as long as it corresponds with the pre-established scheme of whatever school the interpreter happens to adhere. In any case, an interpretation of Emmanuel would still have to place his ideas on unequal exchange in the general perspective of his thought as a whole. To the best of my knowledge, this has never been attempted until now. In addition to his centrality for the history of unequal exchange theories and the fact that he formulated his own also in ecological terms, this is the reason why he has been afforded an otherwise disproportionate three chapters.

Turning to more strictly *ecological* theories of unequal or non-equivalent exchange, there cannot as yet be said to exist a historiographical canon, and whom to include and where to lay emphasis is a matter which will have to work itself out with time. Human ecologists may be disappointed at their late introduction, or with how it has been executed, but one ambition of this thesis has been to put contemporary debates in perspective rather than vainly attempt full coverage. In fact, most ecological ‘theories’ of unequal exchange have been concerned with environmental accounting rather than theoretical or historical explanation, and more can be said of them in the former capacity than in the latter. Starting in the postwar ‘Age of Ecology’ with Odum, Borgström and the lineage of ecological footprints, my own study ends with ecological dependency theory and lays no claim to completeness. More could have been said on ‘social metabolist’ theories appearing here and there, but their history has already been well studied (see below), and they have so far been concerned mostly with domestic relations, not international trade.

All in all, the field covered in this thesis is incomplete as a study of theories and conceptions of unequal exchange. I have instead attempted to focus on aspects with more direct relevance for human ecology. As it concerns ‘exchange’, the full history of unequal exchange has, however, been an affair largely of political economy, preferably in its Marxian version. ‘Passing beyond’ political economy, which is or perhaps ought to be on the agenda of certain human ecologists, cannot be achieved by passing it by, and this also goes for the branch of theories relating to unequal exchange.

In the attempt to delimit the coverage of the present thesis I have not been concerned so much with what theories of unequal exchange *should* be about as with how it tends to be perceived. Used as a technical term, however, one aim here is to *promote* the idea of unequal exchange as a theme distinct from those guiding several long-standing schools of interpretation.

An overwhelming share of the literature using the term is Marxist, so it may be particularly important to clarify things with respect to that family of interpretations. First of all, theories of unequal exchange, as seen in this work, are separate from theories purporting to explain *imperialism*, either in a general sense or in its late 19<sup>th</sup>-century avatar. Unequal exchange may or may not be relevant as an element in such interpretations, but this is another question. Much more specifically, and though it has proved difficult in practice, I wish to promote the distinction between *unequal* and *non-equivalent* exchange. The latter term is commonly specific to Marxism, and should in my view be preferred when dealing specifically with (net) transfers of ‘labour values’. By analogy, most of what is today referred to as ecological ‘unequal’ exchange could preferably be termed ecologically ‘non-equivalent’ exchange, when dealing specifically with the (net) transfer of ‘ecological values’. I have little hope of this change in terminology breaking through in the near future, however, and have not attempted to uphold it throughout the text. By contrast, *unequal* exchange would ideally not require either a labour theory or an ecological theory of ‘value’, but would refer directly to a relation between prices and the underlying sphere of social and distributional conflicts (without necessarily passing *via* ‘values’ of any kind). The Sraffian alternative to Marxism which appears at times in the text, could hopefully clarify this, for many, apparently difficult point. Unfortunately, and complicating the picture, many Marxist applications of the Sraffian approach continue the search for some allegedly ‘objective’ standard of value and equality. This has relevance also for the ecological approach, since by conceiving it in contrast to that of the labour theory of value, ecologists have often fallen into a similar naturalistic conception of value. If so, they have thereby missed the much greater opportunities offered by theories used as tools to understand the relation between prices and conflicting social interests.

Marxist theory has not always been used to make sterile measurements of net value transfers or of aberrations of certain tools of interpretation from other tools of interpretation, *i.e.*, of

‘prices of production’ from ‘values’. In discussing some of the more prominent early exemplars, I have attempted to show ways in which Marxist theories of exchange have been used precisely with an eye to conflicting interests in the social and historical sphere: national hatred and wage-levels in Bauer; and for Grossmann in maintaining the rate of profit and thereby evading the decline of capitalism through trade with low-productivity peripheral areas. Preobrazhensky, who could have been added, introduced non-equivalent exchange as a means to promote industrial development through price policies devised to expropriate the rural sector. While post-war Marxist versions in the socialist bloc may be more sterile from this point of view in serving to provide ideological legitimacy between socialist states or against the capitalist system, and have also been excluded, they also had a concrete role in practical price policy contrasting them with Western Marxism.

Contemporary postwar discussions in the West on the terms of trade between developed and underdeveloped countries – *e.g.*, Singer, Prebisch, and Lewis, to all of whom we shall return – eventually shifted focus from the type of goods exchanged to the types of countries involved in the exchange, *i.e.*, from manufactures vs. raw materials to social relations. This led up to the first explicit modern formulation of a theory of unequal exchange by Emmanuel, and must be said to constitute the concept’s principal and most imminent line of descent. It is one without which the modern history of the concept becomes incomprehensible, and without which it loses its denotation, whatever its various connotations may be.

However, by referring to the relation between prices and the underlying sphere of conflict over societal output, or what in economic language would be called the ‘factors of production’, unequal exchange also becomes distinct from the very wide-spread concern over *monopolies*. Thus, the *usefulness* of ‘unequal exchange’ as a concept will better be seen if it is not mixed up with the more commonplace idea of monopolistic market distortions. This refers to much of the ‘unfair’ trade and lessened efficiency against which common people, liberals and Marxists have been ravaging at least since the late 16<sup>th</sup> century, via Adam Smith, the ‘monopoly capitalist’ interpretation informing Leninism and dependency, up to and including many recent attacks on globalisation.

This may explain some of the otherwise perhaps questionable inclusions of theories, omissions, and lesser treated luminaries. Ultimately, even explicit theories of unequal exchange founded on the idea of monopolistic distortions along with protective barriers have been disregarded (but cf. note 1 above). Although often seen as constituting one and the same thing, the so called *dependency* tradition has an at best ambiguous, and at worst hostile, relation to theories of unequal exchange. It sprang from a tradition which denied both the importance of the terms of trade and the possibility of transfers of value through trade. Thus, the transfer of ‘surplus’ initially spoken of in this tradition commonly referred to purely financial transactions, preferably within multinational corporations. The question cannot be fully dealt with in this work, but the reaction to the original formulation of unequal exchange by Emmanuel, which challenged the idea of a material basis of common interests among all the working peoples of the world, suggests that everything had to be done to reintegrate the term ‘unequal exchange’ with one in which it was ‘monopolies’ which orchestrated and ultimately benefited from the whole thing. This defensive character of the dependency movement, along with the generally rather vague and inconsistent formulations of unequal exchange which it has produced suggests, at least to the present author, the idea of drawing a more or less clear line of demarcation between a tradition of unequal exchange proper and of dependency. As the expression ‘unequal exchange’ is used in common parlance today, however, this dividing line would be more or less absent, but, as was said, it is one that I wish to promote, and that I hold would also promote the usefulness of the concept.

As for what I have chosen to refer to in this work as ‘ecological dependency’, there is still nothing sufficiently explicit with respect to relative prices to decide whether it may also

qualify as ecological unequal exchange. The same point as the one above over distributional conflicts as against ‘embodied values’ in an ecological context is, however, a point in Martinez-Alier’s work, with which we shall end our presentation.

## Earlier Studies

The historiography of theories and theorists of unequal exchange can be said to have started with the work of Emmanuel. His hotly contested 1969 book of that title set out to relate his theory to its predecessors, and thus contained a short review of other contributions “on the fringe of unequal exchange”, which included Prebisch, Singer, and Lewis. The book also contained a review of Marxist theories of non-equivalent exchange in the sense of a transfer of values due to exchange under conditions of different ‘organic composition’ – the Marxist expression for the economists’ ‘capital intensity’, and so termed rather confusingly since a *higher* proportion of ‘living labour’ (worker effort) to ‘dead labour’ (incorporated capital inputs) means a *lower* organic composition. This tradition, which included Bauer, was traced back even to the 18<sup>th</sup>-century economist Quesnay. Wiles’s (1969) book on communist international economics began with a review of the tradition of non-equivalent exchange in socialist economies. More important, however, was Andersson’s (1972a) licentiate dissertation, which took off more systematically where Emmanuel had left it, including systematic treatments of Bauer, Grossmann, Preobrazhensky, Bettelheim, and Emmanuel himself, as well as of Prebisch, Lewis and others. Like Emmanuel, Andersson was himself engaged in constructing a theory of unequal exchange, and it is interesting to note that both of them pointed out that Paul Sweezy, Paul Baran, and Andre Gunder Frank (*i.e.*, scholars whose ideas evolved into the main Western ‘monopoly capitalist’ and dependency tradition) had been *opposed* both to the idea of value transfers via exchange and to the importance of the terms of trade. If this is a brothers’ broil, the initial conflict has become very much blurred in subsequent and general presentations and understanding, which tend to see unequal exchange as part of the dependency tradition. While admitting the historical importance of Baran’s work for the general change of view on the relation between capitalism and underdevelopment within Western Marxism, tracing the history of unequal exchange to the terms of trade debate and the Marxist transfer of value through exchange has meant reviving this initial distinction.<sup>2</sup>

Writings on the post-Emmanuelian debate are hard to distinguish from the debate itself. Several doctoral dissertations have been written on the subject of unequal exchange (*e.g.*, Delarue 1973, Andersson 1976, Gibson 1977, Daffe 1986, Moraes 1986, Koont 1987, Barrientos 1988, Darmangeat 1991), but they have all been concerned rather with advancing some particular theory or criticism of their own, and none has focused on giving an historical account of such theories and criticisms, although parts can be found in each. Barrientos (1988, 1991) makes some kind of historical case that Emmanuel was a Smithian ‘adding-up value’ mercantilist, but manages this feat only by disregarding the Sraffian arguments and presentations that he himself preferred. Along with Andersson’s above (1972a, 1976), the formal presentation and critique of Emmanuel’s and many of his successors’ theories found in

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<sup>2</sup> Andersson’s (1976) doctoral thesis included an overview of in the West thitherto unfamiliar Soviet debates on non-equivalent exchange along with many other useful references, among others to the late mercantilist Sir James Steuart and to relevant passages in Adam Smith. Literature from the eastern bloc covering both the terms of trade and post-war Marxist debates include Szentes 1985. Ma (1986) and Woo & Tsang (1988) include Chinese debates, while Japanese debates were observed already by Andersson (1976), based on Matsui (1970). Thanks to Hoston (1986), much more has become known to Westerners about the important early contributions by Japanese to Marxist theories of economic development from the 1920s and 1930s, but the literature on its unequal exchange aspects are so far scant and difficult to assess (see, *e.g.*, Morris-Suzuki 1989).

articles by Evans (1978, 1979, 1980, 1981a, 1981b, 1984, 1989) are among the more valuable. Another stocktaking of unequal exchange theorists of comparable importance to Andersson's, especially for the post-Emmanuelian debate, is Raffer (1987), who was, however, similarly concerned with constructing a theory of his own. The present thesis could be seen as an extension of this tradition of interpretation, and must therefore be said to have significantly followed an 'internalist' path into the subject, where writers have been personally engaged in the progressive development of theory.

In addition, many general and particular studies of factions of the theories or periods touched upon here have been useful. Howard & King's (1989, 1992) history of Marxist economics has been of great value, particularly for the earlier periods, whereas the chapter on unequal exchange, in my opinion, is rather weak, covering only Emmanuel and Andersson and misrepresenting the former. In this respect, the treatment of Emmanuel and Amin in Brewer's (1990, for Amin esp. the 1978 ed.) history of Marxist theories of imperialism is better. Pouch (2001) is an unusual and much needed study of French Marxism in that it treats economics (but unfortunately brief on the unequal exchange debate). An older study with insightful comments in this context is Lichtheim (1966), while Judt (1986) often makes well-found remarks to the same effect. Edwards's (1985) study of international economics originated in an attempt to make Emmanuel's theory of unequal exchange comprehensible to undergraduates. He identified three schools of economic thought, the 'Marxist', 'cost of production' (i.e., Sraffian), and 'neoclassical', where Emmanuel is classified among the Sraffians rather than the Marxists – a useful perspective adopted already by Evans – but the point is blurred by similarly including Ricardo, Mill, Marshall, Keynes, Veblen, Galbraith, Myrdal, Hirschman, Kaldor, Schumpeter, Willy Brandt and many others (cf. Bowles 1986).

The terms of trade debate has produced a wealth of comment, overviews, and reinterpretations of the data, in an area dominated by a highly internalist perspective. Of studies with an historical ambition, Love's (e.g., 1980) studies of Prebisch have been most useful, along with FitzGerald (1994), Toye & Toye (2003). Inspired by Amin (1974), Love calls Prebisch *the* originator of the debate on unequal exchange but, as will be argued, the sense in which this could be true is questionable. This is partly because of Love's slighting over Singer, who made the substantial contribution with respect to the terms-of-trade debate, and partly because the only other sense in which 'the' debate on unequal exchange originated would have to be with Emmanuel (1962, 1969a). I have tried to incorporate findings from Tignor's (2006) biography of Lewis, although it appeared when my own text was basically completed, but I had already profited from his earlier article (Tignor 2004). The views of the 'pioneers' of development economics themselves, collected in Meier & Seers 1984, have of course also been consulted. A good general overview of post-war paradigms within development economics, with suggestions on the cold-war context in which they appeared, is Hunt (1989; see also Arndt 1978, 1987, Oman & Wignaraja 1991). In addition to Love (e.g., 1980, 1990, 1994, 2005), a well-informed and sympathising study of Latin American structuralism and dependency is Kay (1989). A hostile one on the dependency movement is Pakenham (1992). Fitzhugh was discovered in the context of unequal exchange by Persky (1992).

My treatment of Innis largely builds on work undertaken during the years 1994-97 for my M.A. in the history of ideas and learning at Lund University (Brolin 1997), but has been refashioned in the context of unequal exchange. Among the most insightful interpreters are still some of his contemporaries, e.g., Easterbrook (1953), while McLuhan (1964a, 1972) is perhaps still the most stimulating. Berger (1986) gives the best brief overall view, and Patterson (1990) makes useful efforts to unify the all too common 'schizophrenic' separation into early and late Innises, by linking him to Canadian traditions in historiography. Most have neglected the importance of economic theory and historical economics, and unfortunately

Neill's (1972) focus does not seem on target. Baragar (1996) is a useful reminder with respect to Veblen. Bunker (1989) is the origin for including him in the canon of ecological unequal exchange. The most important recent work is certainly Watson's (2006) sensitive study, building on his 1983 dissertation.

Although the treatment of mercantilism has been all but eliminated in the final text, general book-length studies and collections of mercantilist and pre-Adamite economics have been used extensively (*e.g.*, Furniss 1920, Suviranta 1923, Heckscher 1931, 1994, Keynes 1973 [orig.1936], Viner 1937, Johnson 1937, Supple 1959, Wilson 1969, Coleman 1969a, Appleby 1978, Hutchison 1988, Magnusson 1993, 1999, Finkelstein 2000), along with great numbers of articles for more specific topics and periods (for Cantillon, *e.g.*, Higgs 1931, Brewer 1988b). It is often refreshing to look into Schumpeter (1954), and I have great sympathy for his postulate that when it comes to mercantilism one had better to forget all one has ever read and turn directly to original sources. Although it does not show in the current presentation, original sources (or rather reprints) of British mercantilists have been extensively perused during this work (good collections are found in McCulloch 1856, Tawney & Power 1924, Thirsk & Cooper 1972, Magnusson 1995; these should be complemented with works of individual authors, such as the 16<sup>th</sup> century Commonwealthmen, Malynes, Petty, Cantillon, Hume, or Steuart). The continuance or revival of these traditions in British (neo)mercantilism of the 19<sup>th</sup> century has been studied by Semmel (1960, 1970) and Koot (1987, 1993).

No comprehensive single treatment of the history of ecologist economics and the social context of environmental movements is known to me. Important parts of it can be found, *e.g.*, in Anker 2001, Bramwell 1989, Cleveland 1987, Grove 1996, Golley 1993, Fischer-Kowalski 1998, Fischer-Kowalski & Hüttler 1999, Foster 2000, Hagen 1992, Haberl 2001a-b, Linnér 2003, Martinez-Alier 1987, 2002, Martinez-Alier & O'Connor 1999, Sandbach 1978, P. J. Taylor 1997, and Worster 1977. There is more to be done on integrating these ecological theories and movements in their general historical setting than has been done, but this would be the theme for another book. Taylor's (1997) study pointing out links between H. T. Odum and the Technocracy movement of the 1930s has been highly relevant (Rotaby 2005 puts greater emphasis on his father's 'holism'). Linnér's (2003) study of Borgström and neo-Malthusianism has also been very serviceable, particularly for its linking theoretical issues to the general historical and political context. There is much less on ecological theories of unequal exchange, of course, although useful indications can be found in the works cited above (and probably more so than I have done), and the present work is only a highly preliminary attempt to construct such a history. I know of no previous studies on Bunker or Martinez-Alier, and have not myself attempted full coverage. The 'social metabolist' perspective will only be touched upon in passing. Although from a strictly internalist and 'monumental' perspective, its intellectual history has already been traced in Fischer-Kowalski's well-documented survey (1998; cf. 2003), and in her and Hüttler's (1999) review of the state of the art, complemented by Martinez-Alier (1987), Rosa *et al.* (1988) and Foster (2000) – from Justus von Liebig and Marx, via Bukharin and the 'industrial metabolism' of Robert Ayres, to the material and energy flow analyses undertaken by contemporary Viennese scholars. A good overview of the recent and scarcer contributions to studies of biophysical exchange between North and South is Giljum & Eisenmenger (2004).

## Methodological problems in relating internalist and externalist approaches

"Doubtless", Skinner (1988: 234) has written, "it is the universal fate of those with the temerity to write about historical method to find their conclusions dismissed as obvious where they are not dismissed as false." Let me start with the obvious, and let the reader decide if and

where I transgress into falsehood. I have of course had recourse to standard historical methods (Thurén 1990) of confirming with original sources (or at least reprints) and not taking everything read at face value (historical ‘source criticism’ as it became known by the early 20<sup>th</sup> century; Torstendahl 1964, Nevers 2005). This also involves trying to understand the specific context in, and purpose for which a text was written (something equally valid for so called secondary sources), as well as placing it in the larger context of the author’s other writings. As can be seen in the final text, the focus on individual authors has also turned into something of an organising principle. Having usually concerned myself with obscure and misunderstood authors, I have developed a preference for letting individuals have their own say, rather than repeat what others have had to say about them or swiftly placing them in some category.

Even including checking off databases and search-engines, the most important ‘tool’ has been to look up references and hints in already familiar sources (cf. ‘Earlier studies’), following them up by renewed general searches. If we need a name for this it could be referred to as the ‘snow-ball’ method, *i.e.*, a counterpart to a method frequently used in field research (*e.g.*, Burgess 1984: 56). After a while, when it seems as if the snow-ball has turned into an avalanche, certain patterns emerge and, as in Poe’s ‘descent into the maelstrom’, one may re-emerge to the surface. With time and repeated descents, one may come to learn the underlying ‘geography’, and the problem becomes how to relate it to others who may have found themselves caught in the stream. It becomes a question of ‘translation’ so to speak. Describing this ‘hermeneutical spiral’ (Gadamer 1989) is of course a tricky business, as may be guessed by my avalanche melting into a maelstrom, and since it risks leading into another avalanche or maelstrom, this is perhaps not the best place to do it.<sup>3</sup> One of the hermeneutical ‘rules’ is the zick-zacking between the meaning of the whole and that of the parts. Another is that one should seek the best interpretation in the sense of being the best *Gestalt*. If readers will ultimately come to disagree with me on this best gestalt, it is nevertheless hoped that the ability to *discuss* them will have been enhanced by such historical interpretations as those suggested in this thesis. It is not to be presumed that there exists an ultimate ‘synthesis’, on which all parties will come to agree (cf. Patočka 1979: 66ff., 162).

Trying to write on current theories from an historical perspective, one is forced to confront certain inevitable problems, which are in fact not restricted to recent theory but general to historical interpretation. This concerns a difficulty of drawing the line between interpretation of and contribution to debates, or in more general terms between secondary and primary sources, or between narratives and relics, and the inevitable risk of oneself becoming a mere exemplar of the latter. If most commentary on, *e.g.*, Emmanuel has been a contribution to the

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<sup>3</sup> I agree with Steiner (1998: 316) that the triadic form of the hermeneutic movement “is dangerously incomplete”: “it is dangerous because it is incomplete, if it lacks its forth stage, the piston-stroke, as it were, which completes the cycle. The a-prioristic movement of trust put us off balance. We ‘lean towards’ the confronting text [...]. We encircle and invade cognitively. We come home laden, thus again off-balance, having caused disequilibrium throughout the system by taking away from ‘the other’ and by adding, though possibly with ambiguous consequence, to our own. The system is now off-tilt. The hermeneutic act must compensate. If it is to be authentic, it must mediate into exchange and restored parity.” The necessary ‘trust’ in the material before oneself corresponds to the Nietzschean historians ‘antiquarian’ mission, the cognitive encirclement and invasion to his ‘critical’, and the ‘home-coming’ to the ‘monumental’ . The re-equilibrating restoration of exchange and parity, would then correspond to Nietzsche’s insight that ultimately it must all somehow benefit ‘life’. The perfection implied in tripartite dialectic or syllogistic logic is similarly out of tune with reality, rather than being one of its overtones (cf. McLuhan & McLuhan 1988). I like to think of them as three-legged stools which for that reason cannot ‘wobble’ like the world. Although a synthesising work, contrary to the dialectical imagination of Fichte, Hegel, and Marx, the theses and antitheses need not be fully contained in the synthesis. Instead, they retain a function as openings to past and different experiences, and requiring the fourth stage or leg in the ongoing balancing and counter-balancing according to the dominant biases and disquieting trends of ones own society.

reaction against his work, certain could also qualify as ‘secondary sources’ with respect to the debate. As it happens, even these have been conceived from what in the historiography of ideas may be termed an ‘internalist’ perspective, *i.e.*, from the perspective internal to the advancement of learning within the science itself, commonly by scholars who are themselves active in the discipline, and often with an aim to establish a ‘monumental’ past to current undertakings. The present study pays homage to this perspective in that it treats very disparate theorists under the same heading of unequal exchange, and in that its author often has his own opinions as to what constitutes ‘progress’ or not. So far, no study seems to have existed which attempts to treat these theories and theorists from a general historical point of view, sometimes called ‘externalist’ because it relates scientific changes rather to ‘extra-scientific’ events, and to place them in their general and specific historical context. The historiography of ideas has traditionally sprung from the internalist and evolved towards the externalist, to an extent which now seems to make even this terminology obsolete in that no serious study of the history of ideas can be conceived in wholly internalist terms.<sup>4</sup> What is generally in question, however, is not the defunct ‘Whig interpretation of history’ (Butterfield 1965), which still dominates the way any specific scientific discipline or school is presented to its newcomers, but in what sense a work can still be considered relevant in an ongoing search for ‘truth’. This relevance is not something once and for all established, but is, like Tao, ever changing (cf. Postan 1971: Ch. 5, Matz 1970, 1984).

The Mertonian (Merton 1973) paradigm of sociology typically separated the institution of science from other subsystems of society, studying, *e.g.*, distinctive norms and reward structures. In sociology, then, the ‘internalist-externalist’ divide has come to relate to studies of the *social* relations within the confines of this subsystem, or the social relations with the outside (patrons and public). However, the closer one looked within ‘science’, the more ‘society’ was found, and as Cozzens & Gieryn (1990: 1) comment: “it soon became evident that the internalist-externalist dichotomy was bogus: science is society, inside and out.”

Another way to draw the same line, which is perhaps not as easily discarded, is evident in the respective approach to the history of philosophy by philosophers and historians of ideas. The former treats classical philosophers, such as Parmenides or Plato, as contemporary *colleagues* on the quest for Truth. The latter try to relate the same philosophers to their own contemporaries and society in the quest of understanding what they said *meant at the time*. I have sympathies for both of these approaches and am fairly convinced that the separation between them, which may have been necessary at some point, is ultimately a hindrance to the advancement of either tradition. An obsolete positivist tradition in philosophy struggles with relativist demons and detractors, and the dispute will not be resolved without an expansion of the notion of ‘truth’ as the correspondence between a statement and the thing itself (Kant 2004: A58), to incorporating the good orientation of the *ultimate concerns* (Tillich 1978, inspired by Heidegger 1963; cf. also *res publica* or the ‘commonweal’) of one’s predecessors as well as oneself. Historiography, on the other hand and in Nietzsche’s (1998) terms, has persistent tendency to fall back into *antiquarianism*, to the neglect of its *monumental* and *critical* tasks, ultimately, still according to Nietzsche, to the benefit of ‘life’. There is no once and for all ‘synthesis’ to resolve this dialectic, nor is there necessarily a progressive hermeneutical ‘spiral’. Rather, there is a *metaphorical* relation between, on the one hand, say Plato, his society and their ultimate concerns, and, on the other, the contemporary researcher, our world and ultimate concerns. Such metaphorical comparisons with the classical world have indeed been a defining characteristic of Western humanist and social science at least since the ‘Renaissance’, serving as a tool for self reflection. Relational studies are not limited

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<sup>4</sup> As Kuhn (1977) has remarked, however, the popularity of the externalist approach can also be ascribed to the fact that the internal concerns of the science in question have tended to become too difficult for the average historian or his readers to fathom.

to the classical world, of course, and similar self-reflection was promoted, *e.g.*, in the comparison with extra-European ‘savages’ (see, *e.g.*, Fairchild 1961, Lévi-Strauss 1983, Malm 2003: 83-95). The ultimate concerns of both the ‘philosophical’ and the ‘historical’ approaches to history tend to become *biased* by contemporary society, its ‘methods’ and ‘ultimate concerns’. This is perhaps where critical or even *satirical* (McLuhan 1972) historiography has its role to play, but it requires first of all *self-criticism* and imagination.

On one level, science can be seen as the ultimate refinement of ‘method’, and its proponents certainly like to present it as such, with ever more refined induction and deduction, either filling out ever greater blanks on the map of knowledge through verification, or advancing on the never-ending Popperian quest of falsifying one’s most cherished foundations (Popper 1959). There is also some truth in one of his critics, Kuhn’s (1970) concept of a paradigm, the normal scientific working out of which ultimately produces enough anomalies to create revolutionary breakthroughs or reversals. Lakatos (1970) tried to resolve the problem with the perceived relativism of Kuhn’s approach, while accepting Kuhn’s or Feyerabend’s (1978) point that all theories have already been falsified, by speaking of competing research programs each with their own hard-core and protective belt. While protective belts, and with them research programs, can be refuted empirically, the same is not true of the hard-core elements. The economist Takashi Negishi certainly cannot be charged with not having given full emphasis to ‘normal science’, being a Japanese pioneer in the application of general equilibrium theory to international trade. His approach to the study of past economic thought is not to take the superiority of well-established theories for granted, however, but rather the contrary one of searching for contradicting or complementary ideas, ‘anomalies’, in an attempt at renewing or even revolutionising the standard paradigm or research program. “It is difficult to see”, Negishi (1989: 4) writes, following Lakatos, “why an apparently defeated research program cannot suddenly make a triumphal return with its hard core the same as before but with a better articulated or different protective belt. But, to make a triumphal return, there must be some scientists seeking to develop it while it is in a state of hibernation.” Thus, through the work of some ‘individual talent’, as T. S. Eliot (1920) saw in a classic essay, a seemingly defunct tradition can suddenly find itself re-enacted (Collingwood 1946) or retrieved (Heidegger 1963; *i.e.*, *Wiederholung* rather than *Wiederholung*, ‘repetition’; cf. foreword in Swedish translation) in a new guise.

Different research programs are found both within Marxian and non-Marxian economics. Negishi exemplifies for the latter with the Keynesian revival of mercantilists, underconsumptionists and Malthus, making obsolete the earlier quantity theory of money, which has, however, in its turn been revived by more recent monetarist theory. Further, we have the Ricardian research program, in hibernation since the marginal revolution of the 1870s, which has been revived by Sraffa’s theory. Yet another example is the still dominating neo-classical, or neo-Walrasian, research program, being challenged by neo-Austrians, and the current vogue is to replace ‘general equilibrium theory’ with ‘game-theory’ (cf. Rashid 1980: 9). “The study of mercantilism, which has been outmoded since the dominance of classical economics, may suggest to us a different perspective on the current problem of frictions among trading nations which classical and post-classical economics cannot” (Negishi 1989: 3). In the history of theories of unequal exchange, Emmanuel plays the role of theoretical rejuvenator, Eliot’s individual talent, and he will accordingly be allotted a significant and perhaps disproportionate space and attention. Indeed, according to Eliot every genuinely new poem (and by analogy theory, discovery, etc.) necessitates a rewriting of the entire history of literature (and by analogy science). This, then, is partly the role I have had to adopt. Nietzsche (1998), on whom Heidegger built, spoke of this aspect as ‘monumental’ historiography, building one’s own past, not anachronistically but for the future and simply because history had been essentially changed.

Both the work of the ‘individual talent’ and that of the ‘monumental historian’ are related to the *abductive* logic of Peirce (1990), superior in rank to both inductive and deductive logic. It is also of the same essence as Kant’s ‘synthetic propositions a priori’, or in more common terms to the plea for ‘imagination’ (*inbillningsgäva*) by the 19<sup>th</sup> century Swedish historian E. G. Geijer (1874). At one stage or another, abandoning one’s ingrained habits and conventionalism, a leap of faith is necessary to get the whole and perhaps revolutionary intuitive picture. This may then be subjected to renewed questioning or confirmation, but mostly serves as the organising principle for further work. Its success, as has been observed, is measured by the time it manages to hold scientific progress back. The phenomena are not limited to ‘science’ and its conventionalism, but equally or more to ‘society’.

If science and society are not isolated, or rather, if science is society through and through, how are these conventionalisms established? One answer could be found in the historiography of political thought, speech or discourse by Skinner (1972) and Pocock (1985: 2; cf. 1962). As Pocock describes it, Skinner obliges us to recover

an author’s language no less than of his intentions toward treating him as inhabiting a universe of *langues* that give meaning to the *paroles* he performs in them. This by no means has the effect of reducing the author to the mere mouthpiece of his own language; the more complex, even the more contradictory, the language context in which he is situated, the richer and more ambivalent become the speech acts he is capable of performing, and the greater becomes the likelihood that these acts will perform upon the context itself and include modification and change within it. At this point the history of political thought becomes a history of speech and discourse, of the interactions of *langue* and *parole*; the claim is made not only that its history is one of discourse, but that it has a history by virtue of becoming discourse. (Pocock 1985: 5.)

The more complex, even contradictory, the context of different languages, the richer and more ambivalent can the individual contributions become, and the greater the likelihood that a fundamental movement will take place in the context, or *langue*, itself. Speech constantly acts upon language, *parole* upon *langue*, but languages also “exert the kind of force that has been called paradigmatic”, Pocock (1985: 8) explains, and “present information selectively as relevant to the conduct and character of politics, and it will encourage the definition of political problems and values in certain ways and not in others”. However, although every innovative speech-act, argument, *parole*, takes place within a current language, *langue*, at the same time it must also, if ever so little, like Eliot’s individual talent, transform this language tradition.

Contrary to what has been the focus of these scholars, ‘means of performing’ are not limited to voice or pen phenomena – or even the ‘swords’ (Tully 1983) noted by their critics. It is a pity that Pocock and Skinner have not made more profound attempts to incorporate the ‘history of speech and language’ into its more hardware context. Speaking of popular contentious claims as a constantly changing ‘repertoire’, where innovations are incorporated and older forms become unpopular, Tilly (1995) argues that the form becoming ever more popular over the decades of his study was *national*. This highlights one shortcoming in the humanist Pocock-Skinner approach, namely their lack of concern with how technical innovations might sneak their way into ‘language’, and thereby the speech acts possible within it – the more potent because their impact is often unconscious. In essence this amounts to including not only ‘words’ but technical aspects of culture as part of ‘language’, and thereby of technical innovations as ‘speech acts’ or ‘words’ in themselves. Already Lewis Mumford (1934) pointed out the impact mechanical watches had on medieval thinking and philosophy. So did Lynn White, Jr. (1962), noting how by the time of Descartes the mechanical metaphor had been exalted to metaphysics.

Neither Skinner nor Pocock, or even Eisenstein (1979), show any appreciation of how *all* languages, vernacular, political, religious, humanist, scientific, etc., were paradigmatically modified, extinguished, re-created, and enclosed, in the new discursive context after Gutenberg. The movable types applied to a culture of alphabetic script can be seen notably in the consolidation of vernaculars themselves, and as has been extensively argued and reargued, nationalism is an offspring that could exist only in a culture of print and paper. The printing press could thus be said to have had a notable *rhetorical* impact on *la langue*, thus justifying talk about a ‘Gutenberg galaxy’.

Including technology in the explanation of thought is hardly revolutionary, but doing so in the hazardous interplay of language and speech acts implies a rehabilitation of McLuhan (1962), who also used, *e.g.*, the *langue*–*parole* word-pair to express his idea. This perhaps also gives us a frame of reference with which to distinguish the early mercantilist concerns from their 20<sup>th</sup> century analogues. Where the former citizens were involved exclusively with progressively articulating national concerns (cf. Ferguson 1965), up to the point where the level of abstraction and generality took overhand, the latter often seem to face the contrary problem of stating abstract and general concerns, and often very similar arguments, in terms which can emotionally stir public morality. More interesting perhaps is the general reversal, via world wars and colonialism, of national sentiments from something progressive in domestic politics into an alarmed defence of political and economic achievements against menacing Others. This is the situation which I hope the theories discussed in this thesis, whether ecologic or not, will help to understand.

Remembering the ‘paradigmatic’ effect of Skinner’s and Pocock’s many languages and sub-languages, to which we may add the paradigmatic effects exerted by man’s non-verbal extensions, will be instructive when brought back to the present and to the question of methodology. This was the point of a some notes by Harold Innis in the 1930s on the familiar point that the social sciences should not try to emulate the natural sciences with their ‘laws’. Since the object of study was endowed with free will, so said this view, there could be no laws in the sense of the natural sciences, and neither could the social sciences claim ‘objectivity’, since the social scientist, as a participant of his subject matter, necessarily brought values with him. The participation of the social scientist himself in the process under study, Innis (1935: 286) agreed, entailed innumerable difficulties for the objectivity of the social sciences. Various vested interests and “the corroding effects of institutions” always threatened to lead the search for truth astray. The natural sciences faced a much easier task, imposing few restrictions on the scientist other than laboratory discipline. Consequently, they also permitted him “to indulge in all the biases from which the social scientist is barred”. The social scientist should and must take these biases into account, but this was not all. Paradoxically, they could become a tool of investigation: “the prevalence of these biases at close range should provide the social scientist with an excellent laboratory but it is seldom regarded as such” (*loc. cit.*). Thus, he explains: “Habits and institutions, *even stupidity*, are the assets of the social scientist. Relative capacities of social scientists for observing, in contrast to being observed, extend his range” (*ibid.*: 284, emphasis added). The distortions and prejudices of the scientist’s surroundings become tools, in a way not dissimilar to the course of events in psychotherapy although transcending its scope. If possibly beyond human endurance, it was on the one hand comforting that “the social sciences grows by development and correction of bias. On the other hand he will receive small thanks and possibly much contempt and persecution for attempting to tear the mask off from innumerable biases which surround him” (*ibid.*: 283). Methodologically, “[t]he innumerable difficulties of the social scientist are paradoxically his only salvation”. Since it was impossible to be ‘objective’ in the strict sense, one could only learn of ones numerous limitations:

The “sediment of experience” provides the basis of scientific investigation. The neverending shell of life suggested in the persistent character of bias provides possibilities of intensive study of the limitations of life and its probable direction. “Introspection” is a contradiction, but what is meant by the word is the foremost limit of scientific investigation in a range extending back to geological times. The difficulty if not impossibility of predicting ones own course of action is decreased in predicting the course of action of others. [...] The habits or biases of individuals which permit prediction are reinforced in the cumulative bias of institutions and constitute the chief interest of the social scientist. (*Loc. cit.*)

*Imagination* is certainly a required element in studying ones’ shared stupidities. ‘Stupidity’ in this sense of “cogwheels of the skull”, to borrow Max Stirner’s expression, is not easy to engage in discussion, and according to Bonhoeffer (1960: 20), information or positive arguments will never suffice, only ‘liberation’. This and the dangers perceived to be involved may explain the felt need to have recourse to *satire*, for as Jonathan Swift (1968: 144) wrote in the preface to *The Battle of the Books* (1704): “Satire is a sort of glass wherein beholders do generally discover everybody’s face but their own”.

According to the externalist view of historiography, then, since the purpose of this thesis is *historical* there would really be no need to engage in debates over the respective coherence and usefulness of these theories. Instead it should be a question of relating ideas to the circumstances in which they appeared. I have great sympathy for this approach – with the reservation that coherence and usefulness are also part of history, and whether one likes it or not, do inform the reception and subsequent historiography of a theory – and I would argue that even *theoretical* understanding may be enhanced by this means. One commonplace way of relating ideas to their circumstances goes via the persons coming up with the ideas. This is a fairly straightforward method, which adds to the concreteness of both ideas and circumstances, and which I have chosen to apply also in the style of presentation, commonly referring to what may or appears to have been formative experiences in formulating some specific of a theory, and pointing forward to the more general concerns by which the theorist was ultimately motivated. If this tends to overemphasise the ideological and politico-religious side of theory-building, and only rarely imply ‘purely scientific’ motives, it should be remembered that ‘pure’ science in this sense is defined by its tool-like character and as such can only motivate action on strictly subordinate levels, which are unlikely to produce theoretical novelty in the first place. My point is not that ‘anything goes’ since it is all politics anyway, but rather the contrary that theoretical novelty demands a certain ruthlessness to one’s own most cherished ideological and politico-religious traditions which may be difficult to obtain if *circumstances* are not also rather unusual.

There is, nevertheless, something to be said for the ‘internalist’ tradition within the history of ideas, so called because it saw theoretical changes as a consequence of purely scientific reasoning and findings, and whose practitioners were also most often themselves actively involved in the maintenance and advancement of their discipline. If the ‘externalist’, or general historical approach, in relating thoughts and theoretical shifts within science to the circumstances of the time, tends to shun any evaluative judgements of theories (or likes to think that it does), this is not so in the opposite camp, where the evaluative simultaneity of theories is rather taken for granted. Often – such as when introducing novices to a subject, and which is what makes it old-style – this approach decays into a simple recounting of scientific progress, staking out linearly the cumulative advances which end in the current state of affairs, or rather, would do so were it not for some irritating of exotic infidels who have as yet to be enlightened. This corresponds to what Herbert Butterfield (1960) once called the ‘Whig-interpretation of history’ in which the world advanced towards the ideal of Protestantism. Keeping to the internalist perspective, a counterpart of this history of verification is the history of falsification, in Popper’s term, which recounts the eradication of falsehood, or in

which erroneous theories and facts are filtered out with time. I subscribe to this falsification view in that, for my own part, I am convinced that theories are *all* wrong, even should they not yet have been proven so, but that they are more or less so, or more or less useful and relevant depending on the task which one considers most relevant to undertake.

My own concerns are to understand historical phenomena rather than giving policy advice, constructing elaborate mathematical models, or trying to measure unequal exchange according to some often more or less hypothetical unit (for an interesting approach with empirical relevance, see Köhler & Tausch 2002). These may all be relevant and important undertakings, but they are nevertheless subordinate to the aid they may give the general understanding of our historical experience and existence. This bias on my part is reflected in the evaluation of and respective space afforded individual theoretical contributions (or even exclusion). Certain theorists would on the other hand qualify because of the light they may cast as exemplars of their societies and the problems with which these have been concerned, some of whom have been included, *e.g.*, Fitzhugh. Most of these, however, have been excluded, *e.g.*, postwar Eastern bloc scholars, or many later Marxist writers basing themselves on the distinction between ‘value’ and price, who would provide little illumination (for our purpose) other than as exemplars of a certain academic Marxism. Furthermore, many contemporaries – Marxists, ecologists and others – are involved in trying to measure unequal exchange according to their preferred standards. They, too, have most often not qualified for individual presentation, though, since they do not, as it seems as yet, provide much *new* light on historical understanding. These reasons for inclusion or exclusion may be questioned, but it is probably better to have them stated than merely implied.

If social science is basically a quest for introspection, my own way to the problematic of ‘unequal exchange’ may also be instructive to readers wishing to understand some of the peculiarities of the approach of this work. Interest in the subject was awakened by reading Emmanuel (1969a, 1972a), who tried to confront an anomaly and what I felt to be a certain self-sufficient smugness in the Marxist understanding of the industrial working-classes as one big, ‘happy’ exploited family. This had struck a discordant note both with centuries of nationalist warfare, notably in the First World War, and with the overconsumption that had been the major concern of the ecological movement. Furthermore, it also first made comprehensible to me the point of, *e.g.*, Marxist theories of value, understood as a determination of long-term relative prices from the social and political sphere rather than merely from the sphere of demand and supply, and which also made the to me crucial point of, in some sense, liberating the determination of wages from the level of productivity. I had come across references to Emmanuel in various circumstances, but the most noteworthy was probably Immanuel Wallerstein, who claimed affinity for his interesting historical-sociological synthesis in *The Modern World System* (1974-1989), where he struggles with the double and interrelated problem of the capitalist and the nation-state systems. This problematic in turn engaged me as a consequence of studies of the above Canadian economic historian Harold Innis, in which I also learnt some of my methodological habits and preferences. Innis’s synthesising historiography focused centrally on the overall ‘subliminal’ effects of means of communication in biasing societal organisation and habits of thought, *e.g.*, paper and the printing press on nation states and nationalism. As in the related cases of Thorstein Veblen and Marshall McLuhan, this had often been interpreted as ‘technological determinism’, a quasi-Marxist emphasis on the impact of the techno-economical basis on the political, ideological, etc., sphere. As McLuhan has argued this would only be true to the extent to which such insights were not acted upon:

Approaching the past dynamically as a dramatic action with a world cast, Innis naturally saw history as a mass of ruins and misconceived enterprises. In his power to reveal the patterns of massive imperial events, Innis is a kind of *deus ex machina*, unmasking the actors. This power to expose the

hidden motivations of great corporate actors, such as the city-state or Roman or Babylonian bureaucracies, almost puts Innis in the role of a satirist. One no sooner uses the word than its appropriateness to Harold Innis becomes evident. If he is an artist in his manipulation of major historical actions, he is a satirist in his power to reveal the perversity and obtuseness of the actors. (McLuhan 1972: v.)

Innis and Emmanuel came from politically opposite corners – a Baptist liberal with an anarchic weakness in the case of Innis, and a Marxist believer in globally planned economy in the case of Emmanuel. They also exemplified very different methodologies – Innis being an economic historian with a loathing for political engagement and a penchant for ‘dirt science’, and Emmanuel an economist using Marx’s abstract drawing-board ‘price of production’ schemas with a background in communist resistance and private enterprise. Despite this, there was an apparent likeness in their attempts to reveal hidden motivations of the ‘corporate actors’ such as the majorities of populations. As in the case of Innis, I began by reading all I could find written by Emmanuel as well as about unequal exchange. It was said of Innis that his method was to collect all the material he could come across in huge, amorphous heaps and then to engage in free association in an attempt to discover some pattern in it (cf. Watson 2006: 289). This very painstaking and perhaps unrepeatable ‘method’ is roughly how I see the way I work, though I do not claim to be an artist at it.

## Outline of the thesis

Chapter 1 starts by spelling out the two defining characteristics of mercantilist thought: the desirability of a surplus balance of payments and particularly one in manufactures. In general mercantilist conception, land and labour (apart from ingenious labour) were the original sources of value, and the chapter continues by spelling out one of the more remarkable early 18<sup>th</sup> century theories, Cantillon’s, whose use of a land unit of measurement could be said to make him a predecessor of more modern ecological theories of unequal exchange. It continues by introducing the ‘non-equivalent exchange’ of the more abstract logics of physiocracy and classical political economy. While reacting vehemently against supposed mercantilist confusions, these survived in practical politics and more peripheral theorists, having been revived time and again from neo-mercantilism to Prebisch, development economics, and dependency theory. It finally studies one of the more unusual followers of the Ricardian socialist labour theory of value, an antebellum, proto-fascist propagandist of Southern slavery, exposing its dependent position whether towards Britain or the Northern States. Like mercantilists, *dependistas*, and ecologists, he also linked this to the exchange of raw materials for manufactures, but neglected Southern imports of highly productive Northern state agricultural produce.

The tradition of non-equivalent exchange in the more abstract form of the labour theory of value, can be almost indefinitely extended in numbers. Its geographical extension corresponded historically, first, to the German language and Russian traditions, from where Marxist economics in general sprang. After these intellectual traditions had been cut short by Hitler and Stalin, it became more geographically diversified but still, unsurprisingly, focused on areas in which Marxism had a relatively strong institutional support. The same extension can perhaps not be found in originality, and Chapter 2 focuses merely on some of the earlier and more illustrious members of the Germanic region. Non-equivalent exchange appeared first in Bauer’s explanation of nationalist antagonism and then in Grossmann as countering the breakdown of capitalism, in both of which aspects it reappeared in the work of Emmanuel. Both the problems pertaining to the ‘cyclonic’ interactions of the centre-periphery relation and those relating to nationalism reappeared in the work of the Canadian liberal and

Veblenesque economic historian Innis, who is the subject of Chapter 3. He is known primarily in the former category for his so called ‘staple-thesis’ explanation of Canadian history, which has been revived in the context of ecological unequal exchange. I suggest that he may have as much to offer in the second office, if it is accepted that such horizontal social conflict is what unequal exchange theory is ultimately about.

The Canadian example serves to illustrate part of the argument also in Chapter 4 on Prebisch and the debate on the terms of trade, where it is pointed out that the Argentinean export economy showed many similarities with the British Dominions, and certainly could not be said to have underdeveloped because of its raw materials exports. Discussed is also in what sense, if any, Prebisch can be said to have originated rather than helped inspire the debate on unequal exchange, and how the debate on the Prebisch-Singer theorem soon showed that the question of raw materials vs. manufactures was another from that of development vs. underdevelopment, whether with respect to general economic development or to the trend of the terms of trade. In Chapter 5, we then turn to Lewis, who built primarily on the classical paradigm, pointing out the cold-war context of his effort to understand the British industrial revolution. His model, which focused on the unequal wage-levels due to productivity differences, and their non-equalisation through political restrictions on migration, significantly contributed to the interpretation of the falling terms of trade, and has in itself been seen as a theory of unequal exchange. It furthermore stimulated Emmanuel, with whose theory it has important connections in reversing the order of causality – now from the ‘factorial’ to the ‘commodity’ terms of trade, rather than the other way around.

The mercantilist, classical, Marxist, and centre–periphery traditions are all present, in one way or another, in the work of Emmanuel, the principal subject of the subsequent three chapters. If he has functioned as unifier for the present thesis, he also functioned as the historical catalyst for the idea of unequal exchange, at least potentially reviving it to the normal science paradigm. This is the theoretical centre of the present thesis, starting in Chapter 6 by pointing out the contrasting implications, notably for the differing emphasis on ‘monopoly’, of his background in Greece and the Belgian Congo to that of French Marxism, notably Bettelheim, to which he had to relate. It also points out how, perhaps following suggestions by Myrdal, his theory reversed the assumptions of the Heckscher-Ohlin theory. In Chapter 7, the initially Marxist version of the theory is presented, both in its static and a more ‘dynamic’ version, followed by the Sraffian formulation preferred by Emmanuel himself. This is accompanied by an ecological formulation of its basic consequence regarding the lack of international worker solidarity, which has been the perpetual bone of contention along with the assumption of (nominal) wages as the independent variable of the system. In Chapter 8 we shall see what specific historical function unequal exchange had in Emmanuel’s theory, linking it to another of his fundamental arguments concerning the disequilibrium between the value of output and the purchasing power of income, which original aspect has still not been afforded either debate or rejection. This indicates a possible theoretical foundation for the oft noted ‘realism’ of mercantilist thought on international trade. Another aspect of realism is the abandonment of the abstract labour theory of value, usually endorsed by Marxists, and consequently expressing the basics of his theory of unequal exchange in terms of the social appropriation of limited physical and ecological resources. This step from labour values to ecology was taken in a rather different and more clean-cut way by Jan Otto Andersson, for whom the possibility to unambiguously and abstractly define the inequality of trade was more important. In the ecological tradition there has been a similar problematic, and in this sense, Martinez-Alier’s emphasis on the incommensurability of values is a most welcome addition, though not yet very well incorporated into a theoretical explanation, to the usual focus on some unidimensional standard of measurement.

In Chapter 9, we turn to the most advanced of the biophysical units of measurement, which sometimes also comes close to common sense opinion, although perhaps not easily presented or understood as such. This is the sophisticated, but unidimensional ‘emergy’ concept of H. T. Odum, which is an outgrowth of his general systems ecology. It has found unequal exchange resulting both from the relative emergy incorporated in exports of raw materials and of manufactures, and from the respective ‘emergy purchasing power’ of different currencies. This begins to link it with social aspects more relevant with respect to underdeveloped and developed countries, although, like most ecologists, Odum tends to see these dichotomies as if they were the same thing. If the links to the Cold War were evidenced already in Lewis and Emmanuel, they become equally so for Odum and the branch of ecological ‘Protestantism’ to which we turn in Chapter 10. I have chosen this term to point out the more general environmentalist tradition of concern with population and overconsumption, expressed, *e.g.*, in the work of Borgström as the additional ‘ghost acreage’ needed to supply the population of a certain area with its consumption goods. The idea has been extended, given new names, *e.g.*, as ‘ecological footprints’, and as such been used to express ecological inequality in trade, as well as in countering the claims for an ‘environmental Kuznets curve’, notably by the above Jan Otto Andersson. I also review Sætra’s attempt, partly inspired by Borgström, to extend the concept of imperialism over time’s three tenses, which has not had much following in subsequent literature. Finally, in Chapter 11, some of the more prominent contributions to what I call the ‘ecological dependency’ tradition shall be examined: first, Bunker, who was perhaps the first to try to explicitly unite the debates on unequal exchange and on the ecological shortcomings of Marxist economic or development theory; secondly, Martinez-Alier who has tried to advance the political aspects of ecological unequal exchange. Here we also take the opportunity to confront the association, common to almost every ecological attempt at a theory of unequal exchange, between the production of raw materials and underdevelopment. We also propose that much more could be gained from Emmanuel’s specific approach in which such an association is absent, and that it would in fact be consistent with the approach underlying Martinez-Alier’s writings.

# Chapter 1. The mainspring, death and resurrection of mercantilist unequal exchange

Initially, we shall take a brief look at mercantilist ideas, *i.e.*, that were established before the classical paradigm, which, though realistic, are not widely followed in mainstream economics, and which, for all the revivals of mercantilist ideas, are not included in the present normal science paradigm.

Magnusson (1978: 110) speaks of a divergence in “the mercantilists’ view [...] from that of modern price theorists at one crucial point. Both views take exchange as their point of departure, [...], but the mercantilists do not take a maximization of utility for both parties for granted, assuming instead that the exchange will be unequal” (cf. *ibid.*: 111, 113, 114 for ‘unequal exchange’ as a description of the mercantilist attitude). There were at least two intertwined mercantilist conceptions of trade inequalities: on the one hand, the fundamental perceived inequality of exchanging money for goods, and on the other, the exchange of raw materials for manufactures. Contrary to its modern avatars, the latter conception cannot be well understood separately from the first. Both seem related to the idea of maximising the utilisation and productive output of land and labour, and to be motivated by the realised necessity of *selling* in order to keep one’s weight in the balance of trade.

Mercantilism has been the subject of centuries of scholarly controversy, and I would argue that the divergence of evaluation between economic theorists and historians, on the one hand, and the divergence between economic practice and economic theory, on the other, both suggest that the true problem lies within mainstream economic theory rather than with mercantilist conceptions. While dispute may reign over its *connotation*, however, the term’s *denotation* involves the joint idea that a favourable balance of trade (or payments) is desirable and especially if it is in manufactures. This implies a hierarchy of preferred exports from manufactures and services, via raw materials, to bullion, and conversely for imports. Speaking of mercantilism, Blaug (1985: 10) wrote: “as a description of a central tendency in economic thought from the close of the 16<sup>th</sup> to the middle of the 18<sup>th</sup> century, the label retains general validity”, in referring to “the doctrine that a favourable balance of trade is desirable, and that a favourable balance in manufactures is particularly desirable.” The view of Coleman (1969b: 4f.) is no different: “Let us readily concede that much contemporary thinking about economic matters was influenced by a concern for the balance of trade; and that state measures to encourage the export and discourage the import of manufactured goods were widespread.” He even accepts van Klaveren’s (1969: 142) criterion of mercantilist economic policy: “the objective is always the development, from an agrarian base, of an industrial, commercial and maritime superstructure coupled with an attempt to secure a bigger share in the profits of international commerce for one’s own citizens”. Coleman thus finds two pervasive mercantilist themes: the belief in a fixed cake of commerce so that one nation’s gain therein must be at the expense of another’s loss; and the concern over fostering activities other than agriculture. Another anti-essentialist sceptic, Judges (1969: 39), who had observed the interest in employment, called the theorem of the general balance of trade “hoary with age” already with Mun (1856 [orig. ca. 1630, 1664]) and his “school” (this is a slip of the tongue on Judges’s part, in an article which is famous for its outcry against such a conception), and its calculus “a touchstone of principle which was to determine what forms of exchange might be encouraged as tending to yield a net balance in treasure and what forms should be discouraged

on account of the drain of precious metal they set in motion.”

Already Cunningham (1892: 391f.) saw the mercantilist obsession to be not its confusion of wealth with money, but rather with employment: “It was assumed, as an obvious maxim, that additional employment would be furnished either by opening up new markets and thus securing a vent for our commodities, or by stimulating consumption at home.” Furniss (1920: 8) pointed out what he saw as fundamental characteristics of mercantilist thought: “With all their diversity of opinion, however, the writers do concur with considerable unanimity in two sets of doctrine: (a) the balance-of-trade theory with its manifold derivative principles; (b) a set of doctrines which, along with many incoherent ideas, contains as a solid core a statement of the national importance of the laborer.” Viner (1937) also found two common concerns in mercantilist thought: over a favourable balance of trade, and over employment. Heckscher (1931) found the medieval concern for ‘provisions’ to be supplemented and superseded in mercantilism by a concern for ‘protection’ by which he understood a ‘fear of goods’. In this part of his presentation, perhaps still the most coherent one, the mercantilist striving for a surplus balance is a glorification of selling, that is, a fear of redundant stocks of finished goods. The enthusiasm showed for selling is correlated with that of maximising the factors of production. Although he saw a connection in the protectionist efforts to disburden the home market of its goods and the concern over unemployment, he finds the will to sell older and more primary. By contrast, Grampp (1952) saw the aim for a favourable balance of trade as one of the methods to resolve the principle problem of unemployment. Wilson (1968: 91) summarised policy in the ‘mercantilist age’: “The government (and plenty of others) might be divided about how to achieve national ends, but what they were after was maximum employment and minimum public disorders, maximum exports, minimum loss of native raw materials, maximum shipping tonnage. These were, in turn, compendiously contained within a formula which they read as a sort of shorthand for a dynamic economic model: the favourable balance of trade.” Rashid (1993: 139) found this to be exaggerating the relative importance of the balance of trade and too uniform an image of policy for the period 1600-1770: “If any one idea dominated the economic thought of this entire period, it was concern for employment.”

In line with the above, Emmanuel (1975: 5) saw two ways recommended by mercantilists to lighten un- or underemployment. One quantitative: “A policy of simultaneous autarky and trade expansion. The apparent contradiction between these two targets was resolved by a one-way trade, that is, by a permanent surplus on the balance of trade.” The other qualitative: “A policy of close selection of exports and imports so that the exports embody the most possible, and the imports the least possible amount of living labour. This meant that they attempted to export manufactured goods and import raw materials.” The concern over employing workers did not in general imply favouring labour intensive branches of production, that is, which have more labour per *total* invested capital. As evidenced by the emphasis on ‘art and ingenious labour’ (Johnson 1937), this seems on the contrary to have been regarded a disadvantage. The idea was instead to apply more labour per *consumed* constant capital, that is, in relation to the other material inputs (raw material, wear and tear, etc.). Nevertheless, in the choice between supplying labour on economically meaningless tasks and letting the workforce go unemployed, the former seems to have been preferred (Petty 1662: 31) – and to a certain extent even at loss of materials. If there are similarities with ecological economic ideas and mercantilist regarding the advantage of exporting manufactures, on this latter point they come into full opposition.

Further, Johnson (1937: 237-56) has delineated the basics of a ‘theory’ of production, which traces back to mythological times. Folklore and religious beliefs had already outlined how a sinless age, when deities provided people with free goods, had come to an end and people had to toil for a living. As pointed out by Frankfort (1978), depending on the character of river systems, the emphasis on hardships was stronger in Mesopotamian mythology, while

beneficent deities dominated Egyptian. Fallen from grace man had to eat with sweat in his brow, or as Hesiod (1815: 10, 15) wrote: “The food of man in deep concealment lies, The angry gods have hid it from our eyes. [...] On earth of yore the sons of man abode, From evil free and labour’s galling load.” In medieval Christendom the division between God’s and man’s creation, was stimulated by the concept of the book of nature and the book of man, and it is possible that the transformation implied in the *printing* of books is provocative in the simultaneous re-conceptualisation of nature and man as national factors of production (cf. McLuhan 1962). The Christian providential conception of history as a progressive eschatological movement, linearly modelled on the Book, now became secularised into the linear progress of arts and civilisation from a barbarous ‘state of nature’. The synchronic cultural variation revealed in the ‘discoveries’ was viewed diachronically, and mercantilists tended to interpret the comparative states not so much as due to variations in the natural environment as in man’s art (which in some opinions included that of the merchant), industry, and ingenious labour, or, as in the 19<sup>th</sup> century, to use machines as the measure of men (Collingwood 1946, Johnson 1937: 259-77, Adas 1989, Herlitz 1993, Friedman 1994).

That the economy suffered from under-utilised land and labour was indeed one of the greatest concerns of the princes’ economic advisors and experts (self-appointed or not). Given the state of technology, and particularly if there was land still waiting for domestication, the ultimate objective of economic expansion, required mainly increasing the size and efficiency of the labour force. Johnson (1937: 247) notes that “[p]ractically all writers [...] saw a correlation between total industry and total numbers, and urged as a consequence that every effort be made to increase population.” Even the great witch-hunts – the actual or impending burning of those child-eaters and kidnappers – is evidently related to these efforts, as Heinsohn and Steiger (1999) have argued, most convincingly for the great rationalist Jean Bodin. Garraty (1978), on the other hand, characterises this epoch by its ‘struggle for full employment’, *i.e.*, it was only, or primarily, as productive subjects that they acquired their value, although the effort also had another, more humanitarian, face (Wilson 1959). Although the debates on population, improvements, employment, etc., are sometimes separated from that of other means to make countries gainers in the balance of trade, at least to the present author this seems somewhat artificial, and strictly speaking has no foundation in the arch-mercantilist Thomas Mun (1856 [orig. ca. 1630, 1664]), whose principal work listed the essentials in those other fields before proceeding with his more specific aim of refuting Gerrard Malynes.

In the work of Cantillon, land was taken as the ultimate ground, and in that sense he can be considered the mainspring of theories of ‘ecological’ unequal exchange. Land was further underlined in the physiocratic paradigm of Quesnay, but although he shared the aim with mercantilists of maximising output, he drew precisely the opposite conclusion with respect both to the balance of trade and on the relative benefits of raw materials- and manufactured exports. Emphasis on labour was taken further in classical and notably Marxist economics

### Cantillon’s unequal exchange of land values

Richard Cantillon (1680s–1734) was an Irishman active in banking in Paris between 1716 and 1720, where he, when other bankers “fell like autumn leaves”, grew rich from the failure of John Law’s scheme to print money (Higgs 1931: 368ff.; Walsh 1987: 317). The latter threatened him with immediate incarceration in the Bastille, wherefore Cantillon prudently retired to Holland, returning to Paris only in 1729 and 1732. Migration to France and beyond was traditional in the family, and he had houses in seven European cities. In 1734, at the height of his success, he was found dead in one of these, supposedly robbed, murdered and set on fire by his French cook, who had been dismissed a week before and who escaped to

Holland. Both his manuscripts and most of Cantillon's head perished in the flames (Jevons 1881: 388), occasioning some latter day speculation as to the identity of the corpse.

The Cantillons had a penchant for anonymity which haunts also the publication, definitely by 1755, of his only surviving work, *Essai sur la nature du commerce en général*, thought to have been written in London shortly before his death (according to Murphy 1986 perhaps in 1728-30). Mirabeau, who stood in contact with the Cantillons and had the only remaining manuscript in his possession for 16 years, insisted that it was Cantillon's own translation from the English, although this too has been questioned. Higgs (1931: 383f.) argues that Postlethwayt had a copy of an English original, inserting large sections of it into his own work, as did possibly other writers (cf. Hutchison 1988: 164).

His intellectual debts were limited, but most importantly include William Petty, along with Locke, King, Davenant and the German demographer Halley. Apart from the possible stimulus of disagreeing with Law, he also had discussions with Newton, who was Master of the Mint from 1699 until his death in 1727 (and whose substantial writings on alchemy are obviously related to this post). Of French writers only Vauban, Jean Boizard, and the unnamed author of an *Etat de France*, were openly acknowledged. Judging from internal evidence, the latter has been found almost certainly to be Boisguilbert (Hecht 1966: 520), from whom it seems probable that he must have been considerably influenced (Hutchison 1988: 164).

Cantillon's own influence on the profession was brief but considerable, mostly on the French physiocrats, including Mirabeau, Condillac, and providing Quesnay with the idea of his *Tableau économique*. Turgot owned a copy of his *Essai* and placed it, together with works by Montesquieu, Hume, Quesnay, and Gournay, among the 'greats' of the 18<sup>th</sup> century (Groenewegen 1993: 764). Jevons (1881: 342) rediscovered it to the English-speaking world, as the first treatise of economics, laying the foundation for Quesnay, although without the exaggeration, "going over in a concise manner nearly the whole field of economics, with the exception of taxation." His enthusiasm eventually proved infective. Higgs (1931: 386) called Cantillon "the economists' economist". For Spengler (1954: 283) he was the "first of the moderns", and his treatment of the response of the price structure to changes in the quantity of money was superior to Keynes's, although he was not as impressed by the description of the international specie flow mechanism. Schumpeter (1954: 218, 223) lauded the essay as one of the most important works in the history of economic analysis, in the line from Petty to Quesnay, and maintained, on the contrary, that "the automatic mechanism that distributes the monetary metals internationally specie flow mechanism is [...] almost faultlessly described". Hutchison (1988: 156) agrees with the "widely accepted" opinion that it is "the first systematic treatise on political economy", and Brewer (1988b: 447) calls it "the first coherent analysis of an economy as a single whole". Here we shall add that, with some generosity, it also involves what could be described as the first theory of ecological unequal exchange.

The *Essai* was divided into three parts dealing with a definition of wealth, a survey of the social and institutional framework, and value analysis (Part I), prices, money and interest (Part II), and finally international trade, foreign exchanges, banking and credit. As in Marx's later project, it followed a method of abstraction, working its way from a simple system to the international and general. It began by affirming in Aristotelian language, although Higgs (1892: 438f.) found reason to think that it stemmed rather from the formal language of the old French law, that: "The Land is the Source from whence all Wealth is produced. The Labour of man is the Form which produces it: and Wealth in itself is nothing but the Maintenance, Conveniences, and Superfluities of Life" (Cantillon 1931: 3). The idea itself was common enough in the literature, notably in Petty (1662: 68), where, incidentally, labour has taken on the guise of Aristotle's *efficient* cause: "Labour is the Father and active principle of wealth, as

Lands are the Mother.” (It was also repeated in Ch. 1 of Marx’s *Capital*, whose second edition decided to abandon the formal-cause formulation.)

Cantillon’s first part continued by presenting an account of pricing, distribution and resource allocation in a closed economy, which could be seen as an implicit case for *laissez-faire*. Although, as seen, there was no confusion of money with wealth, when opening up the system to the international sphere he remained a fervent ‘mercantilist’ in the Smithian and conventional sense. He accordingly regarded a surplus in trade and an accumulation of gold as legitimate goals, and supported policies to encourage exports of manufactures.<sup>5</sup> Brewer (1988b: 460) argues that there is no contradiction in this, and that his policy recommendations follow from his analysis, differing from his predecessors “in that his policy recommendations about international trade were firmly based on an analysis of the economy as an interrelated system”, and from classical successors “in assigning no role to capital, which accounts for the main differences between his results and theirs”. Thus, regarding land as the only scarce resource, total world income becomes essentially fixed, and the main aim of policy to gain a larger share in it. Based on a land theory of value, the established notion of a surplus balance of payments and the benefits of an ‘export of work’ was nicely fitted into a coherent system.

In the initial model presented in the first part, market prices fluctuate around the familiar “intrinsic values” of the Schoolmen and earlier mercantilists (corresponding to classical “natural prices”, Marxian “prices of production”, long-run equilibrium prices, etc.), which depended on the land and labour required to produce different goods, while outputs are determined by demand.<sup>6</sup> Market values may deviate from the invariant intrinsic values through changes in demand, but the actions of profit-maximising capitalist farmers, or entrepreneurs, would then lead to changes in supply. As to gold and silver, Cantillon (1931: 111f.) admitted, with Locke, that they were given their value by common consent of mankind. Even so, they did not merely have imaginary values: “Money or the common measure of value must correspond in fact and reality in terms of land and labour to the articles exchanged for it.” The “real or intrinsic value” of gold, silver or other metals was like everything else “proportionable to the Land and Labour which enter into their production”, or necessary for their maintenance. And as with other goods, their market values were at the same time, “sometimes above, sometimes below the intrinsic value, and varies with their plenty or scarcity according to demand.” Although he (1931: 155f., 211) apparently recognised that capital was a necessary precondition to production, Brewer (1988b: 449) suggests that he did not regard capital scarcity as a problem. Labour was not scarce either, but needed to be allocated a certain amount of land for the production of consumer goods. To intellectual historians, approaching the *Essai* in a neo-Walrasian perspective, it became natural to construe Cantillon’s land and labour as given resources. Walsh (1987: 318) counters that in

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<sup>5</sup> E.g., when writing: “It is by examining the results of each branch of commerce singly that foreign trade can be usefully regulated. [...] It will always be found by examining particular cases that the exportation of all Manufactured articles is advantageous to the State, because in this case the Foreigner always pays and supports Workmen useful to the State: that the best returns or payments imported are specie, and in default of specie the produce of Foreign land into which there enters the least labour” (Cantillon 1931: 233; cf. Brewer 1988b: 447f.).

<sup>6</sup> Cantillon (1931: 29f.) thus wrote that “the Price or intrinsic value of a thing is the measure of the quantity of Land and Labour entering into its production, having regard to the fertility or the produce of the Land and to the quality of the Labour. But it often happens that many things which have actually this intrinsic value are not sold in the Market according to that value: that will depend on the Humours and Fancies of men and on their consumption. [...] If the Farmers in a State sow more corn than usual, much more than is needed for the year’s consumption, the real and intrinsic value of the corn will correspond to the Land and labour which enter into its production; but as there is too great an abundance of it and there are more sellers than buyers the Market Price of the Corn will necessarily fall below the intrinsic price or Value. [...] There is never a variation in intrinsic values, but the impossibility of proportioning the production of merchandise and produce in a State to their consumption causes a daily variation, and a perpetual ebb and flow in Market Prices.”

the original, labour was a produced commodity available in return for the culturally accepted level of subsistence, and only land was a given non-produced input (cf. Cantillon 1931: 23ff.).

Cantillon (1931: 31-43) thus developed Petty's concept of a '*par*' between land and labour, investigating the assumptions on which the reduction of labour to the produce of land, *i.e.*, to corn, was legitimate: "as those who labour must subsist on the produce of the Land it seems that some relation must be found between the value of Labour and that of the produce of the Land" (*ibid.*: 31).<sup>7</sup> Here, he entered an area which "even today bristles with problems" (Walsh 1987: 318), concerning the aggregation of 'heterogeneous objects' as neo-Ricardians would have it, in this case labour and land. In fact, while noting that Petty considered "this Par, or Equation between Land and Labour, as the most important consideration in Political Arithmetic", Cantillon (1931: 43) was rather scornful of the research accomplished thus far, describing it as "fanciful and remote from natural laws". Instead, in his view (*ibid.*: 41; emphasised in French original): "The Money or Coin which finds the proportion of Values in exchange is the most certain measure for judging of the Par between Land and Labour and the relation of one to the other in different Countries where this Par varies according to the greater or less produce of the Land allotted to those who labour."

According to Quesnay, and passed on to later classical economists, Cantillon was largely concerned with the allocation of surplus output, and the treatment strongly implied that this surplus arose only in agriculture (cf. Walsh 1987: 319, Hollander 1973: 40, n. 48): "all the classes and inhabitants of a State live at the expense of the Proprietors of the Land" (Cantillon 1931: 15, cf. 43ff.). Landowners could let land to farmers or risk-taking entrepreneurs, but whether wages and prices were left to the market or set to allow a workers' and landowners' consumption at the same rates, resources would be allocated as if they had planned land-use directly (thus providing some sort of case for *laissez-faire*, since this would spare landowners the "care and trouble" of management).<sup>8</sup> Now, individuals would only marry and have children if they could expect a sufficient income, so, in the long run, as in classical economics, population and labour supply adjusted to the demand for labour so as to keep wages at the customarily accepted level, which may be above subsistence and differ between countries, over time, and between different occupations (*ibid.*: 19ff., 79-83; cf. Brewer 1988b: 450). Cantillon (1931: 39) used a concept of subsistence, meaning that of the "meanest Peasant", the level of which differed all over Europe and on which he apparently presented statistical material in a lost supplement.<sup>9</sup> To be quantifiable it would be necessary to express skilled labour in units of simple or common labour, but he was satisfied that "it is easily seen that the difference of price paid for daily work is based upon natural and obvious reasons"

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<sup>7</sup> In his efforts to find a unidimensional measuring rod, Petty (1662: 45f.) suggested expressing all value ultimately in terms of land: "all things ought to be valued by two natural Denominations, which is Land and Labour; that is, we ought to say, a Ship or garment is worth such a measure of Land, with such another measure of Labour; foreasmuch as both Ships and Garments were the creatures of Lands and mens Labours thereupon: This being true, we should be glad to finde out a natural Par between Land and Labour, so as we might express the value by either of them alone as well or better then by both, and reduce one into the other as easily and certainly as we reuce pence into pounds. Wherefore we would be glad to finde the natural values of the Fee simple of Land [...] Having found the Rent or value of the *usus fructus per annum*, the question is, how many years purchase (as we usually say) is the Fee simple naturally worth? [...] the number of years purchase, that any Land is naturally worth [is taken to be] "the ordinary extent of three such persons their lives. [...] In *England* [...] one and twenty years [...] in other Countreys Lands are worth nearer thirty years purchase [...] in some places, Lands are worth yet more years".

<sup>8</sup> His argument that a price system and a 'prince system' – a planned economy directed by the prince – can achieve identical allocation of surplus output, had a follower in Steuart (1767), but then lay fallow until it was given a formal proof in the 20<sup>th</sup> century.

<sup>9</sup> That it was not a physical level of subsistence is evidenced by the commodities this labourer was allowed (Cantillon 1931: 37): "the married Labourer will content himself with Bread, Cheese, Vegetables, etc., will rarely eat meat, will drink little wine or beer."

(*ibid.*: 23).<sup>10</sup> Land was also heterogeneous, as Cantillon was well aware, and could be used to produce different crops, but these analyses had to await Ricardo, in the case of a single crop, and Sraffa (1960: 74-8) in the case where different crops are grown.<sup>11</sup>

The accepted level of entrepreneurial profits determines their engagement in production, which in turn adjusts output to demand (Cantillon 1931: 53). Thus, equilibrium prices have to cover the costs of entrepreneurial and workers' wages and landowners' rents. As worker or entrepreneurial labour becomes a produced intermediate good, long-run equilibrium prices could in the end be reduced to the rent on land in a sort of 'land theory of value' (cf. Brewer 1988a, 1988b: 450). He thus attempted to prove that "the real value of everything used by man is proportionable to the quantity of land used for its production and for the upkeep of those who have fashioned it" (Cantillon 1931: 115). This proportionality, however, was only valid on the regional level, while variable *between* regions, and even more between countries. Of course, in Cantillon's view the labour component in bullion could also be further reduced to the land required to feed the miners. Here the proportionality was particularly indirect, since most countries did not produce it and obtained it only by trading with those who did.

Cantillon appears more or less to have accepted the aims of states, merely offering advice on how to achieve them. One such aim was increased population, which was considered a good thing for military reasons. In particular, he stressed a state's use of its own ships in trade and praised the Navigation Acts. Land scarcity was the only effective constraint, and in a closed economy such as the above, employment accordingly depended on the ratio between labour and land of the output, which in its turn was determined by the composition of demand. Higher real wages would mean that a given territory could support fewer people, and a lowering of employment (*ibid.*: 73, 81-85; cf. Brewer 1988b: 451). Workers living in the manufacturing sector live on the surplus products of the agricultural sector. He nevertheless estimated the level of underemployment (including, however, soldiers and domestic servants), in Herlitz's (1993: 116) words, "at the formidable proportions of one-half of the labor force."

However, opening the economic system to external trade in part two, the constraints set by local agriculture could be offset, and employment – and hence population which adjusted accordingly – increased by importing food and materials (comprising much land) and exporting manufactures (comprising much labour). This would correspondingly lower employment and population in the rest of the world, keeping the total unaltered, but concentrated in countries exporting manufactures (Cantillon 1931: 25, 45, 75f., 85, 225-35, 239). Given his assumptions the conclusions seem correct, and according to Brewer (1988b: 452, 1988c) the emphasis on competitiveness as a determinant of employment would remain so if capital were scarce, but internationally mobile. Cantillon thus established one of the defining characteristics of mercantilism, the export of labour for the import of raw materials.

Even more essential was the case for the other defining characteristic, a positive balance of trade (*ibid.*: 235): "Enough to say that it should always be endeavoured to import as much silver as possible." Or (*ibid.*: 243): "I will conclude then by observing that the trade most essential to a state for the increase or decrease of its power is foreign trade, [...] and above all that care must always be taken to maintain the balance against the foreigner." Depending on "in what way and in what proportion the increase of money raises prices" (*ibid.*: 161), the

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<sup>10</sup> Walsh (1987: 318) writes: "Even today not much progress has been made on this problem, and highly sophisticated models blithely assume it out of existence by using a single homogenous labour input."

<sup>11</sup> Leaving these difficulties behind, to get a consistent Sraffian model, corn would have to be treated as the only commodity strictly necessary (the only 'basic' in Sraffian language) and other goods as luxuries ('non-basics'). Alternatively, one would need to construct a 'composite commodity' containing bread, cheese, vegetables, and so on, in fixed proportions, and use this as the unit of measurement for the par. Avoiding the problems of different crops would further require that any parcel of land would produce these in standard proportions. As Bowley (1973: 105) says, "the 'par' between land and labour could only be found under special and unrealistic assumptions" (cf. Curzo 1980: 218-40; Walsh 1987: 318).

effects could be very different. The fate of the mining countries Spain and Portugal inspired a rather gloomy vision of how miners spent their revenue, the increased circulation forcing up prices, and for a while also wages, rents and costs. Imported manufactures displaced local production, bloodletting the economy of money. Poverty and misery followed and population declined, so that in the end, the only beneficiaries were miners and foreigners (*ibid.*: 161-7). An increase of the money stock based on foreign borrowing or on the artificial creation of money through credit was unlikely to last (*ibid.*: 191f.; cf. Brewer 1988b: 455).

Now, “if the increase of money in the State proceeds from a balance of foreign trade [...] this annual increase of money will enrich a great number of Merchants and Undertakers in the State, and will give employment to numerous Mechanicks and workmen” (Cantillon 1931: 167). After an initial period of saving up, this would gradually increase their consumption and raise the price of land and labour, making everything cheaper in foreign countries and eventually effect competitiveness. However, particularly if conducted in exports of manufactures, “the State may subsist in an abundance of money, consume all its own produce and also much foreign produce and over and above all this maintain a small balance of trade against the foreigner or at least keep the balance level for many years” (*ibid.*: 169). In Cantillon’s view, the merchants, entrepreneurs and workmen on whom the increase first befalls, are more likely to hoard the money until they can buy property, thus delaying the price rise. If monetary exchange replaces barter the increase of price will be moderated.

Just as his contemporaries Potter, Law, and Hume, Cantillon concluded that prices need not rise in proportion to the increase in the money stock (Viner 1937: 36-40, Brewer 1988b: 455). Although the decline of successful trading nations was virtually inevitable, it would take a long time and in the meantime the benefits were well worth having. In contrast to classical economists he did not expect national price levels to be brought to equilibrium, but instead to fluctuate in cycles, because of the long lags in the adjustment process. Newcomers would at first have difficulties rivalling established producers: manufacturing skills took time to learn and were largely transmitted by apprenticeship, while markets were difficult to enter. High prices meant favourable terms of trade, so that the balance may remain favourable even if the quantitative changes of exports and imports were unfavourable. Presumably, it also meant an increased real consumption, as can be seen in the following formulation, opening the third part of his essay rehearsing standard mercantilist policy conclusions:

When a State exchanges a small product of Land for a larger in Foreign Trade, it seems to have the advantage; and if current money is more abundant there than abroad it will always exchange a smaller product of land for a greater.

When a State exchanges its Labour for the produce of foreign land it seems to have the advantage, since its inhabitants are fed at the Foreigner’s expense.

When a State exchanges its Produce conjointly with its Labour, for a larger Produce of the Foreigner conjointly with equal or greater labour, it seems again to have the advantage. (Cantillon 1931: 225.)

The first of these conclusions points directly towards exchange accounted in biophysical, land-based units. The same kind of unequal exchange of ‘a small product of land for a larger’, was to be reinvented by late 20<sup>th</sup> century ecological unequal exchange, which in this sense could be classified as yet another adventitious bud on the common ‘mercantilist’ stem. In Cantillon, however, it was related also to the economic logic of rising prices through a surplus balance of trade, therefore, so to speak, improving the ‘land’ terms of trade. In linking gain in land produce to the general money level, it reminds perhaps only of Odum, to whom we shall eventually turn (Chapter 9).

The second and third conclusions logically base the traditional stance on the ‘export of work’ on the same gain in the produce of land, but as is evident from his other arguments,

unlike ecologists, links it to increased employment and therefore (eventually) population. There were evident, and prospectively self-reinforcing, benefits for states both in increasing population at the same level of income, and in increasing the average income of population. Like Petty, he saw that state revenues were raised more easily where silver and money abounded, giving political and military advantages: “After all it seems to me that the comparative Power and Wealth of States consist, other things being equal, in the greater or less abundance of money circulating in them *hic et nunc*” (*ibid.*: 191.; cf. Brewer 1988b: 456).

In Blaug’s (1985: 21) view, Cantillon (1931: 181), in spite of his mercantilist policy conclusions, presented as clear an understanding of the specie-flow mechanism as anyone would for another hundred years: “We have seen that the quantity of money circulating in a State may be increased”, he summarised “above all by a regular and annual balance of trade from supplying merchandise to Foreigners and drawing from them at least part of the price in gold and silver.” But as the abundance of money gradually increased, consumption and much foreign produce must be brought in, partly reversing the trend. The new habit of spending increased employment of labourers and the prices of manufactured goods went up, giving opportunities for some foreign countries to set up for themselves the same kinds of manufactures. Taking market shares both in their own country and in that of the original producer, the latter began to lose some branches of its profitable trade, and unemployed workers and mechanics would depart to the new producer country. However, because of the old producers’ established reputation and because old customer habits died hard, and since they often have comparably low fixed charges and low costs for overseas transports, that state “will for many years keep the upper hand of the new Manufactures [...] and will still maintain a small Balance of Trade, or at least will keep it even” (*ibid.*: 183). If the competitor was another maritime state that also developed navigation, its cheap manufactures would get the upper hand, and the original producer state commence to lose its balance of trade and “send every year a part of its money abroad to pay for its importations” (*loc. cit.*).

So it happened that when a state had arrived at the highest point of wealth in terms of the quantities of money it possessed it would “inevitably fall into poverty by the ordinary course of things. The too great abundance of money, which so long as it lasts forms the power of the States, throws them back imperceptibly but naturally into poverty” (*ibid.*: 185). Money increase will in the long run make goods and manufactures “cost so much that the Foreigner will gradually cease to buy them,” thereby “by imperceptible degrees ruin the work and manufactures of the State.” While increasing rent of landlords, it will also “draw them into the habit of importing many articles”: “The Wealth acquired by a State through Trade, Labour and Oeconomy will plunge it gradually into luxury. States who rise by trade do not fail to sink afterwards” (*ibid.*: 235).

Still, although in the end checks on growth were bound to set in, policy could prolong the upswing phase of high prices and shorten the downswing. When a state “expands by trade and the abundance of money raises the price of Land and Labour, the Prince or the Legislator ought to withdraw money from circulation, keep it for emergencies, and try to retard its circulation by means exempt compulsion and bad faith, so as to forestall the too great dearness of its articles and prevent the drawbacks of luxury.” Difficulties in knowing when money had become more abundant than it ought to, prompted princes and heads of republics, “who do not concern themselves much with this sort of knowledge”, to “attach themselves only to make use of the facility which they find through the abundance of their State revenues, to extend their power and to insult other countries on the most frivolous pretexts” (*ibid.*: 185). While managing thus to perpetuate the glory of their reigns, the only economic consequence was to accelerate the collapse of the state a little. As the princely advisor he wanted to be, Cantillon (*ibid.*: 187) cautioned that they ought at least to endeavour to make their power last as long as their own administration. In fact, although Cantillon saw the cycle lasting not “a

great many years”, in his view, the upswing in France had nevertheless lasted from 1646, when manufactures of cloth were set up there, to 1684, when a number of Protestant entrepreneurs and artisans were driven out, from which followed a downswing until the time of writing (*loc. cit.*). However low they might have fallen, a “considerable state” could always recommence the circle and revive. In “[n]ot many years”, an “able Minister” was “always able to make it recommence this round”, not by “Violence and Arms” however, through which nations would not fail to decline, but by bringing about “the influx of an annual, a constant and a real balance of Trade, to make flourishing by Navigation the articles and manufactures which can always be sent abroad cheaper when the State is in a low condition and has a shortage of money” (*ibid.*: 193f.).

Permanent growth was ruled out in Cantillon’s perspective and the only equilibrium possible would be at the lowest level, or in Brewer’s (1988b:458) words: “The options are to start on the merry-go-round or to remain stuck in poverty.” Improving quality and reputation of local manufactures, if faster than the consequent price rise, generates a self-reinforcing increase in power and wealth. For Cantillon, as for (other) mercantilists, the world market was limited, so one could only expand exports and population at the expense of others. In his case this assumption was inherent in his basic theoretical framework, Brewer (1988b: 458) argues, where land was the scarce resource and rent the only net income: “Output and demand, on a global scale, are fixed, because land is fixed, and international competition is over market shares.” By contrast to Mandeville (1970) and many other mercantilists, he stood for a cyclical view of development, reiterated without clarification by Hume, and assigned luxury consumption to phases of decadence, within limits set by the scarcity of land. “By this,” says Herlitz (1993: 118), “he represents a breach with the mainstream of mercantilism, where the scarcities of nature were always subsumed into the arts of man – as they were into the residual factor in the models of growthmanship of the 1960s!” In modern language, the landowning class was controlling the feedback mechanism, in a sense evoking Malthus’s emphasis on the stimulus of landowner consumption, with whom he also shared the idea of the uncontrollable propensity of the lower classes to breed, and the ultimate limits set by the produce of the land: “The choices of landowners governed the rise *and fall* of population, but always within the limits set by the supply of land and the demands for survival” (*loc. cit.*).

The central theme in mercantilist ‘development theory’ was “the opposition of arts to nature and the belief in the unlimited possibilities of the development of arts. Cantillon, like Petty (1662), Mun (1856 [orig. ca. 1630, 1664]), Malynes (1601), etc., before him, and Marx (1867) and others after him, evoked the distinction between the natural and the artificial. The absolute limits of the rent of land, reminding of the limited source of renewable solar energy in the theory of Odum, left only the refinement of labour and the arts if real value (Odum’s ‘emergy’) was to be enhanced and if the relative position in the inter-state system was to be raised, drawing money, employment, and population with it, and letting it all supported by the inflow from competing nations.

Cantillon is one of the transitory figures between mercantilist and physiocrat or classical economists, in that, like the latter, he constructed both a systematic model and a basic unit of measurement of non-equivalent exchange, while at the same time confirming the policy conclusions of the former. Along with securing an inflow of money, an unquestioned mercantilist aim was to secure maximum employment of both land and labour. This meant placing goods to import in a sort of hierarchy, topped by gold and silver ingots, followed by raw materials and finally manufactures and services – and vice versa for exports. The ultimate export good would be a final consumer good produced from domestic raw materials, in as ‘roundabout’ a way – requiring as much labour – as possible but still with the highest level of technology. It is difficult to see that any substantial change has taken place in this intuition over the centuries until the present, although the alleged motivations for it may have varied. It

is not unreasonable to see these aims as intertwined, although the ways in which this has been done also vary and perhaps assume too much of theoretical reasoning on behalf of politicians. The idea that a favourable balance of trade was actually favourable most often seems to need no other motivation than being the age-old experience of market-dominated societies that it is better to sell than to buy – while disputing the mercantilist ‘scarcity of money’, not even Adam Smith (1937: 406f.) denied the fact that ‘it is easier to buy than to sell’. Thus, though often seen as the origins of mercantilism the English debates of the 1620s did not substantially change the actual content of the balance of trade doctrine. What changed was the way and higher level of abstraction in which it was expressed perhaps as a consequence of cheaper paper opening up a new field of public debate. ‘Mercantilism’ has thus been interpreted as a proto-scientific paradigm or language (Magnusson 1999), which prepared the way for, presumably, ‘true’ science with the arrival of physiocracy and the classical economists. However, reversing the implied value judgement one could equally well say that with the latter economists, the level of ‘abstraction’ became in a sense so great as to leave reality behind – *i.e.*, the reality of economic policy as we shall point out in the subsequent section. This ‘realism’, or rather what it implies about reality, is perhaps the greatest lesson still to learn from the mercantilists.

The goal of unburdening the kingdom of its goods was so strong that it suggested to Heckscher (1931, 1994), a stout defender of international free trade, an irrational ‘fear of goods’. Although seeing land and labour as the mainspring of wealth, some of the most talented writers did indeed consider the burden of unsold goods so great that it would be better to sink them in the Caspian Sea than to let the people go without employment, thereby implying that the value of *unsold* goods was not only nothing, but *less* than nothing – a negative value, something which presumably not even Keynes would have been able to accept. This, Heckscher perceived and described better than anyone, but he could see no explanation for it – selling was the constant and the earlier concern, and the concern with unemployment and the ‘export of work’ was rather a derivative of the ambition to sell – other than a mad refusal to perceive things as they were according to the liberal mind.

Though inequality of exchange was inherent in every aspect of mercantilist thought, the specific idea of a ‘non-equivalent’ exchange has been traced (Boss 1990), by contrast, to their original critics, Quesnay and Smith. In this sense, these physiocrat and classical economists have more in common with their predecessors than with their marginalist or neoclassical followers. One could thus suggest, in line with the above proposal, that the level of abstraction was still not so great as to *completely* abolish mercantilist ‘realism’, although on the other hand the non-equivalence itself was a consequence *precisely* of this abstraction. This is consistent with the fact that the historical economists and economic historians, concerning themselves primarily with empirical matters rather than theory, in general have been much more understanding and forgiving of mercantilists than are economic theorists. ‘Non-equivalent’ exchange implies some unit of measurement of value in which the non-equivalence is expressed. To counter the mercantilist over-emphasis on the merchant and in an effort to understand British supremacy, physiocrats centred on agriculture as the fundamental sector creating value, the rest of the economy merely living off the surplus of the land – a tradition revived by certain ecologists, who nevertheless draw precisely the opposite policy conclusions. The classical British economists instead emphasised labour as the main productive activity, in which way they prepared for later, Ricardian and Marxist followers of labour theory of value to find non-equivalent and unequal exchange.

We shall now turn briefly to these physiocratic and classical grave-diggers of the balance of trade doctrine in economic theory, who instead advanced systematic land or labour theories of value in which non-equivalent exchange were implied or have been derived, and favouring sometimes opposite sometimes similar policy implications to standard mercantilist ones. Via

Ricardian socialists, non-equivalent labour exchange was taken up in the American South by Fitzhugh to be studied in the subsequent section, while some of the Marxist and, in this sense of non-equivalence, primary tradition will be taken up in Chapter 2. We shall return to the ecological retrieval of a land theories of value and transfer in Chapters 9-11.

## Non-Equivalent Exchange in the Early Classical Tradition

Mercantilist, pre-Adamite, writers had certain more or less definite opinions on what was good or bad exchanges in foreign trade. While there was a fierce reaction against the mercantile system as defending monopolies and allegedly confusing gold with wealth, physiocrat, classical, and Marxist (and many ecologist) systems have retained or simply reworked much of the previous order. In these latter, however, and contrary to the hierarchy of the ‘great chain of being’ (Lovejoy 1936), the more ethereal tertiary sector (services) were ranked lower than both primary (agricultural) and secondary (industrial) goods. Thus, according to Boss (1990: 2), one of few to have considered the question of non-equivalent exchange in classical economics, “[m]ost economic systems allow for imperfectly equivalent exchange when there are imperfections of competition and information in marketed or other resources. But a surprisingly long list of writers postulated (a few still do) a class of ‘unproductive laborers’ who despite their handicap managed to survive and even prosper in a competitive social marketplace.” Physiocrat, classical and Marxist theories all tended to discredit what has been referred to as ‘productive yet intermediate goods and services’ – parts of a perhaps regrettable but necessary ‘social framework’ assuring that a given net flow of consumption goods be forthcoming. Along with the condemnations of money worshipers and often merchants, they focused on the ‘real’ values produced by land and labour, agricultural and industrial workers, and the unequal ‘transfers’ of such values. Contrary to their efforts, however, this was already a significant *loss* of realism.

With greater desire for theoretical ‘enclosure’, sophistication, systematisation and abstractness, a certain ‘abcdminded’ attitude towards the practical world seems eventually to have emerged, combining with the foregoing universalist, Christian idealism. The theoretical impact of Adam Smith and the classical economists was due not least to their greater systematism while not yet having lost a sense of the factual world. Both economic theory and economic history have sought their origins in the work of Smith, but as it turned out the former adopted his condemnation of the mercantilism that the latter sought to revive. The idea of trade inequalities had not yet been fully abandoned, but it had to find a more abstract and systematic expression, which it eventually did in the form of the labour theory of value.

Boss is more concerned with the contrast between, on the one hand, theories of surplus-generation and transfer and, on the other, theories of interdependence, while unfortunately leaving mercantilist economists to their destiny. She (1990: 7f.) thus redefines the rift between classical and neoclassical economics as one which allows and does not allow for non-equivalent exchange in competitive economies. Surplus and transfer theories portray certain dubious members of society, who “fit uneasily into the agricultural or factory paradigms of Classical, Marxian and pre-public choice neoclassical value theory [*e.g.*, handmaidens, handymen, opera singers, dancers, priests, bureaucrats, kings, ministers, doctors, lawyers, leveraged buyout specialists, entrepreneurs, managers, rentiers, retirees, the self-employed, and other unpopular citizens] as *de facto* economic parasites, ‘maintained’ without due recompense by society’s true producers” (Boss 1990: 11; cf. 10). By contrast, theories of interdependence “postulate sovereign contracting and exchange of equivalents, *quid pro quo*, between services rendered and incomes received – across a plurality of institutions and modes” (*loc. cit.*). Imperfect equivalence is allowed by modern theory only through monopolisation, or in transactions linking households or firms and the state, but the classical

and Marxian predecessors “postulate non-equivalent exchange *even when markets are competitive.*” Through some extra-economic mechanism and behavior (be it love, terror, or mutual advantage) the non-economy is able to transfer to itself the ‘surpluses’ generated in the economic or productive sphere. Inside the economy, equalisation of rates of rewards for the different factors, establishment of unique prices for products, etc., are said to occur. Of course, real markets are “rarely perfect in the sense of guaranteeing rentless *quid pro quo* nor exclusive in the sense of being the only allocation mechanisms employed by societies” (Boss 1990: 8).

Although it merges with the distinction between economic and non-economic spheres, Boss’s ‘transfer’ from productives to unproductives is another way of stating the essence of theories of surplus value. However, it is not evident that this should also be referred to as an exchange, *e.g.*, if all output is *owned* by the unproductive class (say capitalists) and *distributed*, to a lesser degree, among those supposedly doing the actual producing (workers). The primary field explicitly considering ‘non-equivalent exchange’ may instead have been, on the one hand, between town and countryside, and on the other in international transfer, principally by the Marxist phalanx.

Boss locates the origin of non-equivalent exchange to the productive-sterile distinction made, *e.g.*, between necessities and luxuries, agriculture and industry, workers and owners, or some such division. Preceded by Petty, Boisguilbert, and Cantillon, the idea came into its own with physiocracy and Quesnay’s *Tableau Économique*, where the proprietors were “portrayed as in direct barter trade with the productive farmer class, as if to highlight the alleged *quid pro quo* of farmers’ produce for the landlords’ *avances foncières*” (Boss 1990: 34). Middlemen or retailers played no role where industry required food and raw materials from agriculture but the reverse was not the case. “Surplus generation and transfer proceed unencumbered by positive feedback from recipients to donors. Exchange of equivalents and mutually beneficial interdependence characterize relations between proprietor and farmer, but not their interaction with the steriles” (*loc. cit.*). There was still a problem in that artisans did not produce final urban luxuries alone, but also intermediate agricultural capital goods, which improved technique and transport formed the backbone of the physiocrats’ program to advance France to greatness. Another was that “if urban-rural trade does not involve exchange of equivalents, as the *Tableau* implies it does not, the sterile class must get something for nothing, for reasons unknown” (*loc. cit.*).

Apparently, by selling things of value in return, the sterile class would nevertheless obtain the cash with which to maintain the exchange value of agricultural produce (*ibid.*: 36), so that in the fully monetised and competitive entrepreneurial economy described by Quesnay’s *tableaux*, there must at least be ‘something like’ equivalent exchange. But this was precisely what he denied in his 1766 *Tableau*, where the sterile class seemed to live on the ‘velocity of circulation’ of the money (Herlitz’s 1962: 118). In line with some 20<sup>th</sup> century ecological unequal exchange, Quesnay’s tableau implied that farmers “buy back their own products by a roundabout and expensive route in which transport costs, the wages and food consumption of the sterile class, constitute an unavoidable loss”, while artisans receive cash assets every year “not as a result of [their] own production, but as a gift!” (Herlitz 1961: 38, 40; cf. Boss 1990: 36.)

Since they alone were productive, agricultural and primary production would necessarily have to be favoured domestically. In contrast to both mercantilists and ecological unequal exchange theorists, however, Quesnay argued the same thing regarding international exchange. Believing sales to equal purchases, he abstracted from foreign trade and advocated precisely export of agricultural goods and raw materials in return for manufactures. He (1991a [orig. 1758-59]: 104f., 1991b [orig. 1774]: 244) warned against mistaking even a surplus balance for a favourable one, if it prejudiced distribution and reproduction of revenues against

primary production. In reciprocal commerce of raw materials bought abroad and manufactures sold there, the disadvantage was ordinarily to the latter branch, because the benefits drawn from the former were so much greater. The point was to maximise primary production and thereby reproduction: “Never let foreign commerce in raw materials be hindered; *for as is the sale, so is the reproduction*” (Quesnay 1991a [orig. 1758-59]: 110, 1991b [orig. 1774]: 242; trans. J.B.). Stopping foreign trade in grain and primary products, would restrain agricultural production to supplying the indigenous population instead of trying to expand output. Foreign sales of raw materials raised the remuneration of land and real estate, thus increasing the disbursements of land-owners, which thereby attracted men to the kingdom, followed by increased consumption of raw materials, so that ultimately consumption and foreign sale of raw materials accelerated the progress of agriculture, of production, and of revenues (*loc. cit.*). At the same time, it was of essence not to lower prices of one’s goods, particularly not of cereal, since the nation would loose in reciprocal international exchange – one would receive less for a given quantity of goods. Observing that the abundance and non-monetary value of the Louisiana Indians was not wealth, while food shortage and dearness equalled misery, he underlined that it was only the combination of abundance and dearness that made for opulence.

Adding to the case for agricultural exports was the idea of an ‘unequal’ or non-equivalent exchange due to different capital intensities. This idea was to flourish in Marxism but according to Emmanuel was already present in the work of Quesnay:

Quesnay (in whose work are to be found, if one looks carefully, the germs of all the major ideas in political economy) noted that a country that exported the produce of its soil and purchased manufactured goods from abroad would employ fewer men than would be the case without this trade – which was another way of saying that it would exchange a certain quantity of its national labor for a larger quantity of foreign labor. Despite the recent reformulation used, it emerges clearly from a reading of his argument that for Quesnay this “unequal exchange” was the effect of the difference in “organic composition” between agriculture and industry, the fixed capital of the latter being, in his day, insignificant as compared with that very substantial quantity constituted by the soil. (Emmanuel 1972a: 174f.)

The ‘productive/unproductive’ dichotomy was used principally to render the distinction between necessities and luxuries, which was relevant to growth by capital accumulation. According to Boss (1990: 9), the earliest writers were “somewhat more liberal than later in refraining from wholesale discrimination against non-material goods and non-market ‘modes’,” but the first full-fledged economic systems of Quesnay, Smith and Marx, were “theories of surplus generation and its non-equivalent transfer beyond a narrowly-defined productive domain.”

Thus, even to Smith (1937: 278) it mattered greatly whether imports consist of luxuries or indispensable necessities of life and capital goods. The proprietors of gold and silver do not send it abroad for nothing, making “a present of it to foreign nations”, but exchange it for foreign goods in order to supply either the home consumption or that of some foreign nation, in which case the profit they make “will be an addition to the neat [= net] revenue of their own country”, thus creating a new fund for carrying on new trade. On the other hand:

If they employ it in purchasing foreign goods for home consumption, they may either, first purchase such goods as are likely to be consumed by idle people who produce nothing, such as foreign wines, foreign silks, &c.; or, secondly, they may purchase an additional stock of materials, tools, and provisions, in order to maintain and employ an additional number of industrious people, who re-produce, with a profit, the value of their annual consumption.

So far as it is employed in the first way, it promotes prodigality, increases expence and consumption without increasing production, or establishing any permanent fund for supporting that expence, and is in every respect hurtful to the society.

So far as it is employed in the second way, it promotes industry; and though it increases the consumption of the society, it provides a permanent fund for supporting that consumption, the people who consume re-producing, with a profit, the whole value of their annual consumption. The gross revenue of the society, the annual produce of their land and labour, is increased by the whole value which the labour of those workmen adds to the materials upon which they are employed [...]. (Smith 1937: 278f.)

In view of the fact that, in early-modern Europe, the greater part of imports consisted precisely of such luxuries, which Smith regarded as “in every respect hurtful to society”, Suviranta (1923: 147) is correct to exclaim: “The great critic of mercantilism appears in this passage as a vindicator of the theory of the balance of trade.”<sup>12</sup>

Boss (1990: 60) maintains that “Adam Smith’s account of production and exchange allows for non-equivalent exchange.” By this she implies that transfers go from ‘productive labourers’ engaged in the fabrication of material goods for market sale, to non-productive members of society: those excluded from the productive force by age or invalidity, or simply beggars. However, there was a more specific, yet central, situation in which something like unequal exchange was present in Smith’s work, having to do with the closer communications and association of townsmen.

To Smith, commerce was principally conducted between town and country, consisting “in the exchange of rude for manufactured produce” either with or without money: “The country supplies the town with the means of subsistence, and the materials of manufacture. The town repays this supply by sending back a part of the manufactured produce of the inhabitants of the country. The town, in which there neither is nor can be any reproduction of substances, may very properly be said to gain its whole wealth and subsistence from the country” (Smith 1937: 356). Insight into the complete and ‘parasitic’ dependence of towns upon the countryside is obviously no news, *e.g.*, with the ‘social metabolism’ approach found in Marx (cf. Foster 2000), or the concept of ‘ecological footprints’ of Rees (1993), and in all probability is a commonplace observation as old as towns themselves. (Originally, of course, ‘townsmen’ were themselves cultivators of the surrounding land).

Smith’s editor Cannan, on the other hand, considers the identification of agriculture with the production of ‘substances’ and of manufactures with a mere alteration, “the error” which “is doubtless at the bottom of much of the support gained by the theory of productive and unproductive labour” (in Smith 1937: 356, n.). Smith, for his part, was at pains to point out that this did not in the least imply that “the gain of the town is the loss of the country.” On the contrary, the “gains of both are mutual and reciprocal,” because of the omnipresent benefits of the division of labour: “The inhabitants of the country purchase of the town a greater quantity of manufactured goods, with the produce of a much smaller quantity of their own labour, than they must have employed had they attempted to prepare them themselves” (*loc. cit.*). The town afforded a market for the surplus product of the country, or what was over and above the maintenance of the cultivators, and the greater the number and purchasing power of the city dwellers, the more extensive the market and the greater the gain in manufactures of cultivators. For proof of these mutual benefits one needed only compare “the cultivation of the lands in the neighbourhood of any considerable town, with that of those which lie at some

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<sup>12</sup> On the other hand, along many others, Rashid (1993: 135f.; cf. Smith 1937: 456) has emphasised how Smith’s “disgust with merchants” and regulations led to his “remarkable conclusion” that “Britain had not only had to endure a ‘relative disadvantage’ but has actually suffered because of the monopoly of the colony trade! The spectacle of a nation of shopkeepers embarking on a policy of loss and sustaining it for almost two centuries boggles the mind, but Smith, nothing daunted, develops it with exquisite patience.”

distance from it". The ultimate proof was perhaps that: "Among all the absurd speculations that have been propagated concerning the balance of trade, it has never been pretended that either the country loses by its commerce with the town, or the town by that with the country which maintains it" (*ibid.*: 357).

Inspired by von Thünen, and basing himself on Dockès's (1969: 408f.) presentation of this passage, Braudel (1992: 39) finds an opportunity to ridicule Smith: "The town-country exchange which creates the elementary circulation of the economic body is a good example, *pace* Smith, of unequal exchange." However, following Dockès (1969: 410ff.) yet another page, we find him pointing out a passage in the *Wealth of Nations*, where Smith underlined *precisely* the exchange between town and countryside as unequal. Following upon an interpretation of inequalities arising from the nature of employments themselves, Smith (1937: 118) indicates the 'artificial' advantages "of much greater importance", that were occasioned by the policy of Europe. It did this chiefly in three ways: "First, by restraining the competition in some employments to a smaller number than would otherwise be disposed to enter into them; secondly, by increasing it in others beyond what it naturally would be; and, thirdly, by obstructing the free circulation of labour and stock, both from employment to employment and from place to place." Most interestingly, Smith here pointed to monopolies on the *factors* market, *i.e.*, in the equalisation of the rate of wages through 'extra-economic' restrictions on the mobility of labour to certain branches of work.

Restricting entrance to particular employments through the "exclusive privileges of corporations" – called 'universities' as Smith (1937: 124) reminds – restrained competition and helped to keep up wages. Guild spirit was institutionalised in laws regulating the number of apprentices and apprenticeship to seven years. Increased competition would ultimately lead to lower prices and, accordingly, income for masters and workmen; the "trades, the crafts, the mysteries, would all be losers", but "the public would be a gainer", *i.e.*, the purchasers of their goods. If such regulative powers were sometimes dependent on charters from the king, they more generally belonged to town governments:

The government of towns corporate was altogether in the hands of traders and artificers; and it was the manifest interest of every particular class of them, to prevent the market from being overstocked, as they commonly expressed it with their own particular species of industry [...]. Each class was eager to establish regulations proper for this purpose, and, provided it was allowed to do so, was willing to consent that every other class should do the same. In consequence of such regulations, indeed, each class was obliged to buy the goods they had occasion for from every other within the town, somewhat dearer than they otherwise might have done. But in recompence, they were enabled to sell their own just as much dearer; so that [...] in the dealings of the different classes within the town with one another, none of them were losers by these regulations. But in their dealings with the country they were all great gainers; and in these latter dealings consists the whole trade which supports and enriches every town. (*Loc. cit.*)

As was mentioned above, Smith saw how towns drew its whole subsistence and all the materials of its industry, from the country, paying for them "by sending back to the country a part of those materials wrought up and manufactured; in which case their price is augmented by the wages of the workmen, and the profits of their masters or immediate employers". In this instance of manufacturing, the town gained *also* from the relative increase of wages and, consequently, prices. A similar extra gain, resulting from better access to communications<sup>13</sup>

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<sup>13</sup> True to his background as rhetorician and grammarian, Smith emphasised communications as the basis for the economy, remarking on the importance of land routes and particularly waterways for the extent of the market and the division of labour, thus, in principle, for the origin of civilisation itself. It is no mere coincidence that Smith (1937: 13) locates "the propensity to truck, barter, and exchange one thing for another", not, as is often presumed, in "human nature", but "as seems more probable" sees it as a necessary consequence of the faculties

and the town's location at junctions, was drawn from the advantage in inland and foreign trade, by sending to the country "a part both of the rude and manufactured produce, either of other countries, or of distant parts of the same country, imported into the town; in which case too the original price of those goods is augmented by the wages of the carriers or sailors, and by the profits of the merchants who employ them" (*ibid.*: 124f.). Both of these advantages are mirrored in increased wages and profits, and through the terms of trade between town and country goods in a consequent unequal allocation of societal output:

The wages of the workmen, and the profits of their different employers, make up the whole of what is gained upon both. Whatever regulations, therefore, tend to increase those wages and profits beyond what they otherwise would be, tend to enable the town to purchase, with a smaller quantity of its labour, the produce of a greater quantity of the labour of the country. They give the traders and artificers in the town an advantage over the landlords, farmers, and labourers in the country, and break down that natural equality which would otherwise take place in the commerce which is carried on between them. The whole annual produce of the labour of the society is annually divided between those two different sets of people. By means of those regulations a greater share of it is given to the inhabitants of the town than would otherwise fall to them; and a less to those of the country. (*Ibid.*: 125.)

Contrary to what Braudel imagines, what we have here is the basics of a theory of unequal exchange, as noted by Andersson (1976: 39; cf. Raffer 1987: 14): "This passage includes the fundamentals of a theory of non-equivalent exchange: it formulates the measure of equivalency in terms of social labour, it shows the means by which this non-equivalence is upheld, and it indicates the effects, the unequal distribution of wealth, between the two trading partners." In fact, since the inequality lies in the difference between an actual state of affairs, with a monopoly on the factors market, and a hypothetical state of affairs, where this monopoly is absent, what Smith describes is perhaps not merely a 'non-equivalent' exchange in Andersson's sense of a transfer of disproportionate amounts of 'embodied labour', but an 'unequal' exchange, in the sense of Emmanuel, valid even without reference to 'values' and their unequal transfers.<sup>14</sup>

Smith's *Wealth of Nations* was possibly more influential than any other single book in political economy – certainly more so than that of Thomas Mun (1856 [orig. ca. 1630, 1664]), for which he made the incredulous claim that it seduced, first English and then European, politicians into adopting the 'mercantile system'. Nevertheless, his attack on the administration and regulation of this system to the enforcement of the balance of trade and the protection of sheltered industries, monopolies and employments, and in spite of his apparent ambition (Haakonsen 1981), did not thoroughly convince politicians. They needed reasons for adopting free trade which did not imply diminished *relative* British strength, and this had in fact already been provided by the reverend Josiah Tucker, whose mind was more in tune with that of politicians. Their role "in helping to bring about the Irish proposals and the French treaty in the 1780s was filled during the 1820s by the works of David Ricardo" (Semmel 1970: 137).

By connecting international trade to *absolute* costs, Smith's theoretical solution was unsatisfactory, since England had higher productivity in both manufactures and agriculture. If

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of "reason and speech". This is a literal translation from the Latin *ratio et oratio*, which in turn is the bifurcated Roman attempt to capture the multi-layered, reverberating Greek *logos*. Like Innis, his 20<sup>th</sup> century admirer (Chapter 3), Smith was obviously concerned with monopolistic derangements of this reason and speech.

<sup>14</sup> Following Raffer (1987: 15), Smith's shortcomings regarding 'unequal exchange' lay preferably in his treatment of the 'uncivilised' regions marginal to Europe, to which his theory of 'sympathy' in the *Theory of Moral Sentiments* only barely extended: "The problem of Unequal Exchange obviously did not exist for Smith, since he defended, it not advocated, the annihilation of those that could later have been exploited by trade, an advice the interior policy of the US has carried out in practice."

rent decreased, the price of English corn would become lower than that of foreign, and it becomes hard to see what England should import at all, except for some raw materials to compensate for the export of manufactures. It was unclear whether corn should be exported or imported. Ricardo's theory of *comparative* costs was an attempt to solve the problem. Since British superiority was greater concerning manufactures than agricultural products, free trade would imply import of corn, as Torrens (1815: 264f.; cf. Viner 1937: 442), had concluded simultaneously or even earlier. Ricardo's example was based on the 1703 Methuen Treaty between Portugal and England, for which period he instead assumed Portugal to be the more productive in absolute terms. It became a demonstration of how free-trade would optimise productive output, given that productive factors were internationally immobile (Ricardo 1963: 71, 1951: 135; for an alternative evaluation in 'dependency' terms, see Sideri 1970: *e.g.*, 29, 42, 49). Portugal could produce a unit of wine with 80 units (hours, days, etc.) of labour, and one unit of cloth with 90, whereas England needed correspondingly 120 and 100 labour units. In spite of the higher Portuguese productivity of both goods in absolute terms, it would specialise in the production of wine, because the relative (comparative) advantage was greater – the cost of producing wine in relation to cloth is correspondingly less, *i.e.*,  $80/90 < 120/100$ . Before specialisation the total labour units expended would amount to 390 and after to 360, meaning an overall saving/liberation of labour of 30 units, whereof Portugal 10 and England 20.<sup>15</sup>

The labour theory of value in Ricardo's form, was used by Ricardian socialists to argue that capitalism was unjust because capitalists did not labour. Thus, a Leeds printer, John Francis Bray (1809–1897) wrote a reputable book on 'labour's wrongs and labour's remedy', where he (1839: 48) argued: "If a just system of exchanges were acted upon, the value of all articles would be determined by the entire cost of production; *and equal values should always exchange for equal values.*" The central ideas of the movement were ridiculed by Marx (1929) in his debate with Proudhon, since equal labour for equal labour was *already* how capitalism worked – or so it was believed – at least domestically. A differential in the gains from international trade has, on the other hand, often been considered a kind of unequal trade in subsequent Marxist literature.

Along with the idea of free-trade, Ricardo's 'law of comparative costs' has had a most remarkable career (cf. Emmanuel 1972: vii, xiii, 1975: 9), and even the Heckscher-Ohlin-Samuelson theorem is rather a complement to than a substitute for it (Shaikh 1979: 290ff., Emmanuel 1972 ix; cf. Hume 1970: 197ff., Cairnes 1874: 138f., Taussig 1915: 57ff., 199ff., Marshall 1919: 55-162, Graham 1923: 204-213). This is so even among Marxist economists, the inheritors of classical liberal political economy, who more than anyone else in the 20<sup>th</sup> century have waged the war against 'monopoly' capitalism.<sup>16</sup> In fact, the same case for

<sup>15</sup> He assumed no transportation costs, and that a unit of cloth was traded for a unit of wine, but this is not a necessary assumption. What is necessary is only that trade is conducted within the limits of 1 wine = 8/9 cloth and 1 wine = 12/10 cloth, outside of which borders trade ceases to be profitable and therefore stops (for an interpretation of the mechanism of optimisation, cf. Shaikh 1979: 286ff.)

<sup>16</sup> Accordingly, Marxist interpretations of mercantilism have followed the liberal one, calling it "the ideology of the monopoly trading companies" (Plotkinov in Judges 1969: 59, and Hill 1938: 167), or as Dobb (1946: 209): "a system of State-regulated exploitation through trade [...] essentially the economic policy of an age of primitive accumulation". Dobb (*ibid.*: 204) saw the views of mercantilists acquiring meaning if applied "to the exploitation of a dependent colonial system" and if the writers were regarded as "spokesmen of industrial rather than merchant capital (or perhaps one should say of merchant capital that was already acquiring a direct interest in production)". Coleman (1969b: 8) comments: "So now we have the happy situation that across the 170 years between 1776 and 1946 the voices of classical and Marxist economics join in sonorous agreement about the machinations of monopoly-seeking merchants [...] unfortunately neither provides evidence of the sort which historical scholarship demands." Shaikh (1979: 297) sees the paucity of Marxist international economics as a result of the paucity of references to foreign trade in Marx, as well as to the obsession with monopoly from Lenin's *Imperialism* onwards and repeated at length by Sweezy, since in such a world the laws of price

monopolistic practice has been made against the free-trade policies. According to Semmel (1970: 157), these were fuelled not so much by Cobdenite cosmopolitanism or the diluted principles of classical political economy, as by the desire “to preserve Britain’s industrial predominance,” preferably an industrial monopoly. This interpretation recants that made by contemporary North American or German observers, seeing “a Machiavellian trick of kicking down the ladder by which Britain had reached her supremacy” (Heckscher quoted in Capie 1983: 11). Keynes (1973: 338) similarly proposed that “in the special circumstances of mid-nineteenth-century Great Britain an almost complete freedom of trade was the policy most conducive to the development of a favourable balance.”

The term ‘mercantilism’ was originally derogatorily used to describe the established political economic practice in France and England, as well as the intellectual struggles over the best means to become ‘gainers in the balance of trade’, what was perceived as a confusion of money with wealth. Later defended by historians as reasonable practice for the time, the problem is left unresolved why the strivings for a favourable balance of trade continues in practice even after it has been abandoned by theorists. Historical ‘circumstances’ continuing for half a millennium deserves to be described as historical ‘reality’, which presumably is what theory is supposed to describe. Even more, already according to contemporaries, the theories and policy recommendations of the classical economists, such as international free trade, have to large extents been applied with the aim to obtain a favourable balance of trade, but now camouflaged, or so it was perceived by others, as something beneficial to everyone involved. Notably, at a time when machines were definitely becoming the measure of men, Ricardo found England to have a natural and comparative advantage in industrial production, which only so happened to have been the goal every nation was and had been striving for based on the mercantilist argument.

There was thus also a rather heterogeneous and often non-Marxist set of traditions on the western, transatlantic ‘periphery’, which emphasised the disadvantages suffered by geographical peripheries in a ‘centre-periphery’ relation. For those increasingly important elements whose aim in the 19<sup>th</sup> century was to catch up with the more developed regions, first in the northern American states and Europe, the mainstream alternative to standard theory was characterised by their protectionism and will to industrialise. The central figures include Alexander Hamilton, Henry Carey and the German-born American citizen Friedrich List (2001 [orig. 1841]) inspired by them (cf. Tribe 1995). Intellectually, this tradition is a continuance of the mercantilist one, which, to the dismay and incomprehension of political economists has been ‘revived’ on numerous such occasions.

Before elaborating on some of these Marxist and non-Marxist trends we shall next look at one of the more unusual followers of Ricardian socialists, the Southern United States, proto-fascist propagandist of slavery, George Fitzhugh, who produced an argument of non-equivalent exchange along their lines, but also argued in terms of the degradation of land. He is presumably not someone that would be underlined by any modern exponent of unequal exchange theories, whether Marxist or ecologist, and shall therefore be treated at a length beyond his importance as a theorist.

### George Fitzhugh and the unequal exchange of the Southern slave society

An antebellum southern contemporary of Carey, the Virginian George Fitzhugh (1806–1881), has received considerable attention as a proto-fascist ‘propagandist of the old South’ for his

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formation must be abandoned. In fact, as Howard and King argues (1989: 100), Hilferding’s *Finance Capital*, on which Lenin built and where the ‘monopoly capital’ interpretation of the world is presented, “has proved to be the most influential text in the entire history of Marxian political economy, only excepting *Capital* itself” – not due to any analytical merits, it seems, since “the defects of the book are readily apparent.”

defence of slavery as a neo-feudal organisation (Wish 1943). More recently, his views on the dependence and the non-equivalent or unequal exchange suffered by an agrarian region have been noticed (Persky 1992; for biographical information see Wish 1943).

His family's plantation had been sold by auction in 1825, and, receiving only skimpy formal education, he became essentially self-educated, with the additional limitations imposed by private finance and rural surrounding. He himself admitted that his "pseudo-learning is all gathered from Reviews", newspapers and novels (quoted in Wish 1943: 20), occasioning Genovese (1988: 188) to reflect that he was a man "who wrote too much and read too little". With an unsuccessful law practice and dependent on the property of his wife, he was always poor and ill paid for his propaganda, only twice being rewarded with political office for brief periods (the Buchanan's and Johnson's administrations).

It was after the sectional crises of the late 1840s, and the political revolutions in Europe of 1848-49, that his thinking turned to the defence of slavery and southern nationalism in an anonymous pamphlet, "Slavery Justified" (1849), continuing his prolific publishing until 1872. Having become contributing editor to the widely circulated *Examiner* (1854-56), and having secured an editorial position on the powerful *Enquirer* for the presidential campaign (1855-57), he wrote perhaps hundreds of unsigned editorials in these Richmond papers, and between 1855 and 1867 contributed well over a hundred articles to *De Bow's Review*, published in New Orleans. The outbreak of Civil War took away his sounding board, and although he tried to conform as best he could when the conflict ended, he soon developed a violent hatred of the freed slave that contrasts with his seemingly kindlier antebellum paternalism. His defence of slavery, finding support in Christian charity, of conservatism based on morality and religion, was spiced with a praise of war as a builder of loyalty and community spirit, and an unabashed imperialism. In this he was certainly not unique in American history, and neither was his advocacy of the acquisition of Mexico as a potential area of expansion of the slave states (Leavelle & Cook 1945: 159).

Pioneered by Thomas Dew, the chief contributor to the dream of a southern civilisation modelled after Greek democracy, was perhaps John C. Calhoun, but his interest was mainly constitutional and he made no extended effort to deal with the theoretical and practical problems involved in erecting a modern state on ancient ideals. It never became the master image of Southern white society (cf. Parrington 1927: 68, Leavelle & Cook 1945: 147f., Merriam 1902: 587, Wish 1943: 45ff., 1949: 257, 259, Hartz 1952: 34). According to Wish (1949: 262), Fitzhugh's views on this issue so resembled George F. Holmes, an early sociologist and the most creative of the proslavery writers, as to suggest collaboration. Fitzhugh attempted to consider the questions of the relation of the political state and economic organisation. Following the 'cult of objectivity' established by August Comte, his method was that of the 'sociologist', but consisted mainly in contrasting southern slave institutions with the immoral and rapacious industrial societies of the North. His reputation rests on two books, summarising his ideas on economics and sociology, *A Sociology for the South; or, the Failure of Free Society* (1854), and *Cannibals All! or Slaves without Masters* (1857), which was "largely a commentary on the first" (Wish 1943: 343). Together, they constituted an attack on the soundness of the free, competitive society as then evolving in England and America.

Drawing both on Carlyle's conservative attack on *laissez-faire* (as well as other Victorian critics of democracy), and radical versions of a labour theory of value propounded by Ricardian socialists and some of the northern abolitionists themselves, Fitzhugh concluded that the relation of an industrial power and an agricultural one was necessarily exploitative. Fitzhugh's central idea was that "*labour makes values, and wit exploits and accumulates them.*" *Laissez-faire* meant only that the devil takes the hindmost and that free enterprise sets labour competing with itself to the point of bare subsistence wages. Thus, all free societies tended toward 'robber barons' and 'pauper slavery'. Interest was wrong "because the

principal represents the labour of the man who accumulates it and should be exchanged for other people's labour. Hence Rents and Interest are the means by which Capital masters Labour" (quoted in Craven 1944: 74). The worlds of capital and labour thereby grew increasingly apart, until the worker was only a slave without a master to give him shelter, sustenance, and protection, having to confide in impersonal public charity in sickness, unemployment, and old age. By contrast, in slave society the superior few, although they too exploited labour as all employers were doing, accepted the responsibility of securing and caring for their workers, resulting in a society without labour problems, unrest and revolution.

Fitzhugh soon broadened the concept of slavery to incorporate all dependents, including white men. Posing the alternatives of enlightened slavery and despotic socialism (Mayes 1980: 89), his ultimate conclusion was that slave society is the permanent order to which all civilised groups tend, while free society is a temporary affair which will be dispersed by revolutionary movements when the empty lands of the West no longer provided an escape for the poor. The twist that black slavery would inevitably lead to white slavery was seized upon by Lincoln to stir up the common folk of the North to the dangers in Southern aggression, so that, in the end, Fitzhugh unwittingly helped to defeat the cause he sought to defend (Craven 1944: 74). This may well be considered his most important contribution.

Free trade had traditionally dominated southern economic thinking, holding that if only tariffs and other barriers to open commerce could be overcome, international markets could be trusted to remunerate the labour of the region accordingly. This was the position of Jacob Cardozo, Thomas Dew, and Thomas Cooper, as well as the policy of John Taylor, and a central item of the Jeffersonian agrarian program.<sup>17</sup> However, in the ten years before the Civil War, the spread of Southern nationalism and sensitivity to reliance on goods from the north stimulated a rethinking of these arguments. "Always suspicious of northern industry, Southerners were increasingly prone to view their commerce with the North as somehow unfair and exploitative", Persky (1992: 117f.) observes, continuing: "More clearly than any of the northern opponents of free trade, Fitzhugh developed the notion that the very advantages that recommended free trade in the short run, were the seeds of long-run dependency." While Southerners for years had equated Northern tariffs and financial manipulations with direct robbery, Fitzhugh explained how voluntary and mutually beneficial exchanges disadvantaged the region. Persky (1992: 118) considers this argument to be "largely separable" from his views on slavery, but surely Fitzhugh's translation of the sectional conflict between the North and South into a clash between radicalism, or 'rationalism', and conservatism, fits nicely in the overall framework (Leavelle & Cook 1945: 148f.). His defence of, and belief in, the latter could provide interesting points of comparison not only with later conservatives and national socialists, but also with 'ecological' versions of unequal exchange and dependency. As Persky (1992: 120) notes, Fitzhugh set out from the romanticist philosophy of Thomas Carlyle, denouncing the 'cash nexus' and the 'dismal science'. Carlyle had considerable appeal in contemporary Tory England and, as many Southerners noticed, showed sympathy for the slave system.<sup>18</sup>

In fact, the economic contrast between a 'free nation', or the 'free society' of an exchange economy, and a slave or command economy such as the military communism of ancient Sparta, was first drawn by Sir James Steuart (1767, I: 250-60 & Ch. 9; cf. Sen 1957: 33ff.).

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<sup>17</sup> On southern economic thought, see Dorfman 1946-59. Fitzhugh's neighbour in Caroline County, John Taylor was a republican essayist, who saw a basic antithesis between centralised agrarianism and centralised capitalism. Fitzhugh had nothing against centralism as such but favoured a balanced economy under governmental direction, and resisted the argument of secession until the last moment (Leavelle & Cook 1945: 148f.).

<sup>18</sup> Persky (1992: 120) continues: "Most significantly, Carlyle had coupled his assault on the political philosophy of liberalism with a vituperative attack on the political economy of laissez-faire. Carlyle, with his Tory radicalism, challenged not only John Stuart Mill's criticism of slavery, but also Mill's defense of laissez-faire markets." (On 'the reactionary Enlightenment' and Carlyle's appeal to Southerners, cf. Hartz 1952, 1955: Ch. 6.)

This he did with much more sophistication than Fitzhugh – or indeed anyone else before the 20<sup>th</sup> century. According to this view, in a ‘free society’ there were self-reinforcing connections between the production of foodstuff and the ‘effectual demand’ for it, more people concentrating on producing luxuries so as to procure food, in turn stimulating increased food production, while the division of labour increased total output. The whole process depended on exchange, leading to the introduction of money (followed by luxury), the want of which made mankind industrious: “The allurements of gain will soon engage every one to pursue that branch of industry which succeeds best in his hands” (Steuart 1767, I: 85, cf. 33, and Sen 1957: 36). Sparta was a familiar topic in 18<sup>th</sup> century philosophy, but Steuart was perhaps the only writer to discuss the economics of Spartan communism. Contrary to the great concern of free society, there was no unemployment, and superfluity was neither necessary, because free enterprise was not needed to provide everyone with bread, nor permitted, since once the degree of necessity was transgressed there was no telling where the limits should be drawn (Steuart 1767, I: 250-8). Strength and security was the virtue of the Spartan planned and compulsory form of society, but in his opinion, and though he was fiercely condemned by contemporary English as its defender, it was nevertheless unsuitable for modern times, not only because it was based on slavery, but because all incentive to progress had disappeared, and no workman would try to improve his method. This was in sharp contrast to the free society, where a man when hired by the piece would find a thousand expedients to extend his industry. Unlike Rousseau (cf. Winch 1996), then, with his great admiration for the republican spirit of the Spartans, and like Smith (1937) and, presumably, Mandeville (1970), but after more serious discussion, Steuart ultimately came out in favour of the free society – not, however, in its unchecked and unregulated state. The utopians of the early 18<sup>th</sup> century were often as critical of free society, but less inclined to analyse their proposed contrary state from an economic point of view. This was true also of the Ricardian socialists who inspired Fitzhugh.

Fitzhugh’s analysis proceeded with spelling out his version of the labour theory of value, with his seemingly odd mixture of intellectual inspirations based especially on the writings of Stephen Pearl Andrews, in the lineage of Ricardian socialists such as Richard Owen and William Thompson. Andrews had described the “value principle” as the “commercial embodiment of the essential element of conquest and war – war transferred from the battlefield to the counter”, and concluded: “If, in any transaction, I get from you some portion of your earnings without an equivalent, I begin to make you my slave [...] if I obtain the whole of your services without an equivalent – except the means of keeping you in working condition for my own sake, I make you completely my slave” (quoted in Persky 1992: 121, and Fitzhugh 1960). Fitzhugh rejected the socialists’ egalitarian conclusions for individuals, but his sociological imagination suggested that they might be very true on average for two sizeable samples of people in a community, region, or nation. On average, therefore, the South’s labour was the equivalent of that in the North and Britain. An hour’s worth of southern labour should exchange for an hour’s worth of northern labour, but Fitzhugh was convinced that this was not the case in free trade, even admitting the reality of short-run mutual advantage.

The South was exploited quite simply because of its agrarian basis. Agricultural labour was basically unskilled and uneducated “hand-work”, in abundant supply and whose price would always be determined by the cost of subsistence. The products and labour of an industrial region was, on the contrary, “head-work”. Merchants and manufacturers could command high premiums that did not reflect costs of production but scarcity in the market:

Peoples and individuals must live by hand-work or head-work, and those who live by head-work are always *in fact*, the masters of those who live by hand-work. They take the products of their labor without paying an equivalent in equal labor. The hand-work men and nations are slaves in fact,

because they do not get paid for more than one-fourth of their labor. [...] The South has, heretofore, worked three hours for Europe and the North, and one for herself. It is one of the beautiful results of free trade (Fitzhugh 1954: 173f.).

Quoting this, Persky (1992: 123) finds it particularly impressive that Fitzhugh “never denied that trade implied mutual advantage in the short run”, but on the contrary, “it was just this gain from trade that seduced the agricultural region of country into a dependent position”:

The more primitive partner traded with the more developed precisely because in the short run this was far cheaper than making do for itself. But the very process of exchange between an agricultural partner and a non-agricultural one reduced the capacity of the former to participate in the ongoing advance of technology and skill. The process left them dependent, and an agrarian strategy was an invitation to an ever more unequal exchange.

Fitzhugh shared the conviction of Josiah Tucker and Thomas Cooper that the education and experience of cities, or at least towns, were crucial to invention and raised productivity. Persky (1992: 124) underlines the connections with 20<sup>th</sup> century dependency theorists (*e.g.*, Frank 1972), who also “saw rich natural resources as something of a curse”, because they reduced the need for initiative and encouraged passive reliance on trade, which, in Fitzhugh’s (1954: 151) words “will supply everything they need, except the products of the soil”.<sup>19</sup> Persky could equally well, or better, have referred backwards to the mercantilists who found great dangers in too much ‘natural wealth’, as exemplified in the case of sluggish Spain, and contrasted with the ‘artificial wealth’ of the docile Dutch. In a passage that Persky (1992: 124) finds to be a most cogent statement of dependency, Fitzhugh (1854: 152) spells out the consequences for an agricultural people:

As they are unskilled in mechanic arts, have few towns, little accumulated capital and a sparse population they produce with great labor and expense all manufactured articles. To them it is cheaper at present, to exchange their crops for manufactures than to make them. They begin the exchange, and they learn to rely more and more on others to produce articles, some of which they formerly manufactured, and their ignorance of all, save agriculture, is thus daily increasing.

Other similarities with mercantilist and later thought are his strictures on private luxury; only public luxury in the form of expenditures for public works and cultural monuments can permanently benefit society (Leavelle & Cook 1945: 163). Fitzhugh’s policy prescriptions of ‘import substitution’ also have their predecessors and modern exponents, as do the ‘infant industry’ aspects. Neither are they all that different from contemporary protectionist economists in the American tradition, such as Henry Charles Carey or Friedrich List (although the mercantilist aspect noted above made Persky [1992: 125] believe the argument to be “much more dynamic”). Fitzhugh’s advocacy of self-sufficiency also had many interesting predecessors and descendants, notably among dependency or ecologist advocates of autarchy. His belief that this was needed to raise productivity seems almost to have gotten the better of his racism, when arguing that the necessity that alone could beget civilization among savages was undermined by free trade (Fitzhugh: 1854: 19).

Although understandable against the background of the industrial revolution, a fundamental weakness in Fitzhugh’s theory is precisely the identification of manufacture and agriculture with high and low productivity respectively. A common idea even today, this neglected the possibility of raising productivity in agriculture. Even more, it neglected the *fact* of such a

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<sup>19</sup> Fitzhugh (1954: 151f.) continues: “Necessity compels people in poor regions, to cultivate commerce and the mechanic arts, and for that purpose to build ships and cities. They soon acquire skill in manufactures, and all the advantages necessary to produce them with cheapness and facility.”

rise, which could have been observable already in the antebellum era – not in the South, however, but in the West. If somewhat idealised, the general pattern of interregional trade in the United States has long been familiar, and though modern debate on the issue is perhaps not conclusive and the data incomplete, this pattern is nevertheless instructive of the problems faced when identifying the South with the ‘agrarian’ region.

In 1909, G. S. Callender commented that the significance of the commerce between western farmers and southern planters had been slighted by economic historians. This commerce between different kinds of agricultural communities began in colonial times in the trade on the Atlantic coast between the Northern Colonies and the West Indies, and appeared again in the first part of the 19<sup>th</sup> century when a trade grew up on our western rivers between the new states of the West and the lower South:

It was in both cases a trade between a community of planters using slave labor to produce a few valuable staples which found a ready sale in the markets of the world on the one hand, and a community of small farmers (who in many cases were partly fishermen) producing food and crude supplies on the other. The basis of the trade in both cases was the fact that the planter found it more profitable to devote his slave labor to the production of valuable staples [...] than to use it in producing the food and other agricultural supplies which he needed. (Callender 1909: 300f.)

Perhaps inspired by the success of the staple thesis in Canadian historiography, Schmidt (1939) and later North (1966) used this scheme to find a tripartite geographical pattern. With the innovation of the steamboat on the Mississippi in 1816, the West began shipping foodstuffs downstream to the South, which continued selling cotton, sugar, tobacco, and rice on foreign markets, as well as in the Northeast and to a lesser extent upriver to the West, while the Northeast provided banking, insurance, brokerage, and transport services to both. The trade between the West and East was either overland, when it involved valuable manufactured goods, or coastwise to New Orleans and thence upriver, when involving bulk products. With the completion of the Ohio canals in the mid 1830s, there was a gradual redirection of western produce to the eastern seaboard. “When, in addition to the Erie and Pennsylvania Canals, East-West railroads were completed in the early 1850’s, the nature of the internal trade had been fundamentally changed”, North (1966: 103) explains, at least in the relative decline in importance of the South, and the increased importance of the East-West commerce. Schmidt’s (1939: 811) oft quoted summary of the mutual independence reads:

The rise of internal commerce after 1815 made possible a territorial division of labor between three great sections of the Union – the West, the South, and the East. [...] The South was thereby enabled to devote itself in particular to the production of a few plantation staples contributing a large and growing surplus for the foreign markets and depending on the West for a large part of its food supply and on the East for the bulk of its manufactured goods and very largely for the conduct of its commerce and banking. The East was devoted chiefly to manufacturing and commerce, supplying the products of its industries as well as the imports and much of the capital for the West and South while it became to an increasing extent dependent on the food and the fibres of these two sections. The West became a surplus grain- and livestock-producing kingdom, supplying the growing deficits of the South and the East. (Cf. North 1966: 103, Fishlow 1964: 187.)

Fishlow has downplayed the importance of interdependence, and questioned the extent of trade between the West and South, instead emphasising the trade between East and West, but the traditional view was again defended by Fogel (cf. the exchange of views in Andreano 1965: 187-224). Later discussions indicate that US slave plantations were indeed self-sufficient through the masters’ and slaves’ independent production of vegetables, poultry and other foodstuffs on small garden plots, undertaken or organised during the slack-season of staple production – in fact, the slave economy itself impelled masters to organise their slaves

in such activities, thereby limiting the growth of consumer goods industries (Post 2003: 301f., 318-25). What happened in the 1840s and 1850s, Post (*ibid.*: 326) suggests, seems rather to have been that a Western/Northern “shift from independent household (‘subsistence’) to petty commodity (‘commercial’) production unleashed a dynamic of productive specialization, technical innovation and accumulation that made Northern agriculture the growing home market for Northern industrial capitalists. Thus, after 1840, the expansion of Northern family farming stimulated the activities of industrial capitalists, which increasingly bound together the different forms of production in the USA.” Since the internal ‘home’ market of the slave economy was insignificant, its geographical expansion became a major obstacle to the further development of capitalism in the rest of the USA. Whichever position one holds, the declining relative importance of the South illuminates the increasing desperation of southerners such as Fitzhugh in the 1850s. The mere existence of the present debate on the importance of southern *imports* of foodstuffs and other agricultural products is sufficient demonstration that his identification of South with agriculture and North with manufactures was insufficient. Was the problem rather, as might have been divined from Steuart’s (1767) presentation, one of low productivity in a plantation economy – due to the slavery he wished to defend?

According to one school of interpreters, most notably Fogel and Engerman, the plantations were highly efficient capitalist enterprises, despite the unfree legal status of slaves. This ‘planter capitalism’ line recognises that slaveholding staple-producing planters of the Americas faced market imperatives, had to accrue debts to purchase land and slaves, and unlike 16<sup>th</sup> and 17 century grain-exporting lords of Eastern Europe did not have the option of withdrawing from the world market when prices fell below costs of production (cf. Post 2003: 292). To meet debts and void loss of their land and slaves, planters were compelled to become competitive in the world markets for sugar, rice, indigo, coffee and cotton through reduction of costs. The profitability of these enterprises can no longer be doubted, but Fogel and Engerman assert also that it promoted rapid economic growth in the Caribbean and Southern United States, with slightly higher per capita income growth than in the Northern States. Although average income was still lower than in the North, it was still higher than in any other independent nations excepting Australia and Great Britain.

Another tradition has, successfully it seems (cf. *ibid.*: 293ff.), contested attributing these growths to the ‘capitalist’ character of plantations, instead pointing to the ‘efficient’ organisation, the South’s near monopoly, and the enormous growth of demand on the part of industrial capitalists in Great Britain and the US North. As Post explains (*ibid.*: 302): “Economic growth tended to be *extensive*, the addition of more slaves and more land in a process of geographic expansion, rather than *intensive*, with the introduction of labour-saving tools, implements and machinery.” The absence, which Fitzhugh grieved, of large-scale industry and manufacturing can thus largely be explained by the plantation economy’s stifling any considerable home market for industrially produced capital and consumer goods, and ultimately, as Genovese (1989) argues, by the absence of an ‘agricultural revolution’, or rather capitalist agriculture. A further anomaly, argues Post (2003: 302), was the tendency of slave-owning planters to increase, rather than decrease output over the medium term in the face of falling commodity prices. However, in that case even contemporary British textile industry seems anomalous.

Following Rostow (1960), Hobsbawm (cf. 1969: 69) calls the cotton industry the incomparably most important ‘leading sector’ during the early stages of British industrialisation, setting the pace of the economy as a whole. However this may be, the enormous rise in output and productivity, and the incipient saturation of the market, was beginning to show in lower prices. In 1784, the cost of raw materials for 1 *lb.* of wrought cotton 2*s.*, and was sold at 10*s.* 11*d.*, with a marginal for other costs of 8*s.* 11*d.* Corresponding figures for 1812 are 1*s.* 6*d.* for raw materials, selling price at 2*s.* 6*d.*, and a

margin of 1s., which was to decrease even more (*ibid.*: 76). Lower margins were compensated for by increased volumes, reverberating through the Southern slave economy in the transition from tobacco to cotton as the main export staple, and in a profound transformation in the slave labour process – comprising a shift from task to gang labour, the introduction in the 1820s of the horse- or mule-drawn ‘sweeper’ plough, and new seeds – which by the late 1830s had raised the ratio of slave labour to land and tools from three acres per slave in tobacco production to nine or ten in cotton (Post 2003: 316).

The raw materials of the cotton industry came substantially from the American South (plus Egypt). The mode of production was very labour intensive, with a more or less fixed ratio of labour to land once the above transition had been made. Notwithstanding an even factory like, assembly-line organisation generating pressure to keep up the pace, the tools used were simple and virtually unchanged. There was certainly nothing like a systematic and continuous process of replacement of human labour through mechanisation, which according to Brenner (*e.g.*, 1976, 1982) and others characterises capitalist agriculture and industry (cf. Fogel & Engerman 1974: 572, Post 2003: 292f., 296). The minimum amount of slaves needed for efficient production was 50 per acre on the soils of Alabama and Texas, and more than 200 around the Mississippi river. Costs have been estimated to half of what they would have been without coercion. The possibilities to increase output per slave were limited, except through increasing the pace or the number of slaves, by tapping the ‘unused capacity’ of juveniles or women, increasing acreage, or moving to more fertile soil. Under the limitations imposed by the social relations of slavery, the most rational way for planters to increase output, given the fixed ratio of labour to land and tools, was geographic expansion and the addition of more slaves. During the period from 1790 to 1810, production rose from 3,000 to 178,000 bales, in a violent westward expansion, accompanied by means of communication connecting the new areas with the coasts and in its turn encouraging new investments in steamboats and railways.

The consequences for the indigenous population were perhaps even more ominous than for the slaves. The Cherokees, Creek, Choctaw, Chickasaw and Seminoles in current Alabama, Georgia, Florida, Mississippi and North Carolina, all had to be expelled from the Jeffersonian democracy’s ‘land without people for a people without land’ (Wolf 1982: 278ff.). The environmental consequences were no less serious, as summarised by Earle (1988: 201):

The erosional cycle (1780–1840) that plagued the upper South also swept across the emerging cotton belt. Following the invention of the cotton gin, a sharp rise in cotton prices ignited a half century of destructive occupance. The vicious cycle of clearing, planting, abandoning, and migrating to virgin frontier lands was extended from coastal Georgia and South Carolina to the Mississippi. The legendary profits from cotton made planters oblivious to the landscape they left in their wake. In this macrohistorical cycle, the myth and the reality of the southern soil miner were one. (Cf. Cash 1941.)

Against this background it is perhaps not so surprising that a conservative, ‘proto-fascist’ admirer of Carlyle, and propagandist for a feudal slave society could show similar distrust of ‘free society’ and ‘free trade’ as do many 20<sup>th</sup> century ecologists and dependency theorists. With his neighbour John Taylor, whose treatises on practical agriculture Fitzhugh praised highly, he condemned the one-crop system, argued for rotation and the use of fertilizer, and advocated “local departments of agriculture so that scientific knowledge and regional experience might be combined” (Leavelle & Cook 1945: 165; cf. Wish 1943: 14). Small was already beautiful, and sound agriculture would lead to sound and appropriate local manufacture:

The balance of manure is the true balance of trade, and the great secret of national growth, wealth, prosperity, and strength. State governments are now active in advancing all industrial interests. State

protection is the order of the day [...]. Federal protection, a protective tariff, would but rivet our chains, and continue our dependence. We must take care of ourselves. (Fitzhugh 1859: 666.)

Fitzhugh summed up his ideal economic organisation as an ‘association of labour’, in contrast to the division of labour. The latter made labour more helpless in the hands of irresponsible management, whereas the former, so he believed, ensured the benevolence of the master by directly relating the welfare of the workers to the master’s own economic interest. Although primarily meaningful in Fitzhugh’s agrarian slave society, the concept seems to have been applied also to industrial organisation, in some kind of paternalistic management theory.

Fitzhugh saw no possibility of playing off the North against Britain, or choosing the lesser evil. The problem lay in that free trade itself would ensure the South an exploited position. He sought to diversify the economy even if it meant reducing commerce, and for this reason was endorsed by the fervent crusader for southern industrialisation, J. B. DeBow, who agreed that “the basic problems of the South originated in the region’s exaggerated dependence on staple crops” (Persky 1992: 126). Theorists of exploitative trade or dependency are obviously easier to find in regions that are marginal to expansive economies, yet also highly vocal. This is exemplified not only in the *dependistas*, but in a sense also in the Canadian political economy tradition. As we shall see in Chapter 3, the importance of Harold Innis, is not limited to being the originator of the ‘staple thesis’ in Canadian historiography, but lies more substantially in his sustained search for, and avoidance of, the ‘biases’ of the world, which conducted him through the preconceived ideas of the economic and historical professions, *e.g.*, on mercantilism and nationalism.

In time, there has developed something like an alternative to mainstream political economy, a peripheral mainstream, where the inequality between periphery and centre was often interpreted in terms of an exchange of raw materials for manufactures. Including, notably the terms of trade argument in the work of the Argentinean Raúl Prebisch, along with that of Hans Singer and Ragnar Nurkse (Chapter 4), in the Latin and North American ‘dependency’ traditions, as well as their ecological avatars (Chapters 9-11), this can be seen partly as a mere continuance of the mercantilist apparatus. The dependency tradition will not be treated here. It was greatly inspired by the Vilnius-born timber-trader, Moscow and Frankfurt educated, North American Paul Baran, whose reinterpretation of the relation between capitalism and underdevelopment prepared for subsequent Marxist debate on unequal exchange. However, he also discarded both the importance of the terms of trade and the transfers of value through trade – the two meaningful senses of unequal or non-equivalent exchange – to the benefit of ‘transfers of surplus’ within monopolistic multinationals. This neglect was continued in the work of Andre Gunder Frank (1967), and has perhaps contributed to the theoretical vagueness on the issue in the work of Immanuel Wallerstein (*e.g.*, 1974-89, II, 1979, 1985).

In spite of their many differences, certain similarities in inspiration may nevertheless be identified among these Western peripheral theorists. Thus, Fitzhugh, Innis and Prebisch, discovered the exposed position of peripheries through the change of perceived centre from the British metropolis to the American – perhaps even Emmanuel, since Greek emigration to the United States had become much more difficult in the 1920s – and they partly continued the interpretation in terms of metropolises and hinterlands, although at least Innis also explicitly criticised it. Lewis’s inspiration came rather from the classical tradition and the attempt to understand, stimulated by the spectre of Third World communist revolutions and Truman’s Point Four, why the industrial revolution had not realised in the underdeveloped countries, but who was also observant on racist impediments to labour mobility.

Before turning to these Western peripherals, however, we shall take a look at the Marxist followers of the labour theory of value, who took up a rather different tune from that of Fitzhugh and those politically conservative American, German and in general historical

economists who questioned the practical wisdom of the theory of comparative advantage and the liberal creed of free trade. The conservatives commonly abhorred the Ricardian vision, welcomed by Marxists, of a society based on social conflict, as well as the increased domestic conflict they felt implied in free trade. If the principal intellectual descendants focusing on the labour theory of value can be found in the Marxian tradition, it was much more concerned with domestic matters and rarely dared treading outside the confines where Marx had not shown the way. For lack of anything sanctioned or better, Marxism tended to accept the theory of comparative advantage and be content to denounce imperialist and monopolistic machinations. I shall argue below that the original argument on non-equivalent exchange was applied in international trade, with the theoretical novelty of international capital mobility, almost unconsciously. Unlike the centre-periphery approach, the geographical centre of Marxism was mostly on the eastern periphery – based in central and eastern Europe, with important following in East Asia.

## Chapter 2. Marxist theories of non-equivalent exchange

In the German-Austrian tradition, on which my efforts will be concentrated here, non-equivalent exchange appeared originally in an explanation of national hostilities. The main tradition adopting the Ricardian labour value approach was of course the Marxist, based on the difference between ‘values’ and ‘prices of production’ to be found in Marx’s *Capital* (Vol. I and III). As I shall argue below, this was originally applied to the problem of international trade almost by accident, through the works of Bauer and Grossmann, while such transfers of value were notably disregarded and even outright rejected in the main tradition behind Marxist dependency analyses.

The other principal early Marxist tradition was the Russian and Soviet. Preoccupied as he was with other matters, Marx’s early and middle aged views on Russia had not been well-informed, certainly not based on materialist analysis, emphasising instead its barbarian and ‘semi-Asiatic’ mode of production.<sup>20</sup> Avineri (quoted in Arndt 1973: 15f.) has pointed out his undifferentiated references to ‘barbarians’, ‘semi-barbarians’, ‘nations of peasants’, ‘the East’ in the *Manifesto*, surprising in view of its universal claims. Marx’s view seemed an uneasy combination of “a sophisticated, carefully worked out schema describing the historical dynamism of European societies, rather simple-mindedly grafted upon a dismissal of all non-European forms” under the static, unchanging, and totally non-dialectical presentation of the ‘Asiatic mode of production’. This lack of internal development made colonial expansion a brutal but necessary step towards the victory of socialism, without which Asia and Africa would not emancipate themselves from their stagnant backwardness.

This faith shows up clearly in his writings on India, where, for all its evils, British rule had at least helped destroy pre-capitalist peasant attitudes and Oriental despotism. The independent and self-supportive Hindu village system based on domestic manufactures and hand-tilling agriculture, had been dissolved through the social revolution unconsciously brought about by free-trade. “Sickening” as it was to see them “thrown into a sea of woes”, it was not to be regretted, Marx informed Mosaically, since their “barbarian egotism which, concentrating on some miserable patch of land, had quietly witnessed the ruin of empires, the perpetration of unspeakable cruelties, the massacre of the population of large towns,” their “undignified, stationary, and vegetative life” which “rendered murder itself a religious rite”, their castes and slavery, had to be undone along with their “brutalizing worship of nature, exhibiting its degradation in the fact that man, the sovereign of nature, fell down on his knees in adoration of Hanuman, the monkey, and Sabbala, the cow” (Marx 1974 [orig. 25 June 1853]: 40f.). In India, the railway system was the forerunner of modern industry, exemplifying how the “bourgeois period of history had to create the material basis of the new world”, the means of universal intercourse and mutual economic dependency, along with the development of man’s productive powers transforming material production into a scientific domination of natural agencies. “Bourgeois industry and commerce create these material

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<sup>20</sup> Howard & King (1989: 134) comment: “Even Stalin, never noted for sensitivity in matters of theory, was moved to criticise the absence of a materialist analysis. [...] The view that it had experienced no ‘internal history’ prior to the late 1850s borders on the absurd.” In underlining its non-Western character Marx was nevertheless followed by major Russian and Soviet theorists, until the very notion of an Asiatic social formation was repudiated under Stalin’s dictatorship: “its apparent similarity with Soviet reality was altogether too close for comfort” (*ibid.*: 135).

conditions of a new world in the same way as geological revolutions have created the surface of the earth” (Marx 1983 [orig. 8 Aug. 1853]: 86f.).

In line with his views of colonialism, Marx’s ecological awareness was ‘more Benedictine than Franciscan’, as Vaillancourt (1996: 60f.) put it: “For Marx and Engels, indeed, nature must be put to the service of man. They wanted to organize and develop production to satisfy human needs, while at the same time conserving the regenerative capacity of nature. [...] They anticipated the damage that capitalism could inflict on mankind and on the planet, but they nonetheless remained fascinated with this system”. The scientific domination of the Earth was to be accomplished not least through chemical fertilisation expounded by Justus von Liebig, from whom Marx borrowed the concept of a ‘metabolism [*Stoffwechsel*] between man and nature’ (Foster 2000: 161f., 164, who [*ibid.*: 139] has understandable difficulties explaining away the *Manifesto*’s panegyric over the “subjection of nature’s forces to man” and the “clearing of whole continents for cultivation”). The fullest development of the individual’s creative capacities was seen as inseparable from the advanced stage of mastery and control over nature in all its forms, which itself was the product of the techno-economic achievements and momentum created by bourgeois society (cf. Warren 1980: 24f.). The metabolist approach was taken up by Bukharin in Russia, but his work, too, was certainly much more concerned with advancing Russia to industrial greatness and, therefore, truly socialist accumulation.

The Russian and Soviet tradition was concerned more directly with the obstacles to economic development in a backward, predominantly agrarian country. The problem of how to construct socialism under these circumstances was accentuated in the debates between Preobrazhensky (1965, 1980) and Bukharin, when the Bolsheviks eventually had taken power in the 1920s (cf. Day 1975, Domar 1966, Erlich 1950, 1960, Howard & King 1989). If Bukharin had by then come to see the problem of industrialisation as one of the restrictions of a poor peasant market, Preobrazhensky, with perhaps greater economic skill and observance on the different mode of accumulation in a planned economy, argued instead for ‘primitive socialist accumulation’, on par with that in capitalism. The best and politically most acceptable way to achieve this was through the price mechanism in a ‘non-equivalent exchange’, as he called it, although he agreed that for political reasons it would have to be called something else. Such exchange had only characterised the initial stages of capitalism – *primitive*, not mature, accumulation – and the same would be true under socialism, where primitive socialist accumulation would eventually give way to socialist accumulation, and non-equivalent exchange disappear. Preobrazhensky is perhaps unique in being the only Marxist actually to *advocate* non-equivalent exchange, an outspokenness which is wholly foreign to later periods, not only in the eastern bloc.

The Russian, German, east- and central European Marxist traditions were all cut short by National socialism and Stalinism in the 1930s, but revived again in eastern Europe and Communist countries as their ascendancy over body and mind slackened or withered. If something similar happened in Japan, there was a striking re-emergence of Marxist theory after the war when Touichi Nawa (1936, 1948, 1949, 1950, 1951) and others (Akamatsu 1950: Ch. 5, 1951, Ikuzawa 1957, Keiou Gijyuku Daigaku Keizai Gakkai 1959: 412-20, Kinoshita 1960a-b, Matsui 1963, 1970), also debated non-equivalent exchange (cf. also Morris-Suzuki 1989). In the 1980s and 1990s, following a rediscovery of the Emmanuelian problematic, a debate ensued involving Negishi (1989, 1991, 1993, 1999a, 1999b) and others (Nakatani 1999, Nakajima 1993, Nakajima & Izumi 1995). In Europe, following Marx (1959: 157f.) on the transfer of value from countries with a lower to a higher organic composition of capital, the earliest postwar species of a Marxist theory of non-equivalent exchange came in 1949 as part of Tito’s break with Stalin, when his Minister of Foreign Trade, Milentije

Popović (1950: 4-7, 57-60), wrote a polemical pamphlet against Soviet trade practices (cf. Wiles 1968, 1972: 254f., Emmanuel 1972a: 176f.).<sup>21</sup>

He was followed in 1951 by Tadeusz Lychowski (cf. Wiles 1968: 2f., 10ff., 1972: 249, 253) in Poland, who was greatly involved in obtaining reparations from Germany, but whose book was not published until the year after Stalin's death in 1953. Publication was a hazardous business after the first Congress of Polish Science in 1951 where it was declared, that Polish science had to be rebuilt from scratch according to the Soviet pattern, that the "fundamentals of economic science are lying in Marxist political economy which is the only true science of economic relations among people", that partisanship was not to be feared, because "the communist party ideology is the basic source for understanding objective development laws" (quoted in Porwit 1998: 88), and where any aberration from it was fiercely attacked. Lychowski's version of non-equivalent exchange can be seen against this necessity to adapt views and writings to the methodology and vocabulary of Soviet Marxism-Leninism. The subject was only banned from discussion so far as it concerned communist states, as illustrated by I. Ivanov (quoted by Lychowski, in Wiles 1972: 253) who in 1952 explained how "the possibility of non-equivalent exchange is excluded in the trade of democratic countries".

By 1954 Lychowski was accompanied by A. Santalov in the U.S.S.R. and Gunther Kohlmey in the G.D.R. Santalov (quoted in Andersson 1976: 167) also seems to restrict argument to trade between "backward countries, on the one hand, and imperialist powers, on the other", *i.e.*, not between communist states, which must have remained a rather sensitive subject, although it was here that it had its major interest. The basic idea was that the commodities of less productive countries were sold under their national value and those of the more developed over their national value, in which sense it was repeated by Dyumilen (1963), the Hungarian Tamás Nagy (1967, cf. Szentes 1985: 107).

The active introduction of Marxism in East Germany was also part of a deliberate attempt to free oneself and one's institutions from National Socialist elements (Krause 1998), and in this process Kohlmey – ironically, perhaps, a former member of the NSDAP (Barth *et al.* 1995) who had defected after Stalingrad – and his theory of non-equivalent exchange due to 'absolute', not 'relative' (*i.e.*, Ricardo's 'comparative'), costs, rose even to some international celebrity (Kohlmey 1962, orig. in 1954). Although Kohlmey, like most Eastern bloc economists, was preferably involved in domestic affairs and price policy, it was in this revival of a Marx as a theorist of international trade that he appears to have had greatest influence in the West – it may be that new theories could only be presented as something already to be found in Marx – although it found no favour with Emmanuel (*e.g.*, 1975a: 32). Mandel's (1962: 200f., 1972: Ch. 11, 1975) theory of 'unequal exchange' is in fact merely a rehearsal of Kohlmey's on absolute advantage, and in the end he apparently stuck more strictly to the dogma of international immobility of capital than did Kohlmey (1967: 1240, and esp. 1973: 1303f.; cf. Raffer 1987: 24f.).

The process of normalising and regularising trade relations in the early 1950s between the Soviet Union and other Eastern bloc countries received a powerful impetus from the troubles in Poland and Hungary, and by the latter half of the 1950s Soviet leadership publicly admitted past underpayments: "Trade henceforth was based on prices ruling at various dates in world (*i.e.* capitalist) markets" (Nove 1988: 351). Thus, by the 1960s, Soviet authors such as Roginsky, Shildkrut, and Papayan, criticised the view that differences in international values or productivities constituted non-equivalence any more than intra-national differences between individual producers. Different amounts of 'embodied labour' were exchanged as a

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<sup>21</sup> Asking for such prices as will eventually allow equal wages amounts in essence to asking for subsidies, although Popović does not call it this and instead claims that Yugoslavia is subsidising the more advanced communist countries, as in recent writings on the 'environmental debt' (cf. Chapter 11).

matter-of-course, and what counted was whether there were prolonged monopolistic deviations from international values, or prices of production (Andersson 1976: 169f.). The use in practice of world market prices (or, in theory, values or prices of production) as a guideline for international prices also among planned economies is what explains the importance to the Eastern bloc of the problem of non-equivalence under capitalism, a sense in which it was debated also by Bettelheim (1967) and Emmanuel (1966b-c). In the early 1960s the Czech economist Joseph Mervart (cf. Emmanuel 1972a: 94) questioned the belief in the possibility long-term monopolistic prices, and following Brezhnev, the ending of the Prague Spring, and the debate on Emmanuel, Soviet economists (Shmelyev, Khvoynik) began rejecting the concept of non-equivalence as incompatible with the theory of value altogether. A similar debate on non-equivalent exchange to the 1950s East European, emerged in China after the change of policy in the late 1970s, where it was basically agreed that Ricardo's comparative costs were still applicable – fortunately enough, in line with the official line to open up the economy (Ma 1986, Woo & Tsang 1988).

Before its undoing in the 1930s, the German language tradition produced what is sometimes seen as the 'classical' Marxist canon. Here I shall trace the origins of non-equivalent exchange theories in Austria, through the novel adaptation of Marxian prices of production to the premise of international equalisation of the rate of profit. This application ensures that branches/regions/countries with a capital intensity, or in Marxian terms an organic composition of capital, above the average will benefit from an inflow of surplus value from those with an organic composition below average.<sup>22</sup> It was suggested above that it could be found already in the work of Quesnay. The pioneer in the Marxist instance was Otto Bauer, whose geographical position in the Austro-Hungarian Habsburg Empire, seems to have made him unaware of transgressing any theoretical boundaries, although his observations on the conflicts between workers of different nationality provide a clear link to the later theory of Arghiri Emmanuel. The theoretical novelty became apparent with Henryk Grossmann, to whom we then turn, and for whom this international 'transfer' of surplus value – which has been referred to as 'unequal exchange in the broad sense' but here will be called 'non-equivalent' exchange – served as one of the means to offset the falling rate of profit and the corresponding tendency towards the breakdown of capitalism. This he had discovered in the schemas for capitalist accumulation in Bauer. Of their critics, Sweezy will be singled out, inspiring in many ways to Baran and thereby the associated dependency tradition, which in many ways could preferably be contrasted with the tradition of unequal exchange.

## Otto Bauer and the bad luck of nationalism

The Austrian approach to non-equivalent exchange originated in relation to problems of nationalism and an interpretation of the breakdown of capitalism. Marx had not considered the problem of nationalism, and neither did he write his once projected book on the state, where it could have been touched upon. Thus, Marxism had no coherent stance on the question and even in Habsburg Vienna, where it was more apparently pressing than elsewhere, the foremost socialist theorists and politicians such as Otto Bauer and Karl Renner approached the question of nationalism and national causes with great reluctance, regretting their "bad luck" of having to set aside "far more important" socialist issues. I doing so,

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<sup>22</sup> Ecologists having difficulty finding anything of interest in this problematic can reflect upon the fact that the constant capital,  $c$ , of the organic composition,  $c/(c+v)$ , commonly refers to input-costs of land (raw materials) and depreciation ('entropy'), so that a high organic composition means a high proportion of raw materials use and entropy per worker (*i.e.*, per variable capital,  $v$ ). In this case, ecological *waste* leads to a (compensating?) non-equivalent net inflow of 'value' from less wasteful branches, etc. Of course, as Georgescu-Roegen (1971) pointed out, even variable capital is subjected to the entropy law.

however, Bauer came to formulate an important condition for later theories of unequal and non-equivalent exchange, although he seems not to have reflected upon its theoretical novelty, namely the international mobility of capital, or the equalisation of profit in a multinational state.

After Prussia militarily defeated Austria in 1866, the Austro-Hungarian Empire was divided into a dual monarchy through the Compromise (*Ausgleich*) of 1867, which remained the constitutional basis of the ‘multinational’ empire until its dissolution in 1918, and at the turn of the century with a population of 53 million people of more than fifteen nationalities. The two parts had separate parliaments, dominated by the Austro-Germans and the Magyars respectively, though foreign affairs, defence and finance were common concerns. Germans, Magyars, Poles and Croats, maintained their advantage over disfranchised Czechs, Slovenes, and Ukrainians in Austria, and Slovaks, Serbs, and Romanians in Hungary. To get a majority in parliament Austro-German rulers granted Polish administrative autonomy to the Polish nobility. This particularly antagonised the Czech nationalists, who wanted precisely that for Bohemia. Their resentment of the German presence there had a counterpart in the Pan-Germanic resentment of Czechs in the German parts of the Empire.

Like other big cities at the time, early 20<sup>th</sup> century, Vienna experienced an influx of diverse ethnic communities, much of it drawn by the greater prosperity of the empire’s German-speaking areas. The population of the capital increased more than four times in 53 years. With immigration from all over the empire, Vienna became a lively and cosmopolitan city, experiencing a period of not often equalled intellectual and artistic efflorescence. However, it also witnessed the erosion of its stimulating multiethnic, multicultural environment – an intimation of the complexities involved can be had in that even Jews themselves not infrequently became anti-Semites (cf. Timms 1986). Conservative Pan-Germans in particular showed deep resentment, which generated protracted controversies over schools instructing in languages other than German (notably Czech), bilingual notices, and place names. Victor Adler, the veteran socialist leader and founding member of the Socialist Party, reflected that in Austria, the question of the names of railway stations had become one of principle and of the most important kind. The Austrian Socialist Party was one of few organisations in Austria embracing multiple nationalities that survived more or less intact in this atmosphere of ethnic confrontation, and this only through investing considerable intellectual and political effort in overcoming mistrust.

Otto Bauer (1881–1938) was the son of a prosperous Jewish industrialist in Vienna. His father was a friend of Sigmund Freud, and his sister Ida was the famous patient referred to as ‘Dora’ in “Fragment of an Analysis of a Case of Hysteria” (Freud 1977). The Russian Revolution of 1905 and its implications for the Austro-Hungarian monarchy intrigued Otto Bauer, who at the time was completing his university studies in law. The very next day to his becoming Doctor of Jurisprudence on 25 January 1906, he wrote a letter to Karl Kautsky expressing fears that intensified animosity between Germans and Czechs could harm the Socialist workers’ movement, adding reluctantly that he might commit himself to writing “a few articles or pamphlets on national troubles”, despite being “much more interested in other matters” (quoted in Nimmi 2000: xvii). In February 1907, he began working on this “regrettable side-track”, resulting by the end of the year his voluminous book on ‘nationalities and social democracy’ (2000).

In May 1907, a parliament was democratically elected for the first time in the Austrian half of the Habsburg Empire. The Social Democratic parliamentary party was made up of 87 deputies drawn from the German, Czech, Polish, Italian, and Ruthenian Social Democratic movements. Charged with coordinating members of five nationalities, Adler appointed Bauer parliamentary party secretary. He had no great doubts when signing up as an Austrian army officer in World War I. He was taken as a prisoner of war to Russia, where he was freed after

the Bolshevik revolution with the help of Social-Revolutionaries, and on his return he assumed the leadership of his party's left wing. At the end of the war he became Austria's foreign minister, but was forced to resign after signing a secret *Anschluss* agreement with Germany. Through his many articles and books, including the second edition of his major book (1924), he nevertheless remained the SPÖ's effective leader and principal theoretician for the next two decades until the Dollfuss coup. In the party's 1926 Linz Programme, he set out the centrist position of Austro-Marxism, rejecting both Bolshevism and Revisionism. He became a member of the Austrian National Council from 1929, until the advent of National Socialism. In 1933 and 1934, Austrian democracy was put to a crucial test, when 'Austro-Fascism' led to the suspension of the parliamentary constitution. The task facing the humanist Bauer was one with which he ultimately proved unequal, searching for compromises with the authoritarian Right. With the outbreak of civil war on 12 February 1934, he was forced into exile, first to Czechoslovakia, then to Paris, where he died in 1938, a lonely and embittered emigrant (for more biographical material see Braunthal 1945: 70-8, 1961, Johnston 1972: 102ff., Nimmi 2000: xvi-xxiv).

In his chapter on the 'multinational state', Bauer (2000) included a subsection treating the economic aspects of national hatred, in particular between Germans and Czechs in Bohemia. He treated these as respectively more and less subject to capitalist development, or as more industrial and more agrarian, notwithstanding that next to the Germans, the Czechs were most industrially developed of all, followed by the Italian, then Poles and Slovenes, and finally the Ruthenians, Romanians and the Serbo-Croats, which were "almost purely agrarian nations", and where "the number of self-employed is greatest" (*ibid.*: 194f.).

He chose to study Bohemia because it represented "the most highly developed land of the monarchy and, precisely for this reason, is the land of the most animated national disputes" (*ibid.*: 198). There were marked antagonisms everywhere between the industrially developed and the agrarian regions, and where "the industrial regions were German and the rural regions Czech, this economic antagonism necessarily clothed itself in a national guise" (*loc. cit.*). Germany was geared more to capital than to craft industry, had a higher proportion of white- and blue-collar workers, and a lesser of self-employed. The opposition should therefore, he (*ibid.*: 200) argued, be comprehended first "as an opposition between the advanced capitalist regions and the less developed regions."

Bauer argued that Marxian price theory provided a valuable tool to understand the opposition in economic terms between regions at different levels of development that exchange goods with one another. Significantly, the important theoretical novelty of international equalisation of profits is not presented as such, but as a natural consequence of the determination of Marxian prices of production. Intra-national, or inter-regional mobility of capital in Marx had served to equalise the rates of surplus value as between the branches of production with varying capital intensity or in Marxian terminology varying organic composition of capital (incorporation a higher or lesser portion of 'dead' over 'living' capital, *i.e.*, capital proper – or machines and raw materials – over labour). Since Bauer put his problem in terms of two regions at different levels of capitalist development within the Habsburg Empire it is not evident that he really was innovating, except so far as the empire was itself a *multinational* state. He did not immediately spell out the necessary condition of the mobility of capital between regions, only that they exchanged commodities, which probably added to the confused comments Sweezy (cited below) was to make on the following relatively oft-cited passage:

The mass of the surplus value produced in both regions is determined by the mass of the surplus labor provided by the workers of both regions. But what part of this surplus labor falls to the capitalists in each of the two regions? The capital of the more highly developed region has a higher organic composition, that is, in the region that is more advanced in capitalist terms the same amount

of wage capital (variable capital) corresponds to a greater amount of material capital (constant capital) than is the case in the less developed region. Marx has taught us to understand that – due to the tendency to equilibrium in the rate of profit – it is not a case of the workers of each of the two regions producing surplus value for “their” capitalists; rather, the surplus value created by the workers of *both* regions is divided between the capitalists of both regions, not according to the amount of labor carried out in both regions, but according to the amount of capital that is active in each of the two regions. Since in the more highly developed region the same quantity of labor provided corresponds to more capital, the more highly developed region also attracts a larger proportion of the surplus value than corresponds to the quantity of the labour actually carried out in that region. It is as if the surplus value produced in both regions is first thrown on a pile and then divided between the capitalists according to the amount of their capital. The capitalists of the more highly developed region thus do not only exploit their own workers, but also always appropriate a part of the surplus value that has been produced in the less developed region.

If we consider only the prices of the commodities, each region receives in exchange as much as it provides; if we focus, on the other hand, on the values, it becomes clear that it is not equivalents that are exchanged. (Bauer 2000: 200.)

The way Bauer put it, in products provided by the region with higher organic composition there was less ‘objectified’ labour than in those received from the region with lower organic composition of capital: “The more highly developed region thus provides the less developed region, with which it conducts commercial relations, with less labor than the latter has to provide for the more advanced region” (*ibid.*: 200f.). Again, he omitted the condition that capital is mobile and competitive between the regions, but nevertheless maintained that the capital of the developed region appropriated a part of the labour of the less developed.

Bauer (*ibid.*: 201) observed the compensation agricultural regions had in ground rents, through which the owners of land could deduct part of the surplus value and “remove it from division among the capitalists on the basis of the amount of capital invested.” Here, the condition of equal rates of profit was made explicit, though not yet the mechanism by which it came to be. No doubt this was not enough to counter the net transfer of value by means of the production price of industrial products, he (*loc. cit.*) reminded, adding: “There can also be no doubt that this constitutes the basis of the economic relationship between German Bohemia and Czech Bohemia.” To make this case he even refers to the different wage levels:

Indeed, since wages in Czech Bohemia are lower than in German Bohemia and surplus labor time consequently makes up a greater fraction of the working day, a greater profit should be realized for every worker employed than is the case in German Bohemia. In reality, however, the profit realized by the German Bohemian capitalist class is unarguably greater, as it in fact must be in order to remain proportional to the size of the workforce employed in German Bohemia. Or, expressed another way: a greater amount of profit corresponds to every worker employed in German Bohemia than in the Czech region. This economic fact is manifested in the greater economic prosperity of the German Bohemian population, in the dazzling development of its cities, in the higher average level of culture found among this population. That which German nationalist authors so happily designate as the superior culture of German Bohemia and the “inferiority” of the Czech region is nothing other than the effect of the fact that governs all capitalist competition, the fact that the more highly developed regions appropriate a part of the value produced by the regions that are less developed in capitalist terms. (*Loc. cit.*)

Here there can be no doubt that he *did* conceive of the capitalists of the regions as being in competition with each other, and that he considered the rate of profit to be equalised and proportional to capital invested. What was lacking was rather any explanation of how and why wages should correspond to the higher level of capitalist development.

Having thus briefly considered profits, rents, and wages, Bauer (2000: 201f.) turned to direct taxes which also differed between the regions: “The higher level of taxation in German

Bohemia can also be attributed to this fact”, *i.e.*, of higher organic composition of capital, allowing the German parts to support a higher rate of direct taxation in proportion to the size of its population than could the Czech part of the land. Bauer was more interested in the consequences this had on the skewed power relations within the state, when not taking into account the ‘indirect’ taxation born by the masses, and the support which the less developed regions offered the material and intellectual culture of the more developed regions.

It all comes to the same whether one speaks of nations or, as Bauer, of regions. Whereas most Marxists, because of Marx’s non-treatment, have felt uncomfortable in dealing with the equalisation of the rate of profit in international trade, and thus with international prices of production, the actual vagueness of what would be considered national and what international trade in the Habsburg empire and its parts, apparently freed Bauer’s mind so that he did not even notice that he was transgressing any boundaries. As we shall see, the assumptions of international mobility of capital and immobility of labour were taken up and made more explicit by Henryk Grossmann and later by Arghiri Emmanuel. To all of them, the economic problem was intimately related to the problem of international worker solidarity. Bauer’s stand was not always clear-cut, as we shall see, because, confining himself to the Austrian problem, he ultimately invoked worker mobility as well as capital mobility.

Briefly put, theories of ‘unequal exchange’ can be said to differ in their implications from the mutual gains in Ricardian comparative advantage favoured by conventional Marxism, to the extent that they assume international mobility of capital and international immobility of labour. The principal interest and conflict awakened by the former, however, concerns the social relations and conflicts underlying the levels of prices, and it is an aim of this study to advance ‘unequal exchange’ in that sense, as distinct from ‘non-equivalent exchange’ for the mere net transfer of labour values. Contrary to much of Marxism, Bauer had a clear grasp of the theory of value as a useful instrument in the former respect. Thus, the implications for the worker mobility and the conflicts this generated constitute a particularly interesting and problematic area with respect to unequal exchange:

The fact that the German region has reached a higher level of industrial development also means that the population movement within Bohemia assumes great national significance. As everywhere else, the population has undergone a process of resettlement whereby a part of the population leaves the agrarian region and migrates into the industrial region. In national terms, this has meant the immigration of Czechs to the German region of Bohemia.” (*Ibid.*: 203.)

Bauer again reverted to the dichotomy agrarian and industrial. The process was the well-known destruction of the old putting-out system and the transformation of agriculture whereby the peasants’ sons and agricultural labourers no longer found a place for themselves in their homelands. Anticipating arguments rehearsed in the post-World War II debate on development, he gave both an external explanation of the higher wage levels in the relative level of political organisation, and of the intra-worker hostility, reminding of the relations between the Irish and the English:

The surplus of labor power and the inability of the agricultural proletariat to help itself through union organization reduced its living standards. By comparison, the demand for labor power increased in the industrial regions due to the constantly strong accumulation of capital, due to the conversion of surplus value into capital. Moreover, union struggle here resulted in wage increases, and the higher wages lured the Czech proletariat into the German regions. [...]

The Czech worker came from areas where the wages were low, where the standard of living was at a low level. Consequently, he arrived in the region as someone who undercut wages and often as a strikebreaker. It is no wonder, then, that he awakened the hatred and the rage of the German worker. (*Ibid.*: 204)

However nationalistically ‘German’ the capitalists of German Bohemia might have been, they had no difficulties seeing the advantage of replacing

the “covetous” German workers with Czech workers who have not yet discarded the vice of “confounded frugality.” In the first place they safeguard their profits at the cost of the German workers, and, if the hatred of German workers for the Czech immigrants is thereby nourished and if the workers – filled with national hatred – allow themselves to be enticed by a bourgeois national party, this represents a tidy bonus for the German capitalists. (*Ibid.*: 205)

The obvious hostilities were not enough to shake Bauer’s confidence in solidarity between German and Czech workers. However, this was apparently achieved by sheer necessity on the German part, and then by appeals to ideology. The Germans had

long since learned that the only method they have of protecting themselves against Czech wage undercutting and strikebreaking is that of winning the support of the Czech workers for their trade union organization and training them for union struggle. And the progress of the Czech workers’ movement has also filled the Czech proletariat with the consciousness of the solidarity of all worker interests. Thus, the undercutting of wages by Czechs has fortunately already become an exception. [...] The more proudly the Czech worker raises his head, the less does the German worker have to fear Czech wage undercutters and strikebreakers, the more he can hope for strong support from his Czech comrades in the struggle against capital and the class state. (*Ibid.*: 205, 207.)

In making these happy observations, Bauer seems to have forgotten that according to his own figures the Czech were the capitalistically second most developed, and that if there were mutual interests between his chosen nationalities, these were likely to be related to their basic economic similarities rather than disparities. It is also to be remembered that his ‘nationalities’ were still confined within a common ‘state’, and as he observed: “There is surely no capitalist land in which it is possible to restrict freedom of movement” (*ibid.*: 207). Fundamentally, solidarity was explained by worker mobility:

Czech immigration certainly initially awakened national hatred, national rage among German workers. However, this hatred was unable to take on the concrete form of political will: modern industrial workers cannot demand the repeal of the freedom of movement, a strategy that would represent the only means of countering Czech immigration. Bitter necessity has thus taught the German workers that only by waging a common struggle against capital, shoulder to shoulder with the Czech workers, can they achieve success.

It is precisely Czech immigration to the German industrial region that has taught the German workers to comprehend the solidarity of the interests of all workers, the necessity of the common struggle of the workers of all nations. (*Ibid.*: 205.)

Even allowing for the oversight that in the real world there were much greater differences in capitalist development than between Germans and Czechs, Bauer here made several illegitimate logical jumps, the most obvious being that, contrary to the case he had examined, in the real world it is not only possible to hinder international worker migration, but this was precisely what was happening at a grand scale, at least by the time of his second edition (James 2001), and already in the 19<sup>th</sup> century if Indian and Chinese migrants are taken into account. The only thing that would confer a ‘realisation’ of international worker solidarity would be a ‘bitter lesson’ that such low-wage immigration could not be stopped. At any rate, it is interesting to note how Bauer took for granted that it was the privileged, wealthy and more highly developed German workers who had to be forced to make this realisation, contrary to the implication in much other Marxism that the mere handling of more advanced means of production somehow has a mental spill-over of solidarity. In all but words, the

argument is close to identifying the whole of German Bohemian working class as a 'labour aristocracy'.

As it was, Bauer was saved, or at least allowed himself to be saved, from drawing this conclusion by the events reported, and so went on to the more irreconcilable petty bourgeois nationalism, which tallied ill with the economic advantages they reaped from worker immigration. The national sentiment and hatred of the petty bourgeois were founded in the mistrust and aversion with which he viewed everything not rooted in the soil of the traditional homeland, everything strange, unfamiliar and foreign to the narrow local sphere in which he was born, married and died. When eventually faced with low-wage worker demands, and even more, the competitive petty bourgeois of the poor regions, his animosity and prejudices were reinforced – the same with the respective intelligentsias (*ibid.*: 205-11).

One cannot say that Bauer reached a compelling solution to this problem. It took off in the industrial character of the German and the 'agricultural' character of the Czech parts of the land, explaining the immigration of Czech workers, petty bourgeoisie, and intelligentsia to the German. "This immigration aroused the hatred of the German population, above all that of the German petty bourgeoisie and the German intelligentsia", but because the latter two still wanted a cheap labour supply, they "found emotional release in demonstrations devoid of objective or sense, in fruitless outcry. The hatred felt by the majority awakened that felt by the minority" (*ibid.*: 212). The national hatred that filled the Austrian population, and particularly its petty bourgeoisie, was a product of a painful process of population resettlement and the antagonisms and struggles it produced, he explained: "it is nothing more than one of many forms of the social hatred, the class hatred, engendered by the violent upheaval that has been produced everywhere in the old form of society by modern capitalism. *National hatred is transformed class hatred*" (*ibid.*: 213). So, national hatred sprang from the German majority's hatred of low-wage immigrants, then 'realising' their international solidarity, but apparently only to be convinced again by the irrational outcries of the petty bourgeoisie whose ingrained and as yet unexplained hatred of strangers made them particularly receptive. It is not clear in which sense or by what means class hatred was transformed into national hatred.

Bauer's book was written to account for the internal strains of the Habsburg Empire before the First World War that broke it to pieces. The extent of hatred of which the working classes, too, were capable was in all probability beyond his imagination, and had the book been conceived after the war, or better yet by an attitude of mind formed at that time, it would surely have tackled these problems differently. Even the preface to the second edition gives only the briefest reference to the Great War, and only so far as it relates to the necessity of dissolution of the empire if the Austro-Hungarian nationalities problem was to be solved. What this would do to the labour mobility which he had previously thought to assure international solidarity we can only guess.

When of late Nairn (1977: 41) proposed something approaching a plausible Marxist interpretation of nationalism, it consisted in the political christening of the working classes having been 'channelled' into its nationalist form by 'populist' members of the middle class and intelligentsia. But as Hobsbawm (1977: 13) noted, and Benedict Anderson (1991: 2f.) quoted, Marxist movements and states have tended to become national not only in form but in substance, *i.e.*, nationalist, and they found no indication that this tendency would not remain. Nairn (1975: 3) spoke of the 'theory' of nationalism as the great historical failure of Marxism, something Anderson (1991: 3) found to be a euphemism considering the minuscule efforts afforded the problem. If anything, it was an inconvenient *anomaly* for Marxist theory, which for precisely this reason had been elided rather than confronted. Gellner (1997: 168) has amusingly described the agony shown by Marxists before the nationalist phenomenon, resulting in what he refers to as the theory of mistaken address: Just like certain extreme Shiites believe the arch-angel Gabriel to have made a mistake when giving the word to

Mohammed, when it was instead meant for Ali, so Marxists would like to believe that the spirit of history or human consciousness has made a giant blunder. The message of awakening was meant for classes, but was instead left with nations. What revolutionary activists now need to do, is to persuade the mistaken receiver to deliver the message to its rightful owner. His unwillingness to do so causes the activist very much frustration and irritation.

From a Marxist point of view, one could perhaps argue that there was an implicit timeline in Marx's proposed books on land-owners, capital, and wage-labour. If the first had been the dominant class under feudalism, the second dominated under Marx's own bourgeois epoch, and therefore became his principal theme. The era of the (wage-)labourer was still in the future, but unfortunately not, as he himself would probably have it, debouching into the 'final battle' of the communist revolution. Instead, the battles became nationalist and turned, much more profanely and ultimately tragically, into a kind of nation-class or welfare-stately consumer society. This implies a more intimate relation between these classes and a logic of the (nation-) state (cf. Andersson 1979, 1981a, 1981b, 1982, Tilly 1992), but, of course, the 'state' was also left untouched by Marx in his unwritten tomes. Marxism and those inspired by it have much fearless work to be done if they are to resolve the problem of nationalism. Part of the problem is directly related to the problematic of unequal exchange relating to non-equalisable wages and levels of consumption. This has also been of central concern in the ecologist criticism of the Marxist 'enlistment of the workers for technocracy' (Matz 1978), and of the consumer society in general. Part of it relates to the decline, or simply absence, of international solidarity, worker or not, which was sealed in the First World War. If there were such a thing as bourgeois and worker cosmopolitanism, the First World War certainly hastened the already commenced demise of both.

Whereas Marxist theory and nationalism have been uncomfortable bed-fellows, liberal free-trade ideals have often inspired critical confrontation. Writing at the end of the Second World War, E. H. Carr (1945: 2, 6-9, 17ff.) identified three stages in the history of nationalism, roughly corresponding to those implied by Marx's tomes above. The first, conservative period began with the disintegration of the union of the medieval church and religion, and the establishment of the nation state and national churches, and whose essential characteristic was the identification of the nation with the person of the sovereign. The second, liberal and relatively peaceful period from the Napoleonic to the First World War, saw the 'internationalism' of the free-running economic sector coexisting with political nationalism under intensifying national sentiments. Democratisation of the nation only half-heartedly included the worker or common man, but nevertheless made it wholly foreign to the 18<sup>th</sup> century, while imparting 'a new and disturbing emotional fervour', which came into its own only in the third, socialist period. It made itself felt after 1870 but surfaced only in 1914, when the compromises of the previous era were driven to collapse in a catastrophic growth of nationalism and the bankruptcy of internationalism. People in common did not necessarily become more nationalist or resentful of international cooperation, Carr explained, but nationalism "began to operate in a new political and economic environment". The latter was unfortunately left unspecified, but certainly related to the enormous expansion of the national press and international communications, including not only the telegraph and telephone, but regular steamship and railway transportation. These enhanced both labour and capital mobility, compressing the world in what for many identities seems to have been an over-challenging way – certainly for the diplomatic community, which was thrown into a 'war by timetable' (A. J. P. Taylor 1969). Seeming to Carr like logical steps in a process inaugurated long before, the suggested 'causes' – real national citizenship for new social layers, extended franchise, homogenising obligatory schooling, self-conscious labour organisations; visible union of economic and political power; and a rise of the number of nations (cf. Hayes 1931, McLuhan 1962, Gellner 1997: 43f., 52, 80) – were not self-evidently distinct from 'effects'.

This ‘socialisation’ of the nation was much more radical than the foregoing ‘democratisation’:

Henceforth the political power of the masses was directed to improving their own social and economic lot. The primary aim of national policy was no longer merely to maintain order and conduct what was narrowly defined as public business, but to minister to the welfare of members of the nation and to enable them to earn their living. The democratisation of the nation in the second period had meant the assertion of the political claims of the dominant middle class. The socialization of the nation for the first time brings the economic claims of the masses into the forefront of the picture. The defence of wages and employment becomes a concern of national policy and must be asserted, if necessary, against the national policies of other countries; and this in turn gives the worker an intimate practical interest in the policy and power of his nation. The socialization of the nation has as its natural corollary the nationalization of socialism. (Carr 1945: 18f.)

At the time the implication was obviously to National Socialism, but the remark is true in a more fundamental sense, captured by Myrdal’s (1957, 1964 [orig. 1956]) identification of the welfare state as nationalist. Always hard for Marxists to swallow, this idea reappeared only with peripheral radicals when an outlet for solidarity was found in underdeveloped countries.

There is nevertheless some intimation in Bauer’s work of a more general, basically historical materialist interpretation of nationalism, relating it simply to the great transformation of the work of society occasioned by the “penetration by modern capitalism” and “rapid industrialization”, which somehow awakened and intensified national hatred (Bauer 2000: 217). The systematic increase in the organic composition of capital, involved “the developments of modern means of transport, of the railway and the steamship, [which] made it possible for the fertile lands in distant parts of the globe to be turned to the service of the grain requirements of Europe” (*ibid.*: 217f.). It was “synonymous with the transition from the manufactory to the factory, which has awakened the nation from the slumber of non-historical existence”, and “with the movement of the workforce out of agriculture into industry, which through a diverse process gives rise to national hatred, the driving force of national struggles” (*ibid.*: 218). In short, “the transformation of the power relations of the nations of Austria, the national struggles, are one of the many violent effects of the progress to a higher organic composition of capital” (*loc. cit.*).

In spite of Gellner’s ironies above, most current interpretations, including Carr’s historical and Gellner’s sociological, are variations on this theme, originating perhaps with Tocqueville, of how industrial society, directly or through its disruptions, has somehow caused nationalism. Gellner’s (1997: *e.g.*, 72f., 177) recurrent point is the common modernity and artificiality of nationalism and industrial society, but only rarely does the presentation become so historically specific as to characterise the epoch of nationalism (with premonitions in the Reformation) as that of cheap paper, printing, general literacy, and fast communications, giving birth to countless ideologies competing for our favours (*ibid.*: 60, 163). There is much talk of “objective and inevitable imperatives” and “objective need”, arising presumably from an “industrial social organisation”, and surfacing as nationalism (*ibid.*: 58, 68; cf. 66, 70). Criticising K. W. Deutsch he points out that it is not the disseminated content, but the media themselves, the penetration and meaning of abstract, centralised, unidirectional communication from one to many, that automatically brings about the idea of nationalism. The most important message is generated by the medium itself, he explains (*ibid.*: 164f.), with McLuhan (1962, 1964b) but without acknowledgement. In fact, Deutsch (1952: 390) appears to have conceived his approach in reaction to Innis (1950, 1951; cf. Chapter 3), who in turn inspired McLuhan. Like Innis or Febvre & Martin (1958), McLuhan (1962) saw intimate relations between industrial society and nationalism via the printing press, a factor neglected by Bauer.

Hobsbawm (1998: 209f., 221ff., 227) estimates that the apex of nationalism occurred in the period before 1945, and that since then a completely different type of imagined community has begun to be erected out of lost sense of identity and perceived menace from 'the Others'. Together with the obscure emotional intensification observed by Carr for the previous period, this is in line with McLuhan's (1964b, McLuhan & McLuhan 1988) observations on how the overheated medium reverses into its opposite. In fact, his satirical metaphor of the 'global village' referred precisely to how the extended communications were reviving, on a global scale, the anxious vigilance, rumour mongering, and informal settlements of the enclosed village life that one had just proudly left behind. By contrast to Innis, McLuhan or Hobsbawm, neither Gellner (1997) nor Anderson (1991) shows any appreciation of different or intensified use of media having basically different effects on communities. Noting the important transition from a national household to a world economy, Hobsbawm cannot avoid linking these changes to the technological revolution in transport and communications, and to the fact that factors of production for a long time have been able to move freely around the world. This contrasts starkly with Gellner's (1997: 128) parading that, in his model, capital – *i.e.*, one of the forces of production – is not even mentioned.

The theme of mobility of the factors of production in Bauer's work, and the conflicts thus engendered, has thus reappeared as a possibly fruitful line of interpretation. By the latter half of the 19<sup>th</sup> century the international mobility of labour and capital were indeed higher than ever before. However, this mobility was not uniform in either time or space. In addition to the coercive and restrictive forces on migration, there were both attractive and repellent forces at work. In line with Bauer's approach on the mobility or immobility of factors, though reaching less comfortable conclusions regarding nationalism and the lack of international worker solidarity, Lewis (Chapter 5) and particularly Emmanuel (Chapter 6-8) provided frameworks for interpreting these forces in accordance with experience. Centripetal forces for labour were of course relatively wealthy, high-wage areas, where living conditions were better, or thought to be so. Surprisingly to some, *e.g.*, in the perspective of Lewis, but more coherently in Emmanuel's, these areas also attracted capital and technology, in spite or because of higher costs of production, because it was here that outlets could be found and that international specialisation would favour 'higher organic composition'. These arguments were still in the future, however, and Bauer's most immediate follower was another Marxist at one time active in Austria, namely Henryk Grossmann, to whom we shall now turn.

## Henryk Grossmann and the breakdown of capitalism

Grossmann was born in 1881 in Krakow, as the son of a Jewish mine-owner in Galicia, Poland. He studied law and then economics in Krakow and Vienna, publishing works on Austrian economic history. He became a Polish subject in 1918 and worked in Warsaw for the Central Statistical Office, before joining the Institut für Sozialforschung (Institute for Social Research) in Frankfurt in 1925. Although he had been a member of the Polish Communist Party, the dogmatic authoritarianism and incompetence of the overly bureaucratic German Communist Party repelled otherwise sympathetic Marxists like Grossmann, Fritz Sternberg or Paul Baran. After Hitler's *Machtübernahme* he fled to Paris (1933-35), then London (1935-37), before accompanying the Institute to New York. He returned to Europe in 1949 as Professor of Political Economy at the University of Leipzig, where he died the following year.

The argument of Grossmann's single most important work (1967, orig. 1929) on 'the law of accumulation and breakdown of the capitalist system' had been presented in lectures at the Institute for Social Research and at the University of Frankfurt in 1926 to 27. However, following its publication and the response it received, he grew increasingly alienated from them. His interests were much more economic than those of the leading members of the

Frankfurt School, and his support of the Soviet Union added to their estrangement. Furthermore, the economic historian Werner Sombart had published a new three-volume edition of *Der Moderne Kapitalismus* in 1928 (first in 1902), whose interpretation of European history placed groups of nations into ‘centre’ and ‘periphery’ – Great Britain supported by the United States, and surrounded by an exploited and dominated Central, Eastern and Southern Europe. Although as an interpretation of capitalism the general approach had been criticised by Veblen (1903), on lines later repeated by Brenner (1977) vs. Wallerstein (1974), Sombart’s book was very influential both in central Europe (Manoilescu 1929) and later, directly or indirectly, for Latin American economists such as Prebisch (ECLA 1949). The economists of the Frankfurt School, on the other hand, disputed it fiercely “on the orthodox Marxist grounds that exploitation by one proletariat (and thus one ‘country’) by another was theoretically impossible” (FitzGerald 1994: 94; cf. Jay 1973). The hostility towards the idea of international transfers of value was shared by Baran, another associate of the Frankfurt school, who brought it with him into the postwar dependency tradition. By contrast, Grossmann was to incorporate this idea as a factor counteracting the nonetheless inevitable breakdown of capitalism.

The Marxist discussion on the breakdown of the capitalist system – as deriving from the inner workings of the system itself – had begun with some articles by Eduard Bernstein published in *Die Neue Zeit* in 1896 and 1897. Grossmann, for his part, believed that his theory of the breakdown of the capitalist system sprang from Marx’s *method*, involving notably the reproduction schemas of which we shall see some examples below. They did not spring from the resulting *teachings* to which both Marxists and Marx’s critics had often clung, taking abstract and simplifying preconditions for the real world (Grossmann 1967: v-vii). The contradiction that Böhm-Bawerk (1973) thought he had discovered between Volumes I and III, Grossmann argued to be an example of Marx’s method of treating every problem at least *twice*, with simplifying assumptions and in more final form. Grossmann’s has been called the first serious attempt to develop Marx’s analysis in Volume III of *Capital*, in particular the tendency of the rate of profit to decline (Howard & King 1989: 316). Outdoing Marx, he undertook to study his chosen problem *thrice*: first, the conditions for the normal process of reproduction were examined; secondly, the impact of the accumulation of capital and the resulting tendency towards breakdown were introduced; thirdly, the modifying factors counteracting this tendency were put to the test. The character of his work was theoretical, not empirical, and introduced factual matters only to illustrate theoretical deductions, limiting himself to showing

how the sum of the empirically observable tendencies of the world economy, which are seen as the characteristic hallmarks of the *latest* phase of capitalist development (and have been enumerated in various writings on imperialism: monopoly organisations, export of capital, the struggle for the division of raw-material-producing areas, etc.) are secondary *surface appearances*, which arise from the *essence* of capital accumulation as the primary root. By establishing this context it is possible, without reverting to a special ad-hoc-theory, to unambiguously account for all capitalist appearances, including making comprehensible the latest imperialist phase of capitalism, from *one* principle, the Marxian law of value. (Grossmann 1967: x; partial trans. in Howard & King 1989: 317f.)

The book’s organisation followed his method. The first chapter (spreading into the first six sections of the second) was a lengthy summary of the existing Marxist literature on the breakdown and end of the capitalist mode of production. The second attempted to present ‘Marx’s’ theory (*i.e.*, Grossmann’s own) of accumulation and breakdown in its pure form, which builds on the analysis of the falling rate of profit, and is used to derive ‘his’ model of cyclical crisis. The third chapter assessed the counteracting tendencies which operate, first in

a hypothesised closed economy and then, which is the most interesting section from our perspective, on the world market, opening it up to gains from non-equivalent exchange. Finally, Grossmann sets out the political implications of his analysis for the class struggle and the prospects for revolutionary change.

Both Grossmann's argument on the falling rate of profit and on the acquisition by the 'capital' of developed countries of part of the 'labour' of less developed were extensions from arguments found in Bauer, but as he (1967: 430, n. 331) observed Bauer had not attempted bringing them in accord with one another. (The words *entwickelten* and *minder entwickelten* were also Bauer's, and predated the English by decades.) To see how the non-equivalent exchange fits into his overall framework of the breakdown and crises of capitalism, we shall first review this debate up to the contribution of Bauer, extending from which Grossmann reached his conclusions, thus unifying two of Bauer's arguments thitherto kept apart.

Emphasising Marx's method, Grossmann built his case on a criticism of his predecessors' use of the reproduction schemes found in the second volume of Marx's *Capital*. Among other such schemas, Marx (1915: 600f.) constructed that of Table 1 for what is called 'extended' reproduction, *i.e.*, showing an accumulation of capital, and as opposed to 'simple' reproduction in which the same amount is reproduced in each period.

Table 1. *Marx's second schema for extended reproduction.*

Period	Department	<i>c</i> Constant capital	<i>v</i> Variable capital		<i>m</i> Surplus value	=	<i>V</i> Value <i>c + v + m</i>
0	I	5,000+	1,000	+	1,000	=	7,000
	II	1,430+	285	+	285	=	2,000
		<u>6,430+</u>	<u>1,285</u>	+	<u>1,285</u>	=	<u>9,000</u>
1 <sup>st</sup>	I	5,417+	1,083	+	1,083	=	7,583
	II	1,583+	316	+	316	=	2,215
		<u>7,000+</u>	<u>1,399</u>	+	<u>1,399</u>	=	<u>9,798</u>
2 <sup>nd</sup>	I	5,869+	1,173	+	1,173	=	8,215
	II	1,715+	342	+	342	=	2,399
		<u>7,583+</u>	<u>1,515</u>	+	<u>1,515</u>	=	<u>10,614</u>
3 <sup>rd</sup>	I	6,358+	1,271	+	1,271	=	8,900
	II	1,858+	371	+	371	=	2,600
		<u>8,216+</u>	<u>1,642</u>	+	<u>1,642</u>	=	<u>11,500</u>

Source: Marx 1915: 600f.

The actual numerical values of the first year are arbitrary; what is important is the numerical demonstration of relations and possibilities. Department I produces means of production used in the subsequent period, and Department II produces consumption goods. The ratio between the value produced and each constituent part is constant, as is the ratio between departments after the 0<sup>th</sup> period. As a description of reality this schema is unrealistic because, with a constant organic composition of capital ( $c/[v+m]$ ), it does not take account of technical progress. This implies that the surplus value from each round of production must be proportionately distributed between constant and variable capital, which not only contradicts the rest of Marx whole production, but is in itself a wholly gratuitous assumption. Rosa Luxemburg (1951: 337) therefore tried to manipulate this schema so as to take account of both increased organic composition (capital intensity) and increased rate of surplus. She

arrived at the schema in Table 2, which she wanted to be both intensive ( $c/v$ , or  $c/[v+m]$  increases) and extended (the quantity of variable capital, *i.e.*, labour, increases) reproduction.

Table 2. *Luxemburg's schema for mixed extended reproduction.*

Period	Department	$c$ Constant capital	$v$ Variable capital		$m$ Surplus value	=	$V$ Value $c + v + m$
1 <sup>st</sup>	I	5,000+	1,000	+	1,000	=	7,000
	II	1,430+	285	+	285	=	2,000
		6,430+	1,285	+	1,285	=	9,000
2 <sup>nd</sup>	I	5,428 <sub>4/7</sub>	+ 1,071 <sub>3/7</sub>	+	1,083	=	7,583
	II	1,583 <sub>5/7</sub>	+ 311 <sub>2/7</sub>	+	316	=	2,215
		7,016 <sub>2/7</sub>	+ 1,382 <sub>5/7</sub>	+	1,399	=	9,798
3 <sup>rd</sup>	I	5,903+	1,139	+	1,173	=	8,215
	II	1,726+	331	+	342	=	2,399
		7,629+	1,470	+	1,515	=	10,614
4 <sup>th</sup>	I	6,424+	1,205	+	1,271	=	8,900
	II	1,879+	350	+	371	=	2,600
		8,303+	1,555	+	1,642	=	11,500

Source: Luxemburg 1951: 337.

Here Luxemburg found that to the extent that the organic composition increases, there will be a relative underproduction in department I, producing means of production (corresponding to  $70162/7 - 7000 = 162/7$  in the 2<sup>nd</sup> round) and a corresponding overproduction in department II, producing consumption goods. This discrepancy increases from year to year ( $162/7, 46, 88, \dots$ ), from which she concluded that any modification giving an increased organic composition will demonstrate the inherent tendency of the system towards overproduction of consumption goods, and that it is therefore mathematically impossible for the system to reproduce without exchanging with non-capitalist economies that can absorb this excess, and supply the lack of means of production (raw materials).

Luxemburg (1972: 5) expected all Marxists to be convinced by her arguments and to say that hers was “the only possible and thinkable solution to the problem”, so she was genuinely surprised at the reception accorded to it in the Social Democratic press. Most of her critics were probably guided more by political motives – the same could be said of her adherents – than any desire to rectify theoretical shortcomings, but these shortcomings are still highly conspicuous. In Sweezy’s (1942: 178) evaluation, hers was certainly the most elaborate underconsumptionist extension of Marx’s work, and “probably the one to attract more adherents than any other,” but was nevertheless “a clear failure from a logical standpoint.”

As described by Emmanuel (1984: 185), Luxemburg’s case is based in the following argument: “If (i) the rate of surplus-value is the same everywhere, (ii) capitalists save the same proportion of their profits wherever they may be, and (iii) they can only invest these savings in their own Department, the two Departments must expand at the same rate, whereas they produce the material elements of  $c$  and  $v$  respectively. Since  $c$  must grow faster than  $v$ , a shortfall in I’s output and oversupply of II’s output necessarily follows.” Accordingly, a capitalist economy must always expand at the expense of non-capitalist ones in search of markets. The only problem is that assumption (iii) is, in Emmanuel’s words, “not merely gratuitous but absurd”. The basic argument against it, which “alone is enough to invalidate quite a few theories of crisis” (*ibid.*: 168) – that the equalisation of profit rates requires free

mobility of capital throughout the economy – had been provided even earlier by Tugan-Baranowsky (1905: 227, n. 1). Robinson (1951: 25) concluded that her model “is overdetermined because of the rule that the increment of capital within each Department at the end of a year must equal saving made within the same Department during the year. If capitalists from Department II were permitted to lend part of their savings to Department I to be invested as capital, a breakdown would no longer be inevitable” (cf. Brewer 1990: 65, Howard & King 1989).

In fact, it is not certain that even Tugan-Baranowsky drew the logical conclusion from his observation – that the production of the means of production could be wholly disengaged from the production of consumption goods – by constructing a schema of intensive extended reproduction. This was first done in Bauer’s (1986) review of Luxemburg’s book for *Die Neue Zeit* in 1913 (Table 3), in response to which Luxemburg (1972: 48) rejected as irrelevant the kind of numerical examples with which she herself had built her own argument, and trying to ridicule her opponents by calling it a viscous circle and a merry-go-round running empty.

Table 3. *Bauer’s schema for intensive extended reproduction.*

Year	Department	<i>c</i>		<i>v</i>		<i>m</i>		<i>V</i> Value <i>c + v + m</i>
		Constant capital	+	Variable capital	+	Consumed in <i>c</i>	Invested in <i>v</i>	
1 <sup>st</sup>	I	120,000	+	50,000	+	(37,500 + 10,000 + 2,500)	=	220,000
	II	80,000	+	50,000	+	(37,500 + 10,000 + 2,500)	=	180,000
		200,000	+	100,000	+	(75,000 + 20,000 + 5,000)	=	400,000
2 <sup>nd</sup>	I	134,666	+	53,667	+	(39,740 + 11,244 + 2,683)	=	242,000
	II	85,334	+	51,333	+	(39,010 + 10,756 + 2,567)	=	188,000
		220,000	+	105,000	+	(77,750 + 22,000 + 5,250)	=	430,000
3 <sup>rd</sup>	I	151,048	+	57,576	+	(42,070 + 12,638 + 2,868)	=	266,200
	II	90,952	+	52,674	+	(38,469 + 11,562 + 2,643)	=	196,300
		242,000	+	110,250	+	(80,539 + 24,200 + 5,511)	=	462,500
4 <sup>th</sup>	I	169,324	+	61,748	+	(44,455 + 14,196 + 3,097)	=	292,820
	II	96,876	+	54,014	+	(38,899 + 12,424 + 2,691)	=	204,904
		266,200	+	115,762	+	(83,354 + 26,620 + 5,788)	=	497,724

Source: Bauer 1986: 96; Bauer’s 4<sup>th</sup> year corrected after Emmanuel 1984: 188.

The schema has the following characteristics: the working population and the amount of the variable capital both grow at the rate of 5%; the rate of surplus value remains always at 100%, so that its total quantity is equal to variable capital and thus also grows at 5%; to bring out that the organic composition of capital rises (slightly faster in department I), constant capital is assumed to grow at 10%; the rate of capitalisation of surplus value is the same in each department, but rises along with capitalists’ aggregate income, from 25% the first year to 28% in the fourth – and as Grossmann was to demonstrate by the 35<sup>th</sup> year transgressing 100%; realisation takes place the same way each year: Department I’s annual output is equal to the following years total constant capital, while Department II’s annual output is equal to capitalists’ personal consumption that same year plus workers’ consumption the following year, but since the rate of accumulation is determined by the rate of surplus value, capitalist consumption is residual (again with Grossmann, becoming negative in the 35<sup>th</sup> year).

Luxemburg (1972: 93ff.) was outraged at the transfer of capital to Department I – which she feigned to believe was an ‘unpaid’ sale, *i.e.*, a ‘present’, undertaken to remedy an existing disequilibrium, but which was, quite the contrary, necessary precisely to prevent any such disequilibrium from developing in the following period. There were valid objections to Bauer’s theory of crisis but, as Howard & King (1989: 121) note, very few of these “were

made by Rosa Luxemburg in her distinctly ill-tempered *Antikritik*, and most of her objections were wide of the mark.” The style of her writing can be gathered from fits like: “this pedantically puzzled out system of hair-raising nonsense [...] is not a common error, such as can occur in the quest for scientific knowledge [...] [but] a disgrace to present official Marxism and a scandal for Social Democracy”. Howard and King (*loc. cit.*) note that there is certainly nothing in her critique of Bauer to justify this assertion, but they point to some extenuating circumstances: “It must be remembered that the *Antikritik* was written in the prison cell to which Luxemburg’s opposition to the war had brought her. Its main purpose was political rather than academic, and its principal target was Karl Kautsky, not Otto Bauer.”

Underconsumptionist interpretations of crises had been most common in the early Marxist literature on crises, but theoretical shortcomings pointed out in attacks by hostile critics made this approach less and less attractive. For a decade after the First World War, there were no significant contributions to the breakdown controversy. With the weighty contribution by Grossmann in 1929 the possibility of insufficient consumption was flatly denied, and attention diverted in other directions. Taking up the thread where Bauer had left it, he (1967: 121f.) demonstrated that the growth path set out in Bauer’s numerical example could not be sustained indefinitely, but would collapse after 35 reproduction rounds when capitalist consumption becomes negative. “Despite his intensions, then,” Howard & King (1989: 120) observe, “Bauer’s model is one of capitalist breakdown, bound up with (if not in any simple sense caused by) the tendency for the rate of profit to fall in the course of technical change.” In Bauer’s schema the system eventually fails to produce enough surplus value to permit both the required rate of accumulation and capitalist consumption, and so breaks down from a shortage of surplus value. “By a breath-taking mental leap”, as Sweezy (1942: 210) put it, “Grossmann concludes that the capitalist system must also break down from a shortage of surplus value.”

Indeed, breakdown inevitably follows from the assumption of constant capital grows twice as fast as variable capital while at the same time the rate of exploitation is kept unchanged, and could be avoided, *e.g.*, by letting the rate of surplus value increase. Ironically, Luxemburg criticised Bauer precisely for not having allowed for such an increase. As noted by Emmanuel, however, Bauer and others had already remarked that the hypothesis of a constant rate of surplus value was not crucial to the argument and could perfectly well be dropped. While Luxemburg scathingly flung out that Bauer perhaps had not considered it worth his while to construct a scheme in equilibrium where the rate of surplus value did increase, Emmanuel (1984: 196f; cf. 134 on the general tendency) had no trouble doing it for him. Without either of the two constraints, Grossmann’s ‘law’ falls to the ground. Indeed, Grossmann (1967: 136f., 186f.) himself noted the unlikelyhood that capitalist entrepreneurs would remain passive in face of declining consumption rates. Long before they would take measures to avert it precisely by breaking the preconditions thitherto made by depressing worker wages or the value of constant capital, or by capital exports, resulting, however, in slower rates of growth and accumulation and a steadily growing reserve army of unemployed.

Grossmann’s theory of breakdown is at the same time a theory of crisis, which functioned as a purifying “healing process”, restoring the conditions for continued accumulation. He (1967: 139f.) expected a series of increasingly severe crises rather than a once and for all collapse of the system – only if and when the countervailing tendencies were slackened or ceased to operate, would the basic breakdown-trend have the upper hand, and its absolute validity make itself felt in the ‘final crisis’. Counteracting tendencies were factors operating to raise the rate of profit in the downswing of the business cycle, thus permitting an upturn in the level of activity rather than complete collapse. These were considered first for a closed system, operating in the internal market, and for a system which is open to trade with the external world. The tendency towards crisis became ever stronger and more acute with the extension of

capital accumulation. The deepest roots of imperialism lay in this parallel tendency; they were merely two sides of the same complex (*ibid.*: 396f.; cf. 300). He was severely critical of all preceding theories of imperialism, which had neglected and completely misunderstood the significance of capitalist expansion and overaccumulation. Kautsky and Luxemburg had erroneously restricted imperialism to conquests of agrarian, non-capitalist areas, and in actual fact it had nothing to do with problems of realisation, as Luxemburg thought, which were only the surface appearance of the problem of lacking investment opportunities (*ibid.*: 528). Hilferding mistook one finance-dominated phase of capitalism for the general trend, and also could not explain why the export of capital was so recent (*ibid.*: 574). Even Lenin had mistaken a mere means of counteracting the falling rate of profit, the growth of monopoly, for the underlying cause.

There were three types of internal factors, Grossmann (1967: 301-415) asserted: (1) those which worked against the increase in organic composition of capital, such as technical progress in the production of means of production, which cheapened the elements of constant capital, and improvements in transport and communications, speeding up circulation (*ibid.*: 308-22, 368); (2) those which increased the production of surplus value, such as technical progress in the production of consumption goods, thus lowering the value of labour power, alternatively the intensification of labour and lowering wages below this value (*ibid.*: 308, 316);<sup>23</sup> (3) the tendency for rent and commercial profit to occupy a proportionately smaller part of surplus value, itself partly offset by increasing costs of supporting new unproductive middle classes (*ibid.*: 345, 354-61).

Turning to the counteracting factors which opened up on the world market, and their implications for a theory of imperialism, Grossmann became more elaborate. He saw three basic ways in which access to the world market might counteract the falling trend in the rate of profit. These included (1) monopoly control over raw materials, in which capitalists used the state in a neomercantilist fashion to weaken the breakdown tendencies at the expense of others by cheapening the constant capital element (*ibid.*: 450-90, esp. 458, 460); (2) the export of capital, where he criticised his predecessors for disregarding both the tendency towards international equalisation of the rate of profit, relying to the point of exclusion as they did on differences in rates between backward and advanced countries, and the possibility that the organic composition of capital might actually be higher in the colonies because they benefited from the latest technology – subject to ‘the merits of borrowing’, in Veblen’s expression: “Not the higher profits abroad, but the lack of investment opportunities at home is the *ultimate basis of capital exports*” (*ibid.*: 490-579, quotation on p. 561, trans. J.B.); (3) a non-equivalent exchange in value terms, appearing with the international equalisation of profits.

Grossmann’s aim was to show how international transfers of value could counteract the fall of the rate of profit. In Andersson’s (1972b: 92, 1972d: 13, trans. J.B.) summary: “As a consequence of the internationalisation of capital and the redistribution of surplus value between the countries through world trade, the tendencies which Marx showed for a closed and pure capitalist economy have not manifested within an individual country but only on a world scale.” Grossmann (1967: 431) borrowed a numerical example where Marx had compared a European and an Asiatic country with different organic compositions of capital (84% and 16% respectively), but used it to illustrate how prices of production changes on the world market. Real wages are assumed to be equal, but since European productivity is higher its workers produce their means of subsistence in shorter time the rate of exploitation (or the rate of surplus value), can reach 100% in the European country and 25% in the Asiatic.

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<sup>23</sup> Howard & King (1989: 327) observe: “This is Grossmann’s first mention of a rising rate of exploitation; it comes halfway through the book, occupies barely a page, and impinges not at all on any of his numerical examples.”

Without equalisation of the rates of profit, 16% and 21% respectively, prices of production equal values at 116 and 121, as in Marx's example (Table 4).

Table 4. *Marx's price of production schema for Europe and Asia (without equalisation of r).*

	$K$	$c$	$v$	$q$	$m$	$m'$	$V$	$r$	$p$	$L$
Region	Total capital (here= $c + v$ )	Constant capital	Variable capital	Organic composition $c/K$	Surplus value	Rate of surplus $m/v$	Value $c + v + m$	Rate of profit $\frac{\Sigma m}{\Sigma K}$	Profit $rK$	Price of production $c + v + p$
Europe	100	84	16	84%	16	100%	116	16%	16	116
Asia	100	16	84	16%	21	25%	121	21%	21	121
	200	100	100		37		237		37	237

Source: Grossmann 1967: 432.

Now, introducing capital exports (international mobility of capital) profit rates can be taken as internationally equalised at 18.5%, and prices of production alter accordingly (and it so happens that they are the same at 118.5; Table 5). The country with a higher than average

Table 5. *Grossmann's modified price of production schema (with equalisation of r).*

	$K$	$c$	$v$	$q$	$m$	$m'$	$V$	$r$	$p$	$L$
Region	Total capital (here= $c + v$ )	Constant capital	Variable capital	Organic composition $c/K$	Surplus value	Rate of surplus $m/v$	Value $c + v + m$	Rate of profit $\frac{\Sigma m}{\Sigma K}$	Profit $rK$	Price of production $c + v + p$
Europe	100	84	16	84%	16	100%	116	18.5%	18.5	118.5
Asia	100	16	84	16%	21	25%	121	18.5%	18.5	118.5
	200	100	100		37		237		37	237

Source: Grossmann 1967: 432.

organic composition (capital intensity), *i.e.*, the European country where  $V < L$ , will gain as compared with a situation without international equalisation of profit rates, and vice versa for the country with a lower than average organic composition. In this case the equilibrium price of European goods has increased from 116 to 118.5, whereas that of Asian goods decrease from 121 to 118.5, thus in this comparison corresponding to a (hypothetical) amelioration of the terms of trade for European goods. The rate of profit has risen in Europe from 16% to 18.5%, while in Asia it has declined from 21%, and there has been a 'transfer of value' from Asia to Europe compared with the (hypothetical) state where no equalisation of the profit rates take place. In Marxist essence, then, the technically and economically more highly-developed country appropriates excess surplus value at the expense of the backward country (Grossmann 1967: 438; cf. 431f.).

Andersson (1972b: 93, 1972d: 14) concentrates on the net 'transfer' of (surplus) value – in the above case of  $121 - 118.5 = 2.5$  units from the Asian country to the European – but demonstrates that with slightly different inputs this transfer can easily be reversed. It all depends on whether the ratio between the organic compositions of capital is greater than, lesser than, or equal to that of the rates of surplus value (in the above case  $84/16 > 100/25$ ), and draws the following conclusion: "A country A, with higher organic composition of capital, obtains in exchange with another country B, with a lower organic composition of capital, but with the same rate of profit, a greater value than it gives, even in the case where the rate of surplus value in A is greater than in B, only if the ratio between the rates of profit is greater than or equal to the ratio between the organic compositions of capital." For Andersson (1976: 40) it is of essence that the comparison be made with values, since he believes Marx's important contribution to lie in his "clear separation of surplus value and profits", which was "the necessary precondition for an elaboration of a theory of international value transfers in

connection with foreign trade.” “Without a conceptual separation of profits from surplus value, it would not be possible to understand how (surplus) value, which is produced in one country, is transferred to another through the mechanism of market price formation.” However, it is not evident that this net-‘transfer of values’ is the main point of comparison for Grossmann. As noted by Andersson (1976: 41) himself: “Grossmann discussed it [non-equivalent exchange] as a method of counteracting the tendency of the rate of profit to fall”, *i.e.*, in the country with higher organic composition of capital. It functioned as such in comparison with a (possibly hypothetical) situation with no capital mobility, irrespective of the net direction of value transfer.

Thus, just as he built his case for the inherent tendency towards breakdown of the capitalist system by elaborating on Bauer’s reproduction scheme, Grossmann also picked up and linked it to Bauer’s demonstration of non-equivalent exchange as one of the countervailing tendencies. To be sure, in this case he referred first of all to the relevant passages in Marx’s work, and chose his numerical example from *Capital*, but he pointed out that the international dimension to the transformation of values into prices of production had been neglected until Bauer, as it was, indeed, to remain for some time after Grossmann’s work.

In a sense, his overall framework is rather similar to that later informing the work of Emmanuel, who was studying economics in Athens when Grossmann’s book appeared, particularly as presented in his (1979) dynamic version of unequal exchange, where the falling rate of profit, due in this case to worker organisation, was offset by unequal exchange with the low-wage periphery. However, in details the similarities disappear: Grossmann’s basic idea of a general law of the falling rate of profit is given scant reference, and the transformation of values into prices of production had nothing to do with Emmanuelian unequal exchange. Nevertheless, as Howard & King (1989: 316) noted on another aspect of his theory: “Deeply flawed, it nevertheless proved to be (in the long run) extremely influential.” Loxley’s (1990: 717) review of Howard & King notes:

Grossmann’s crisis model, which allowed for the possibility of declining rates of profit in industrialized countries to be offset through international transfers of value from less developed countries, anticipated Emmanuel’s imperialism of trade’ approach by some forty years, although, surprisingly, the authors do not make this connection. True, Grossmann located the origin of unequal exchange in different organic compositions of capital, while Emmanuel, who recognized the validity of this form but dismissed it out of hand as being not particularly interesting, concentrated instead on differential wage rates; but the methodology and the conclusions about the role of trade in propagating underdevelopment are remarkably similar to those of Emmanuel.

It is certainly possible that Emmanuel came across the problem set out so incompletely by Grossmann on the eve of the Great Depression, and that it lingered on in his mind, only to reappear some three decades later, but there is not very much more to build this proposal on.

The reception of Grossmann’s book was merciless, and only few reviewers were at all favourable. Critics seem to have concentrated on the argument on breakdown, the rigid, unrealistic assumptions necessary for it to hold, his assumption that the goods exchange at their labour values, empirical difficulties, and his interpretation of Marx. They touched on the counteracting tendencies only to argue that these ought to have been included in the main trend, not attached at the end – perhaps an odd point to make for an argument extended over the latter half of a more than 600-page book.

But at least one critic, Paul Sweezy, objected to the transfers of value in both Bauer’s and Grossmann’s arguments. Asking to what extent the laws governing value, the rate of surplus value, and the rate of profit apply to the world economy, Sweezy (1942: 289) conducted his examination under the assumption of only domestic, no international, mobility of capital – “Let us first consider the case of trade alone, leaving capital export for subsequent treatment”

– and no mobility of labour Domestically, competition and mobility of labour and capital would ensure the equalisation of surplus value and profit respectively, between different lines of industry, so that commodities will sell “at their values or prices of production”: “As between different countries, however, no such equilibration can be effected by trade alone.” (Adherents of the Heckscher-Ohlin theorem would perhaps disagree.) Since he assumed the conventional Ricardian restrictions on factor mobility, he reached conventional conclusions. For commodities exchanged “on equal terms” (*i.e.*, without monopolies) between countries it would thus be purely accidental if they contained equal quantities of labor, and “[e]xactly the same would be true of the products of two industries within a country if transfer of labor from one to the other were impossible”. The overall mass of use values would in any increase, potentially influencing the rate of surplus value and the rate of profit, such as when at constant real wages, wage goods could be had more cheaply through international trade, the rate of surplus value (rate of exploitation) would increase, which was of course why British capitalists (not landowners) had combated the Corn Laws. As Marx and Grossmann had pointed out, “cheapening of the elements of constant capital” was one of the counteracting factors to the falling rate of profit, whether by trade or any other means.

Sweezy (1942: 290) now made an odd turn to criticism, denying international transfers of value though trade altogether: “It should be particularly noted that trade between two countries can affect the distribution of the value produced within either one or both of them [...] but that it cannot transfer value from one to the other. A more advanced country, for example, cannot extract value from a less advanced country by trade alone; it can do so only through the ownership of capital in the latter.” Here is a common point of departure for subsequent monopoly and dependency analyses. He (*ibid.*: 291) maintained that several Marxian writers, such as Bauer and Grossmann, had mistakenly argued to the contrary “that trade does constitute a method whereby value is transferred from backward lands to more highly industrialized countries.”

What is odd about Sweezy’s criticism is that he apparently believed them to assume no capital exports, and that profit rates were equalised between countries through exchange alone. No such claim was ever made by them, but having made this criticism he (*loc. cit.*) went on to say: “The situation changes, of course, as soon as we drop the assumption excluding capital exports.” As pointed out by Emmanuel (1972a: 43), this of course means that Bauer’s and Grossman’s theses do become well-founded under the assumption of mobile capital, and that for Sweezy’s criticism to be correct he would consequently have to deny international transfers of capital altogether. However, Sweezy’s reasons seems simply to have been taking for granted that transfers of capital would go in the opposite direction, towards the least developed areas, because these were presumably to be the high-profit areas. In addition, he (1942: 292) entirely missed the point when he argued for the non-equalisation of the rate of *surplus value*: “It should be noted that international equality of profit rates does not imply international equality of rates of surplus value. So long as free mobility of labor across national borders is restricted, for whatever reason, the workers of some countries will continue to be more exploited than others even if the rate of profit obtainable by capital should be everywhere the same.” These were indeed the very same conditions which were for Emmanuel to *constitute* unequal exchange, and certainly could not be advanced against the idea of a transfer of value. To Sweezy (*ibid.*: 292), who did not consider this possibility, movements of capital only expressed “the tendency for the rate of development of capitalism in the various parts of [the] world economy to be evened out”. He is careful not to present any argument to support this opinion, and in all probability did not hold on to it. The reversal of his stance on the equalising tendencies of capitalism was in all probability mediated by his colleague Baran, but the negative evaluation of attempts to apply or adopt the Marxian theory of value to the international economy is evidenced in the works of both.

In spite of the frequent association between ‘dependency’ and unequal exchange, Baran strictly speaking does not belong in a history of unequal exchange theorists, or if so, perhaps rather on the side of its opponents. He (1951, 1952, 1957) was, nevertheless, important in the reformulation of the traditional Marxist stance on underdevelopment. On the other hand, reacting to Emmanuel there was an evident obsession to ‘develop’ unequal exchange theory back into a version of the monopoly (or ‘state-monopoly’) capitalist interpretation – perhaps under the guise of debating the preferred ‘independent variable’ (wages or profits) of one’s system (cf. Andersson 1972, 1976, Amin 1970a, 1973, Bettelheim 1962, 1969a-d, Braun 1977, Kidron 1974, Delarue 1973, 1975a-b, Frank 1975, 1978, Marini 1973, 1978, Palloix 1969a-b, 1970a-b, 1971, 1972, 1973, 1975a-b, who demonstrate this tendency to a greater or lesser extent). If this was the most common way to house-train unequal exchange, it thereby lost most of its specific interpretive power. Of the ‘neo-Marxist’ or dependency theorists, Baran is the only plausible candidate to have influenced the unequal exchange tradition, but he did this rather in his role as a synthesist of a coherent Marxist stand on underdevelopment, reversing the traditional stance that imperialism was beneficial to the conquered. While unequal exchange theorists have basically accepted the reversed position, this specific synthesis served rather as something *against* which to react.

The origins of Baran’s synthesis can be traced with some help from his personal history (cf. Sweezy 1965). Educated by his Menshevik father with most of his family bonds in the Jewish community of Vilna, he eventually came to work in his uncle’s timber business and be stationed in London. By then, he had become affiliated with Preobrazhensky and the Trotskyite opposition during a Moscow respite in the 1920s, with Hilferding, Marcuse and the Frankfurt school in the Weimar Republic (appearing to follow the Institute’s generally neglectful reception of Grossmann). When the family business was shattered in the persecution of Jews following the German-Soviet partition of Poland, he became friends with Sweezy in the United States. These liaisons perhaps explain his internationalism and concern over the industrialisation of backward regions, the centrality of ‘monopoly’ in his interpretation of capitalism, as well as the defence of communist society in ‘critical’ terms (in an ideal-type theoretical sense of an optimally producing society) rather than actual (although he also defended actual Stalinist socialism in the McCarthy era).

Following the Comintern program of 1928, Baran (1951, 1952, 1957) contributed to redirecting the Marxist stance on the ‘progressive’ nature of colonialism and imperialism in the West and was largely instrumental in bringing the Hilferding-Leninist monopoly capitalist interpretation into postwar western Marxism. The ‘transfer of surplus’, for which monopolies were said to be responsible, hindered the development of backward areas, or even brought underdevelopment upon them. He did not concern himself with the possible ‘transfers’ due to price differentials and the terms of trade, and this tradition was brought into the ‘development of underdevelopment’ argument of Andre Gunder Frank (1965, 1967), who was also an open critic of Emmanuelian unequal exchange (1975), and, in spite of his positive references to Emmanuel and unequal exchange, to the ‘world-systems’ perspective of Immanuel Wallerstein (1974-1989). No attempt will be made here to cover Latin American dependency theory in general, among whom Oscar Braun (1972, 1977; see also Andersson 1976, Evans 1981, 1985, Raffer 1987) and Ruy Mauro Marini’s (1973, 1978, Serra & Cardoso 1978) have constructed theories of unequal exchange, the latter which has been called the most sophisticated of its kind springing from this tradition (Kay 1989). Braun’s concerns referred to the manipulations of monopolists and protectionist price policies of the well-to-do countries, much like Prebisch reflecting the primary concerns with the balance of trade, while for the latter unequal exchange was the cause of super-exploitation. Active in the same circles as Frank and Amin, and similarly vague on certain theoretical issues, Marini also shared the view that monopolies were ultimately to blame for unequal exchange, however defined. Apart

from the openly expressed rejection of international transfers of value on Sweezy's behalf, a reason for Baran's relative neglect of the terms of trade argument, formulated at the time in terms of raw materials vs. manufactures, may well be linked to his experience in the Baltic timber trade at a time when that branch experienced a price-boom. Baran nevertheless had a profound impact on the understanding of Charles Bettelheim in France, who was by contrast more concerned also with the terms of trade argument.

If not unequal exchange, the Baranian transfer of 'surplus' through repatriation of profits resembles rather another idea which was debated in England even during Baran's stay there in the 1930s, the Indian so called 'drain theory' (cf. Chandra 1965, Ganguli 1965, Dasgupta 1993), which has indeed been considered a forerunner of both dependency and, more dubitatively, unequal exchange theory. In this sense the idea can be traced backward to the late mercantilists, *e.g.*, Sir James Steuart (1767, 1772; cf. Barber 1975), who seems to have been among the first to write on such balance of payments drain with respect to India. Thus, not only Prebisch and Latin American structuralism, but also the dependency tradition revived questions central to mercantilists. As an economic debate trying to relate to real problems of the world rather than to formal coherence, this could indeed be said of much of development economics. Apart from U.S. leftist academics, the popularity of the dependency tradition has been greatest among Latin American and Canadian nationalists and anti-Americans. Although the enemy has changed, in this way, too, it resembles the Indian drain theory.

Summing up on Marxist contributions, if much of the strengths of Marxism springs from the intellectual heritage found in the work of Marx, this dependence has a backside in little true innovation. Meshing with political disputes almost into theology, it thereby strikes a discordant note with the simultaneous claims to radical questioning. If one is looking for a general interpretation of the Marxian confrontation with unequal exchange, maybe the following can be said. The predominant monopoly interpretation originally rejected transfers of value through trade or the balance of trade, when this turned out to be impossible, unequal exchange was subsumed as an aspect of monopolistic capitalism, thereby transferring the problematic from the anxiety-ridden field of socially horizontal conflicts, to more habituated and ideologically correct socially vertical conflicts. When not simply rejected, furthermore, the common proposition with respect to theories of *non-equivalent* exchange in most of these debates relates to different organic compositions of capital. In this sense the idea is older than Marxism, and almost as old as the monopoly tradition, reappearing in many forms under varying circumstances, which often seem more interesting than the bare theoretical statements. While this would be a harsh – some would say unfair – overall judgement, instances of true innovation can nevertheless be found.

Thus, non-equivalent exchange in the work of Bauer figured as part of his explanation of national hatreds between Czechs and Germans in the multinational Austrian state. Applying Marx's prices of production to this multinational situation, involved, unnoticed by Bauer himself, the theoretical innovation of international capital mobility equalising the rate of profit. Jointly with the differential in organic composition between the highly developed German region and the less highly developed Czech region, this implied a 'transfer of value' between them through mere exchange. Of course, as Bauer saw, the same idea was implied in Marx's original formulation of prices of production, which, in the process of equalising profits between branches, transferred value from less to more capital intense ones. Writing on Austria before the First World War his argument was strictly within the confines of traditional Marxism, but with the break-up of these regions after the war, the same argument suddenly appeared as a theoretical novelty. It was only in Grossmann's work that the same idea of a value transfer was explicitly applied to an undisputedly international case, involving 'Europe' and 'Asia'.

What made Bauer's argument interesting in itself was rather the implications it had for the understanding of nationalist antagonism among workers. As he observed, it was not only technical development which differed between the regions, but also standards of living. According to the normal formation of prices of production, workers move so as to 'equalise' wage levels and standards of living throughout the system. It was *this* process, rather than the differential in technical level of development (whose connection with wage-levels remained unexplored), that *directly* occasioned hostility from German workers and their unions, seeing immigrating Czechs in the same light as strike-breakers undercutting wage-demands. This *genuine* conflict of interest was overcome only by necessity, with the impossibility of hindering these invaders finally forced Germans to 'realise' their international solidarity, and thereby include the Czechs in their demands. Bauer was saved from further questioning by the fact that the Czechs were, as he himself pointed out, the *second* most developed region, and his apparent belief in a necessary progression through such development before the will to emigrate would make itself felt. He seems to have had no conception of the contemporary migrations from India and China, and the exactly similar conflicts awakened, *e.g.*, in the Anglo-Saxon world, where, as it turned out, workers were *not* forced by necessity to realise their solidarity.

Contrary to Bauer, Grossmann referred explicitly to the divergence between Europe and Asia, but unfortunately he, too, did not refer to the conflicts involved between workers – an argument which in the context of unequal exchange had to await Emmanuel and Lewis. Instead, he linked the argument to another of Bauer's demonstrations, made when disputing Luxemburg's idea that capitalism was formally incapable of reproducing without continuous geographical extension. In showing that this was indeed formally possible, Bauer had created an example which, when followed through, seemed to indicate that the system would break down, nonetheless, not through lack of space as implied by Luxemburg's theory, but through the continuous decline in the rate of profit. Of course, Grossmann incorrectly presumed that no other schema could be drawn which avoided a decline in the rate of profit, but his point that non-equivalent or unequal exchange with an external (less developed, poor) region could function as a counteracting factor was basically correct, in spite of, *e.g.*, Sweezy's even more orthodox Marxist claim to the effect that international transfers of value were impossible. While basically erroneous, wholly different in details, and not relating the problem to nationalist conflicts, Grossmann's argument, where non-equivalent exchange with a lesser developed region functioned to counteract a continuous fall in the rate of profit, may very well have stimulated Emmanuel's later argument to similar effect.

In trying to face the problem of nationalism and the hostility to international migration, Bauer shared a concern not only with Lewis and Emmanuel, but also with Harold Innis. For the latter, however, interest in nationalism seems to have sprung partly from the experience of the First World War and partly from the tradition trying to understand the break-up of the British Empire. His starting point, however, was rather with Canada as an expanding hinterland, its relation with the European metropolises, and transformation of European civilisation. As with other transatlantics, such as Fitzhugh and Prebisch, the centre-periphery approach in Innis was significantly influenced by the shift in world economic dominance from Britain to the United States.

# Chapter 3. Staples and communication in the peripheral vortex of Harold Innis

Harold Adams Innis (1894–1952) is known in different intellectual communities either as the originator of the Canadian ‘staple thesis’ or as a theorist of communication inspiring Marshall McLuhan. The first has become a bone of contention among scholars as either a theory of growth or as a dependency/ecological unequal exchange theory. In truth, for Innis it was neither, although he was very sensitive to the often disruptive repercussions of seemingly insignificant changes in an extensive metropolis–hinterland communications system. In line with certain interpreters (Berger 1986, Patterson 1990, Watson 2006) I shall try to indicate some common concerns between the two Innises, and also some lessons that may be learnt from this perspective for interpreters focusing on the global problematic of underdevelopment and ecology. The principal one is merely pointing out Innis’s involvement with the common and ultimate concerns and well-being of societies (*res publica*, or ‘commonweal’), which was introduced via defunct religious and, notably, imperial traditions which had to be updated. Another, which will not be overly extended upon, is the methodological lesson of the sheer exertion required in acquiring the necessary familiarity with ecological and technological detail if progress of interpretation is to be made from an ecological perspective. In addition, there is the insight that advancement of learning will proceed from a further integration of basic approaches. History was the irreplaceable subject of Innis’s all-inclusive approach and for the understanding of which theoretical insights function as tools. As has already been suggested (Chapter 2; cf. also Chapters 5-8 & 11), for a theory of unequal exchange as a tool in the interpretation of history, the most relevant lesson may well relate to the problem of nationalism and its transformation in the postwar era.

## Canadian political economist

In Canada political economy was already from the start historically bent, and characterised by certain specific problems which were shared by general historians and society. From its birth the subject had a particularly low status as a boring subdivision of moral philosophy, appropriate for busy administrators, and the traditional fixation on *laissez-faire* gave it a disadvantageous air to important Canadian interests. From the 1880s and 1890s, agricultural sales to Europe, linked with westward expansion, industrialisation, and an upsurge of national consciousness, coincided with the advance of the historical school of economics and the growth of marginal utility theory. Arguments against trade unions and government intervention were substituted for those against tariff protection (Goodwin 1961: 173f.). The first political economy professors were educated either in Europe (England and Scotland, Quebecois in France), or in the United States, representing most of the important schools of the day, but contributing little to the understanding of the specific Canadian situation.

The appointment of the foremost representative of the English historical economists, William James Ashley, to the first chair in political economy “was not accidental”, Goodwin (1961: 176) remarks, since by then economic theory, and particularly policy, had been a source of bitter controversy for almost half a century, and it was undoubtedly hoped that “he would not assume any doctrinaire theoretical position”, meaning a belief in free trade. Ashley’s inaugural address in 1888 (quoted in Goodwin 1961: 177) quickly made his stand clear on this matter, arguing that economics as a science really began in the 1870s with the revolution set of by the historical economists and “what has been the great achievement of

German thought in the last fifty years – the discovery and application of the Historical Method.” He praised the German historical school for teaching without “the great prejudice against Government action which was natural to an English or French liberal”, and the English historical economists (Leslie, Ingram and Toynbee) for accompanying the Germans in this discovery of a political economy “of real value to society”, in which “the old doctrines will be shown not to be untrue, but to have only a relative truth, and to deserve a much less important place than has been assigned to them”. Although not personally contributing to Canadian historiography, he set political economy in Toronto on the path it would follow for generations, explaining that “the direction for fruitful work” was “no longer in the pursuit of the abstract deductive method which has done so much service as it is capable of, but in the following new methods of investigation – historical, statistical, inductive” Thus, in his view, as Goodwin (*loc. cit.*) observed, only “a careful student of Canadian economic history, and not a mere expert in theory [...], could qualify as an advisor on public policy.”

In addition to its emphasis on historical study, as an imperialist, Ashley indicated and promoted the close connections between the Toronto-department and the British mother country. His Scottish successor, James Mavor, gave Innis admission to European intellectual circles in the 1920s, notably economic historians, J. M. Keynes, Graham Wallas, and the Shaws. After Mavor came R. M. MacIver, E. J. Urwick, and finally Innis, who was the first Canadian-born Professor of Political Economy at Toronto. Another Brit, C. R. Fay, was Professor from 1921 to 1930 and good friends with Innis. For both Ashley and Fay the stay in Canada meant a widening of perspectives, the latter coming under the influence of what he dubbed the ‘Toronto school’ of political economy, meaning Innis (Fay 1932, 1934). The problems of the union of the British Commonwealth and its division into independent nation states or dominions under responsible government, as well as economic means of counteracting the increased influence of the United States, were questions which completely absorbed all of the early Professors. They were also of great importance to Innis (cf. Patterson 1990), both in the early studies on Canadian waterways and staples and in the later on the biases of communications in general and their relevance for empires in particular.

Starting about the time of the First World War universities saw a large influx of students with a Canadian background. The efforts of Adam Shortt to collect documents widened Canadian historiography outside the political and into the economic sphere, and in Innis’s view qualified him as the founder of Canadian economic history (Goodwin 1961: 185ff., Berger 1986: 26). In the 1920s, future historians and economists from all over Canada made for the Archives, and the perceptive eye could “see the actual renaissance of Canadian history in the course of preparation” and that “a revolution is bound to come about as a result” (A. L. Burt in 1926, quoted in Berger 1986: 30). Cook (1977: 126) could later speak of it as an “Innis revolution” in Canadian historiography, noting that the “necessary starting point for any clear understanding of the outlook of contemporary English-Canadian historians is Harold Adams Innis”.

Innis’s road to Canadian economic history began shortly before the First World War, when studying at McMaster, under the inspiring and devoted ‘radicalism’ of William J. A. Donald. Donald had himself graduated from McMaster in 1909, gone on to post-graduate studies at the University of Chicago under Chester W. Wright, and in 1913 returned to Canada with a Canadian topic for his Ph.D. dissertation and a lectureship at his alma mater. Within two years, while Innis was his student, Donald published four articles and his only book, on *The Canadian Iron and Steel Industry*, which was based on his dissertation and proved the assumption false that this industry had been necessary for Canadian economic development. The ‘radicalism’ shown by him and Innis in early years, seems to mean rather a Smithian outcry against ‘mercantilist’ corruption (cf. Neill 1972: 10f.). Innis’s innocent Baptist upbringing is indicated by his dismay, as late as the second term, at students “who tend

towards materialism and believe there is no God” (quoted in Berger 1986: 86). Neither the present-minded social gospel, nor the traditionalist conservative phalanx, managed to win his full approval, and their respective shortcomings indicate a problematic which was to surge in later writings (Watson 2006). His studies were interrupted by the war where he was seriously wounded at Vimy Ridge. Having learnt solidarity with the rank and file from the trenches, and to despise the stupidity of British supreme command, he returned to complete his master’s degree at McMaster in 1918. Through Donald’s agency, and like many other Baptists of Scottish descent, Innis chose the University of Chicago for his continued studies under Wright who suggested and supervised Innis’s dissertation, *A History of the Canadian Pacific Railway* (1923), as a better departure for understanding Canadian economic development (Neill 1972: 11). The sojourn in Chicago was relatively brief, but was of great significance for his subsequent methodology, notably, the exposure to the ideas of Thorstein Veblen, the father of ‘institutionalist economics’, whom he was induced by the general stir (and with some help from Frank Knight) to “read intensively” (Innis n.d.1, quoted in Neill 1972: 35). He returned to Canada in 1920, accepting a position at Toronto University’s Department of Political Economy, where he remained, becoming head of the department in 1937 and serving as dean of the graduate school from 1947 until his death in 1952, by which time he had become president of the American Economic Association.

The return to Canada from Chicago meant not only abandoning an intellectually livelier environment – and at the University of Toronto there was no equivalent interest in Veblen – but also entering the elementary state of economic-historical research on Canada, and the formative stage of the discipline of Canadian political economy itself. The challenge facing scholarship, to which Innis responded, was not only to undertake the basic research necessary to establish a general interpretative framework, but also to articulate a method or approach in order to tackle the task at hand. Seen as a struggle to infuse vitality into Western civilisation from its margins (Watson 2006), the continued involvement with such problems is evidenced by his expanding administrative duties as well as his writings on the universities and education. It is also evident in his compiling bibliographies of research in Canadian economics and economic history, in editing documents in Canadian economic history, and in an essay on “The Teaching of Economic History in Canada” (Innis 1928a-b, 1929a-b, 1929-1933; cf. Baragar 1996). Here, he acknowledged the important and “central position” accorded to theory, but stressed the indispensability of economic history (Innis 1929b). “Over the three decades of teaching and research allotted Harold Innis,” his friend and colleague Easterbrook (1953: 291) remarked, “no subject concerned him more than the state of economics.” Innis (1950: 2) himself suspected this concern to reflect the bias of writing on the margins of the British Empire. Another of these early papers (Innis 1929c) dealt more explicitly with theoretical issues, and demonstrates the continued involvement with the work of Veblen – the only economist with whom he engaged in an extended assessment. Here, Innis set out to restore and restate those of Veblen’s substantial contributions which had tended to become distorted by violent controversy. Baragar (1996) argues that insofar as this restatement coincided with Innis’s aforementioned efforts to shape the direction of future economic research in Canada, Veblen’s contributions can be viewed as an integral aspect of Innis’s conceptualisation of the path that lay ahead.

As outlined by Innis, Veblen’s work had both destructive and constructive parts. The former comprised Veblen’s well-known critique of the classical and marginalist economic approach ‘from the standpoint of consumption’, as Innis termed it, summarised in his brilliant attack on economic hedonism, which had secured its place at least since the days of Jeremy Bentham (cf. Veblen 1919: 73f.). Veblen (*e.g.*, 1899) outlined an alternative approach to consumption in which both the agent and his environment had to be taken into account to understand economic motivations and cumulative economic change. He even criticised Marx and

Marxism for simply having transferred hedonism from the individual to the class – a stance repeated without acknowledgment in Keynes's (1972: 445f., 1949: 96f.) claim to have belonged to the first generation "to have thrown hedonism out the window", along with the Benthamite calculus, and therefore to have been saved from "the final *reductio ad absurdum* of Benthamism known as Marxism."

Innis's dissertation (1923) was an inadequate reflection of what he was seeking to achieve, and deserves mention perhaps mostly because of its first hundred odd pages, presenting a first overall picture of Canada's economic development, starting with how the essential geographical features through the agency of fur traders divided the country into three relatively distinct regions – the Pacific coastal area (British Columbia) in the west, the Hudson Bay drainage basin in the north, and the St. Lawrence river penetrating the land from the east, to which were added the easternmost fishing regions and the agricultural prairies west of the Great Lakes. The main achievement of the railway building was its conquest of geographical barriers (Innis 1923: 287) unifying these regions, and seen as the transformation of a politically forced national union to an economic one, in line with a widely shared opinion of Canadian lack of conformity (Westfall 1981: 40). This overcoming of nature was a shared Christian and national mission, expressing (as Innis repeated three times on the first 12 lines of his conclusion) "the strength and character of Western Civilization". The great 'overhead costs' of construction forced a monopolistic rule, localised in the more established eastern regions. At the time of publication, the Progressive Party was subjecting national policy to penetrating scrutiny, but though Innis's economic argument could be seen as a defence of the government, he (as a one-time teacher in a rural Alberta school during the summer of 1915) could not help but expressing the prairie indignation towards the C.P.R.: "Western Canada has paid for the development of Canadian nationality, and it would appear that it must continue to pay. The acquisitiveness of Eastern Canada shows little sign of abatement" (Innis 1923: 294).

The book's principal importance is perhaps that it occasioned a re-evaluation in order to overcome its shortcomings. The uneasy feeling he had that his thesis was inadequate was reinforced by some reviewers, obliging him to satisfy his uneasy conscience "by continuing along lines which would offset its defects" (Innis n.d.1, quoted in Neill 1972: 35). He had gradually come to realize that the C.P.R. had not so much created Canadian unity as linked up a land unit which was basically dependent, at an earlier stage, on water navigation. He started looking for maps showing how the rivers interlinked Eastern Canada and the Pacific coast. If maps related to the railroad had destroyed the idea of unity, the railroad itself reinforced or was a re-enactment of this older entity. He set out to acquire familiarity with previous work, resulting in numerous bibliographies of published materials, and on a thorough inventory of the archives in Ottawa and elsewhere. These documents were chiefly concerned with political activities and much less satisfactory in describing economic and social conditions of different periods, so another consequence of going through them was the editing, with Arthur Lower, of two by now standard volumes of documents on economic history. He began enlisting students to write on some aspect of the staple industries, and was instrumental in setting up the periodical *Contributions to Canadian Economics* (Berger 1976: 89). "My immediate task was offsetting the limitations of my thesis by attempting to show the inherent unity of Canada as it developed before the railroad in relation to lakes and rivers. For this reason I concentrated in the beginning on the fur trade as the oldest staple trade of the continent" (Innis n.d.1, quoted in Neill 1972: 36). Two things can already be detected with respect to Innis's methodology: the first is the obvious concern with media of communication, whether railways or waterways, for the understanding of socio-economic organisation; the second is the ambition to detect biases shared by his surroundings, and to escape their effects.

Innis's second book, *The Fur Trade in Canada* (1930), constituted the centre-piece in the Canadian historiographical revolution of the 1930s. It was a study of the dynamics behind the expansion of the fur trade from 1497 to 1929, contrasting to previous studies in not accentuating heroic figures and the adventure of expansion, which were instead depicted as reflections of inescapable and anonymous geographical, technological, and economic forces. It was 'an introduction to Canadian economic history', as its subtitle read, "in that the patterns revealed in the economic history of the Old Regime and in the fur trade were persistent and cumulative and were connected directly to the Canadian economy of his own day" (Berger 1976: 94).

The main determinants of expansion were European demand for beaver pelt, increasing Indian dependence on the manufactured goods of a more technologically advanced society, and the rapid extermination of a non-migratory animal. The interconnected system of rivers and lakes, and the Indian mastery of the canoe, directed extension along the southern edge of the Pre-Cambrian Shield. The inward thrust increased transportation costs, brought the competition of the Iroquois to the south and later the Hudson's Bay Company in the north, which was most severe on the uplands separating the three major drainage basins of north-eastern America. The French responded by military aggression and vast encircling movements. Innis argued that the fur trade severely weakened New France and ultimately accounted for its collapse. Carrying on trade over longer distances drew men away from settlements precisely at a season when they were most needed for agriculture. The fur trade also reinforced dependence – notably military – on the mercantilist mother country, increased vulnerability, and strengthened inflexible authoritarian and monopolistic institutions, which proved incapable of responding to changing economic conditions. Profitability made expansion into virgin lands imperative in overcoming the overhead costs of long ocean voyages and imports of large amounts of merchandise, but with the extension into Saskatchewan by the middle of the 18<sup>th</sup> century the geographical limits of trade with the modified birch-bark canoe had been reached: "French power in New France collapsed of its own weight" (Innis 1930: 114; cf. 389ff.).

The dependence on manufactures gave cheaper English goods an advantage, and contributed to the downfall of New France, but the importance of manufactures to the fur trade also "made inevitable the continuation of control by Great Britain in the northern half of North America", contributing to the failure of the American Revolution in these parts:

The northern half of North America remained British because of the importance of fur as a staple product. The continent of North America became divided into three areas: (1) to the north in what is now the Dominion of Canada, producing furs, (2) to the south in what were during the Civil War the secession states, producing cotton, and (3) in the centre the widely diversified economic territory including the New England states and the coal and iron areas of the middle west demanding raw materials and a market. The staple-producing areas were closely dependent on industrial Europe, especially Great Britain. The fur-producing area was destined to remain British. The cotton-producing area was forced after the Civil War to become subordinate to the central territory just as the northern fur-producing area, at present producing the staples, wheat, pulp and paper, minerals, and lumber, tends to be brought under its influence. (Innis 1930: 391f.)

The period after the Conquest saw the formation of the Northwest Company, before the pressure of overhead costs led to its amalgamation with the Hudson's Bay Company in 1821. The importance of this organisation was recognised in boundary disputes and negotiations. Its bases of supplies for the trade in Quebec, Ontario, and British Columbia represented the agricultural areas of the later Dominion of Canada, and Innis could thus conclude that "The Northwest Company was the forerunner of the present confederation" (Innis 1930: 392). Thus, Canada was not merely a political creation but a logical geographical unity historically

defined by the fur trade. What the Canadian Pacific Railway and the wheat economy had done was to reassert this older solidarity.

The book's principal message in public ears at the time was simply: "The present Dominion emerged not in spite of geography but because of it" (Innis 1930: 393). This was also a statement in a contemporary debate between a more American-friendly view, favouring a continental perspective, and a metropolitan perspective more concerned with the British connection, and where Innis, so to speak, rather put the French at the centre, but ultimately a peculiarly Canadian perspective and a thoroughly self-critical outlook.

### Theoretical inventory of the 'staple thesis'

Important circumstantial influences on the book can be found in geography. The popular grand theories of the 1920s involved cultural-evolutionary models and particularly economic and environmental schemes of varying degrees and kinds of determinism, 'environmentalism' (cf. Huntington 1915) or 'possibilism'. One of Lucien Febvre's, a representative of the latter approach, favourite examples was a river, seen by some as an obstacle and others as a means of communication (cf. Burke 1992: 36). Paul Vidal de la Blache, emphasised the importance of bioclimatic zones, ecology, and particularly the complex, balanced evolution of patterns of living (*genres de vie*). Through everyday problem-solving in a certain environment, the community even adopted a characteristic mental structure, which could live on even after environmental conditions had changed. Innis was familiar with these works, and while he was working out the relation between the Canadian railroads and waterways, there had appeared a work by the Scottish possibilist geographer Marion I. Newbigin (1927), who tried to demonstrate how French Canada had evolved along the waterways, using this as the explanation of why Canada had evolved separately from the United States (*ibid.*: 6). On the relation between man and the environment she held that the possibilities of their combination were endless (*ibid.*: 284, 300), but for Innis, they were not so endless after all. His review pointed out that though she had accentuated the Laurentian Shield and Indian canoes, she was too concerned with military schemes and had insufficiently treated the limitations of the fur trade. Although only partially successful, he was particularly impressed by her observations (*ibid.*: 282f.) on the impact of geography on the different flexibility of French and English political organisations, helping to explain the collapse of early New France.<sup>24</sup> Innis's own interpretation paid much more attention to the limitations of ecology of the beaver, bioclimatic zones, and climate, and to the dependence on the Indians and their knowledge (Innis 1927: 497f.; cf. 1930: 387f.).

At the time, Innis invariably described himself as an 'economic geographer' (Berger 1976: 93), and the conclusion's opening phrase gives further hints: "Fundamentally the civilization of North America is the civilization of Europe and the interest of this volume is primarily in the effects of a vast new land area on European civilization" (Innis 1930: 383). The first to undertake the study of 'the effects of a vast new land area on European civilisation', was not Innis but Frederick Jackson Turner, the United States' perhaps most influential historian, whose 1893 essay on 'the frontier in American history' had tried to divert the preoccupation of American historiographers with the eastern cost and European background. Instead the 'frontier' was a kind of individualist-democratic purification plant from which a genuinely 'American' society had sprung (Turner 1893: 463f.). Initially of little impact, his thesis had by

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<sup>24</sup> Berger (1976: 93) explains her position: "The entire history of Canada hinged on the solution to the twin problems of maintaining access to the sea and internal expansion based on products that could find their natural outlet by way of the St. Lawrence. The parallel between the fur trade and the river with the wheat economy and transcontinental railways was neither fortuitous nor insignificant. Canada was essentially what New France had been."

the 1920s engulfed the whole community of American historians (although Charles Beard, perhaps the second most important historian, criticised it in 1921). Turner struck a religious chord, speaking of the perpetual rebirth of Western civilisation, and Innis's first book had perhaps not been entirely free from this influence. Turner (1893: 464) saw American society springing forth in a series of westward waves of fur traders (while fishermen remained on the East), miners, cattle-raisers, and farmers each having to confront the Indian civilisation, which also changed in the process so that each wave faced a new kind of Indian society. The trading frontier, initially dominated by the French, anticipated the settler frontier, whose different spheres of interest had been summarised in the formula 'wheat against fur'. Indian trade and means of communication were nevertheless crucial to the evolution of western, southern, and Canadian societies, ultimately dependent on the geology of the continent (*ibid.*: 465f.).

By the 1920s, when Innis worked on his book, it was generally thought that the Indian peoples were a dying race, and anthropologists engaged in extensive fieldwork to collect elements of native civilisation before these cultures were swept away. "Both the intellectual climate and his larger interest in the social impact of technological change influenced his approach to the aboriginal dimension," Ray (1999: xiii) has observed, continuing:

In Innis's mind, aboriginal consumers' enthusiastic adoption of European trade goods, and the inclusion of ever-more Native groups into the orbit of the fur trade, created an "insatiable demand" for European products. [...] Euro-Canadian merchants were able to make profits largely because aboriginal people willingly produced the commodities the industry needed in exchange for their labour at rates that were far below what the expectations of Euro-Canadians would have been.

This could indeed be regarded as a form of 'unequal exchange', but the theme seems not to have been pursued in the Canadian context (although for Russia cf. Kerblay 1978; also Ray & Freeman 1978).

Veblen (1904, 1915) had described 'the merits of borrowing' the latest industrial technology for nations such as the United States or Germany. In spite of its cultural inheritance, however, the borrowing community would have to make its peace with the new elements "on such terms as may be had". If the difference between the new and old cultural elements was too great, he reminded, their introduction might be so disruptive as to entail wholesale destruction, such as had been the case with the Indian civilisation with the introduction of iron tools, fire-arms, distilled spirits, the horse, and trade, especially in furs (Veblen 1915: 38f.). Innis made much the same point in his study on the fur trade, where the "insatiable demand" of North American hunting peoples for European goods, which enabled them to obtain their food supply (*e.g.*, moose) more quickly and to hunt the beaver more effectively, was a determining influence upsetting the cultural and ecological balance of their civilisation, which ultimately succumbed to war and disease (Innis 1930: 388). There was a further lesson here for Innis in the analogous impact of industrial civilisation on European, or Western cultural values (Innis 1950b: 141). However, although not as severe as those of Western civilisation on the Indian Civilisation or of industrial civilisation on traditional Western, readjustment problems were present already with each transition from one staple to another.

The hang-up on harmonious statics and dynamics in orthodox and not so orthodox economics, stimulated the development of what Innis termed 'cyclonics', wallowing in and gorging upon disruption.<sup>25</sup> Gunnar Myrdal (1944, 1957, 1964 [orig. 1956]), too, was to retain

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<sup>25</sup> Comparing the Canadian literary tradition with American and British, Margaret Atwood (1972: 32) has observed, that "the main idea is [...] staying alive. Canadians are forever taking the national pulse like doctors at a sickbed: the aim is not to see whether the patient will live well but simply whether he will live at all. Our central idea is one which generates, not excitement and sense of adventure or danger which the Frontier holds out, not the smugness and/or sense of security, of everything in its place which the Island can offer, but an

from the institutionalist tradition the critique of the assumption of equilibrium, but instead of focusing on disruption he sought a theory of self-reinforcing disequilibrium. Innis's perspective profited from admitting the experience from Canada's marginal position within Western civilisation as a legitimate stand from which to start theorising. The search for a theory more appropriate for new countries provided a good opportunity to discern and avoid some central biases of orthodox theory.

A further synthesis of economic theory and economic history was part of Innis's explicit program as spelt out in his 'bibliography' of Veblen (Innis 1929c). At least on the surface it was inspired by Veblen, but in significant respects was very similar to the program Ashley had expressed, and, as did the British historical economists, Innis traced its lineage to Adam Smith. If Smith had made the last major stocktaking before the industrial revolution, Veblen's importance was that he was the first to attempt one after it, Innis argued, and rounded off: "Any substantial progress in economic theory must come from a closer synthesis between economic history and economic theory". The extensive work being done in economic history on the origin and growth of institutions "will call for more diligent application in the synthesis with economic theory". He envisaged a program where Veblen's attempt at synthesis was to be "revised and steadily improved" (Innis 1929c, 1956: 26). In the article on "The Economic Significance of Culture" (1944, 1946: 100f.) he tried to identify the roles both economic history and economic theory had to play in political economy – a subject more difficult than mathematics: "The significance of economic history in all this is shown in its concern with long-run trends and its emphasis on training in a search for patterns rather than mathematical formulae."

Innis noted Veblen's (1919: 180-230) criticism of the 'static' nature of orthodox economics expressed in a critique of J. B. Clark. John Maurice Clark (1923), the son of the latter and Innis's teacher at Chicago, had been encouraged to complement it with his book on 'overhead costs'. Easterbrook (1953) reports that Innis's research program consisted basically in adapting the work of Clark and Veblen to his own field of historical investigation. For Veblen, however, the roots of the static perspective extended back into the classical tradition, which was teleologically predisposed to see society as moving in and unfolding towards equilibrium. The static theory formulated "the conditions under which this putative equilibrium supervenes", and those features that did not fit the formula were "abnormal cases and are due to disturbing causes", so that "the agencies or forces causally at work in the economic life process are neatly avoided" by reverting instead to taxonomy and classification (Veblen 1919: 67f.). The contemporary work best exemplifying the approach, Innis (1929c, 1956: 24) agreed, was that of Alfred Marshall, the arch-enemy of the neomercantilist economic historian Cunningham (1892) in spite of Marshall's claimed belief in later years that the historical approach would revolutionise economics (Olsson 1994). As Georgescu-Roegen (1966: 106f., 1971: 321) commented: "It is nevertheless true that lessons, perhaps the only substantial ones, on how to transcend the static framework effectively have come from Marx, Schumpeter, and Veblen."

Like Georgescu-Roegen, Innis considered the constructive argument to be both overlooked and more important. Enumerating all major works from *The Theory of Business Enterprise* (1904) and forth, Innis (1929c, 1956: 26) explained how Veblen's theme was the increasingly chaotic problems arising from the unused capacity of industrial technology:

His main argument was logically developed in all of these volumes – namely, that machine industry was overwhelmingly and increasingly productive, and that the problems of machine industry were incidental to the disposal of the product.

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almost intolerable anxiety. Our stories are likely to be tales not of those who made it but of those who made it back, from the awful experience – the North, the snowstorm, the sinking ship – that killed everyone else."

The constructive part of Veblen's work was essentially the elaboration of an extended argument showing the effects of machine industry and the industrial revolution. Veblen's interest was in the state of the industrial arts which had gone out of hand – a point similar to that urged by Samuel Butler.

This indicated that the harmonious equilibrium of the *statics* or *dynamics* of conventional economics had to be complemented by a *cyclonics*, sensitive to the disruptive reverberations of technological or other progress, echoing to and forth – 'synchronically', in the geographical dimension, in economic 'cyclones' between metropolises and hinterlands, and 'diachronically', over time, in not so evidently equilibristic business 'cycles'.

Marshall (1920: 270) declared in his *Principles* that "the causes which determine the economic progress of nations belong to the study of international trade", and opened up the second but last chapter, dealing with "General Influences of Economic Progress", as follows: "The field of employment which any place offers for labour and capital depends, firstly, on its natural resources; secondly on [...] knowledge and organization; and thirdly, on [...] markets in which it can sell those things of which it has a superfluity. The importance of this last condition is often underrated; but it stands out prominently when we look at the history of new countries" (*ibid.*: 668). He went on referring to "the splendid markets which the old world has offered to the new" (*loc. cit.*), but as Nurkse (1959: 16) later noted: "It is perhaps significant that such remarks, though true almost to the point of platitude, were left unrelated to the traditional theory of international trade." A most important source of Innis's contribution in this respect was a metropolis-hinterland perspective joined with attention to the repercussions following the specific character of various staple goods and an observance of the character of demand.

In searching for a more adequate theory of Canadian economic history, Innis was helped by a man with similar personal experience of the conditions giving rise to agrarian radicalism, his colleague William A. Mackintosh, who was familiar with Turner's frontier thesis and with the ideas of Guy S. Callender. As noted above, Callender (1909, quoted in Berger 1976: 92) proposed that "the most important feature of the economic life in a colony or newly settled community is its relation with the rest of the world." Mackintosh (1923) suggested a more systematic study of Canadian history on these lines. Innis asserted in conversation that his interest in export staples had in part been aroused by this lecture, whose broad thesis was that "Canadian economic and, indeed, national development had been delayed and frustrated because we had been able to achieve no more than intermittent and marginal export staples until the wheat trade achieved a firm basis at the turn of the century." Innis "clearly exaggerated" the influence of his essay, Mackintosh admitted (1953: 187), since it only spelt out what Adam Smith and Callender had already said, and since Innis's thesis had already fixed attention on the staple export, he noted it because it was "concerned with ideas already formed in his own mind." Mackintosh's ideas were encouraging, but Innis felt that he had paid too much attention to the later stages dominated by the wheat staple.

In another work, Mackintosh (1924: 1; cf. Berger 1976: 92) argued more generally:

In the settlement of new countries one problem takes precedence over all others – the problem of discovering a staple product with a ready market. The world makes a path to the door of those regions fortunate enough to possess such a product, and all commodities of other countries are obtainable in exchange [...]. So well do young communities understand this fact, that it is almost possible to write the history of the settlement of North America in terms of the search for new vendible products [...].

Innis, partly inspired by the British sociologist Graham Wallas, understood the primary reason for the emphasis on staple products to lie in the need to maintain a habitual pattern of culture

and consumption. Sudden changes of cultural traits could be made only after serious difficulties, and maintaining them and the accustomed standard of living involved an appreciable dependence on the peoples and goods of the homeland, resulting in the migrants' search for "goods which could be carried over long distances by small and expensive sailboats and which were in such demand in the home country as to yield the largest profit (Innis 1930: 383f.). In the early modern era such goods were necessarily luxuries (or their raw materials), intended for the European market, particularly in the major metropolises. The first of these was cod, which under the circumstances of early modern Europe could be seen as a kind of luxury, the second was furs, particularly beaver pelt for hats.

The peculiar character of new countries was a further stimulus to Innis, one of whose central messages to Canadian political economy was that theories developed in old, industrialised countries were not applicable in new ones: "Economic history consequently becomes more important as a tool by which the economic theory of the old countries can be amended" (Innis 1929b, 1956: 3). Working out his new project, Innis nevertheless brought into the marriage a theoretical toolbox from the Chicago metropolis, including C. S. Duncan's "lectures on the relationship between the physical characteristics of a commodity and the marketing structure built in relation to it", and Veblen in whose work "the same point had been made but in a more general fashion" (Innis n.d.1, in Neill 1972: 35). Based on his lectures, Duncan (1920: 17) wrote a manual on marketing, which made a primary division between, on the one hand, raw materials and foodstuffs, and on the other, finished, or manufactured, goods, advising students that a specific commodity should be selected and study "planned to carry through both the raw-material and the finished-product stage". The former reached the market (bourses, fairs, etc.), fabricating plant or consumer, without any significant intervening manufacturing process, and as a product nature, not man, did not come into being in accordance with a predetermined man-made plan. Since they did not readily fall into standard patterns, standards were difficult to apply. For manufactured goods the fabricating process was of paramount importance, and it was here that machinery and standardisation had entered most conspicuously. Whereas the moulding of the product was under manufacturer control, he nevertheless took his orders from consumer demand. Whereas the marketing of raw materials and foodstuffs required an emphasis on the control of the commodity and the risk of its destruction and deterioration, the marketing on finished products stressed the control of consumer demand, through branding, trademarking and particularly advertising: "The aim of analysis in raw materials is to secure scientific production; the aim of analysis in finished goods is to promote scientific selling" (Duncan 1920: 278). One can recognise the parallel to Veblen's distinction between 'making goods' and 'making money'.

Duncan had much to say on the different trade organisations built around these various goods, which would be included in Innis's analysis of the fur trade (*e.g.*, on the grading of raw materials which gave advantage to the British around Hudson Bay over the French around the St. Lawrence, and to hunting during winter rather than summer). Arguing for the importance of the Chicago school of sociology, and of Robert Ezra Park's 'human ecology', to Canadian social science, Shore (1987: 272; cf. McLuhan 1964a) claims that Duncan's point that the physical characteristics of a commodity influenced its marketing structure and in turn the cultural community built in relation to it, "all stemmed from Park's ecological theories and penetrated into Innis's books." She points to the neglected ecological dimension in Innis's work – his description of beaver family life was perhaps one of the more conspicuous instances –, which she thinks adds to her case, noting also that Canadian historians' lack of theoretical understanding contributed to the neglect of this influence. Whatever Park's influence, Duncan entered the reference list of N. S. B. Gras, who was perhaps the direct source of the metropolis-hinterland dichotomy.

Gras's methods and point of view owed a great deal to the German tradition of economic history, with a preference for typological classification and interpreting history as a succession of 'stages'. The earliest and best known of his studies, on *The Evolution of the English Corn Market* (1915), emphasised metropolitan areas and markets, and was, as Postan (1957: 485) puts it, "a detailed exercise on themes from Schmoller". The same interest and influences were reflected in many of his later studies, notably on the interplay between metropolis and hinterland, which was important also in the work of Werner Sombart, and was to become so in the works of Innis, Prebisch, and others. Gras's (1922: 181-340) introductory attempt to give an overall picture of the Modern Era from a metropolitan perspective, built primarily on the case of London and its position in England and the world economy, and on the growth of American metropolises. A metropolitan economy entailed a stronger division between the metropolis and its hinterland. Gras found it characterised by four phases: (1) the creation of a well-organised marketing structure for the hinterland; (2) the development of manufacturing; (3) the linkage of the urban metropolis to its hinterland through improved transportation; (4) the emergence of a mature financial system.

Simultaneously with the organisation of the market in the first phase, joint-stock companies became more important, since they could finance expensive, risky and long voyages. Along with inter-city trade, an internal division of labour between the metropolises and their hinterlands emerged, where the latter supplied the raw materials and the former provided a varied supply of finished goods. The hinterland constituted a substantial part of the market for finished goods, while the metropolis functioned as collecting point, warehouse, stock-in-trade, etc., and as Duncan had pointed out, the physical characteristics of the goods influenced respective organisation. The metropolis saw the growth of various specialised activities and trade institutions, such as credit and advertising, but also an increased dependence on the foodstuffs of the hinterland. Mercantilism created national free-trade zones, and temporary protective monopolies for the metropolises and manufactures, but was ultimately hampering because of the different interests of state and metropolis. The second phase was characterised by industrial development starting to withdraw from the centre of the metropolis into adjacent villages. The vicinity of great market demand in the metropolis was becoming neutralised by heavier costs of living and production. The increasing volume and specialisation of goods resulted in heavier loads on roads, so that during the third phase, the network of transportation was extended, improved, and modernised (*i.e.*, railroads). Now the restraints on *laissez-faire* and the free-trade system could be loosened, and instead appeared necessary due to increased means of production. The fourth phase meant that banking and finance, though present from the start, acquired an independent and even dominant position.

Innis criticised all attempts to generalize from European experience, and never considered Gras's scheme applicable to Canadian history, where cities grew and took on the characteristics of metropolitan centres in a radically different order. Canadian cities arose not in isolation, but out of the commercial dictates of staple exploitation and cyclonic growth. Nevertheless, viewing Canada as the 'hinterland' of the European metropolises the coherent model of metropolis-hinterland interflow must have been intriguing. Because of Canada's position at the margin of Western civilisation, Innis was naturally more occupied, at least initially, and as opposed to the sociologists of Al Capone's Chicago, with the problems of the hinterland. With each shift of major staple product, Canadian society and ecology was thrown into pangs of readjustment, but changes in the hinterland could also resound on the European or American metropolises.

The reciprocal and often disruptive interaction between metropolis and hinterland was notable in the paper industry. The preceding adaptation to British metropolitanism laid Canada open to the American, which was accompanied by market restrictions and complex tariffs and exchange controls, forcing Canada to concentrate on exports with the most

favourable outlets. Thus: “Newsprint production in Canada is encouraged, with the result that advertising and in turn industry are stimulated in the United States, and it becomes difficult for Canada to compete in industries other than those in which she has a distinct advantage. Increased supplies of newsprint accentuate an emphasis on sensational news. As it has been succinctly put, world peace would be bad for the pulp and paper industry” (Innis 1948: 111). In Innis’s analysis, advances in the pulp and paper industry, notably the use of wood pulp, encouraged and was encouraged by American ‘new journalism’, which pioneered ways of increasing circulation and attracting advertising. Exported to Europe, this sensationalism underlined international instability as a means of increasing circulation, which in Innis’s view, encouraged the First World War. Furthermore, the limitations of the press facilitated rapid development of the radio, particularly in Germany. German language regions were powerfully influenced by Hitler in his effort to extend the German *Reich*, whereas English language groups were mobilised by Churchill and Roosevelt. Rapid changes made people rely for information on the radio, which became a powerful instrument of propaganda stimulating the Second World War (Innis 1949: 101f., *et passim*).

Easterbrook (1953) believed that Veblen’s influence was most notable in the early years and that Innis’s thoughts on the impact of means of communication on mind and society came under the inspiration of his studies of the pulp and paper industry. In fact, Veblen (1904: 385f.) also wrote on the press and advertising, even to the point of relating it to war. Exemplifying that ‘terrific irony’ admired by Innis, he outlined how in order to sell advertising space, gauging the prejudices of readers became the editor’s first duty, until it all collapses: “The modern warlike policies are entered upon for the sake of peace, with a view to the orderly pursuit of business” (*ibid.*: 392).<sup>26</sup> Although the scale of disruption had been increased by industrial technology, the cyclonic reverberations between metropolis and hinterland followed a pattern discernable already for earlier staples.

In the conclusion of *The Fur Trade*, Innis sketched the impact of successive staples on the Canadian economy. The first staple, simultaneous or even preceding furs, was cod, to which Innis himself was to devote articles and a major volume by 1940. The decline of the fur trade was accompanied by the rise of the lumber trade, which was largely responsible for the improvement of waterways and the construction of railways prior to Confederation. It had important effects on the supply of raw materials and extension of the market for the finished product. Heavy overhead costs meant that ships sailing from Quebec with lumber, were in desperate need of a return cargo. These ‘coffin ships’ were employed to take out emigrants, whose settlement brought an increase in imports of manufactured products and exports of potash, wheat, lumber, and other products. Heavy expenditures involved the development of a strong central government, while the serious effects of crises in Britain and the United States involved centralisation of banking, and finally promoted Confederation as a guarantee of successful operation.<sup>27</sup> Increasing demand for paper in the United States and the exhaustion of

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<sup>26</sup> Innis did feel that just as Schumpeter (1939) had neglected the importance of communications for the understanding of depressions, and that Veblen had failed to grasp the full significance of monopolies of communication for the disruption of society: “Schumpeter [...] has neglected the problem of organization of communication by which innovations are transmitted. As monopoly of communication with relation to the printing press, built up over a long period under the protection of the freedom of the press, accentuated discontinuity and the destruction of time, it eventually destroyed itself and compelled a recognition of a medium emphasizing time and continuity [*i.e.*, the radio, J.B.]. Veblen’s emphasis on the pecuniary and industrial dichotomy overlooks the implications of technology, for example in the printing industry, and its significance to the dissemination of information in a pecuniary society. A monopoly which accentuates more rapid dissemination brings about a profound disruption of society” (Innis 1951: 187).

<sup>27</sup> “Perhaps it was Innis’s iconoclastic sense of humour that led him to juxtapose in a causal relationship the prosaic facts of primitive technology with grand political results, or to describe Confederation as a credit instrument” (Berger 1986: 102).

more available American sources of pulpwood, were factors responsible for the development of the Canadian pulp and paper industry especially after 1900. Innis's forest-loving colleague, Arthur Lower was to extend the story of forestry staples in *Settlement and the Forest Frontier* (1936) and *The North American Assault on the Canadian Forest* (1938).

With the completion of the Canadian Pacific Railway and addition of other transcontinental lines "Canada came under the full swing of modern capitalism with its primary problems of reducing overhead costs" (Innis 1930: 399). As Innis well knew from his previous study overhead problems were crucial also in the production of wheat, as a plant grown in a north temperate area affording pronounced seasonal traffic. George Britnell, whom Innis reputedly considered as something of a disciple, elaborated on this staple in *The Wheat Economy* (1939). Lower's first book was co-published with Innis's own study of *Settlement and the Mining Frontier* (1936). Innis interest in the mining industries had been awakened rather with his study of the Canadian Pacific Railway, and mining had indeed been important for the timing of construction, in order not to loose contact with British Columbia to the benefit of the United States, although the localisation was still dependent on the fur trade. Interest here was directed towards the separate regions and their spasmodic development; naturally, the role played by geographical factors was noted, as well as the side effects of technological inventions (exhaustion of sources, extraction from ore or by washing, weather, water flow, unused capacity, and overhead costs of dams, machines and transport). He (*e.g.*, 1936: 267f. on Yukon) often reminded of the ravages of the economic 'cyclone', with sweeping gold rushes followed by rapid elimination, leaving whole ghost towns behind, and began sketching on a study of the pulp and paper industry, where the cyclonic side effects, as indicated above, might have proven overwhelming.

The so called 'staple thesis' thus became prevailing in the 1930s, and V. W. Bladen's political economy was for example heavily indebted to Innis. The perspective influenced also the historical sociology of C. S. Clark, who was interested in the societal cyclonic side effects of shifts in dominating staple,<sup>28</sup> and in the 1950s J. M. S. Careless (1954) revived the book's 'metropolitanism'. Furthermore, the anthropologist Alfred G. Bailey's (1937) *The Conflict of European and Eastern Algonkian Cultures, 1504-1700* owed much to Innis's *Fur Trade*, but was largely ignored until ethnohistory became popular in the 1960s. While futilely waiting for 'the great Canadian novel', Northrop Frye has even suggested (in Klinck 1965) that Innis might have touched the right cord of Canadian literature.

In spite of it taking 15 years to sell the thousand copies of the *Fur Trade*'s first edition, the book had an impact exceeding that of any other in Canadian political economy, but was equally important in historiography. Trying to understand its impact as well as the role it played in relation to Innis's other work, it is not enough to look only at the staple thesis. It was in fact the implications of the geographic, communications, and techno-economic substructure on the superstructure of political organisation and thinking, which gave the book its revolutionary and iconoclastic freshness. Thus, the diplomatic focus of Chester Martin's *Empire and Commonwealth* (1929), which lauded the contributions of the maritime region Nova Scotia in the establishment of responsible government, was obsoleted through Innis's fur-trade study. In a number of books such as *The Commercial Empire of the St. Lawrence 1760-1850* (1937) and *The Dominion of the North* (1944), Donald Creighton profited from

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<sup>28</sup> The characteristic feature of Canada's social history "has been the recurrent emergence of areas of social life involving new problems of social re-organization and adjustment" (Clark 1939: 351; cf. Clark 1959, 1962). Berger (1986: 165) summarises Clark's perspective of the history of Canadian social developments as "the record of a succession of disturbances in social relations, habits, controls, and institutions caused by the intrusion of new forms of economic production. In the fur trade of the St. Lawrence Valley, the fisheries of Nova Scotia, lumbering and farming of New Brunswick, farming in Upper Canada, mining in the Yukon and northern Ontario, wheat-growing on the Prairies, and manufacturing in the industrial cities, the specific modes of production determined the nature of social problems."

Innis's study and instead found the centralising effects of the St. Lawrence something very much to acclaim.

However, as when turning from study of the C.P.R. to the fur trade, Innis in a sense used the study of the substructure as a tool to liberate himself (and perhaps some of his readers) from ingrained habits of thought on political matters, notably on the centralisation and decentralisation of empire and commonwealth. If Canadian historiography had previously been concerned with little else but political and diplomatic perspectives, any reinterpretation, even while raising economic interpretations to centre stage, would have to relate, or be related to such concerns. Thus, if *The Fur Trade* substantiated a theme of Canadian unity and continuity over time, Innis's other works of the 1930s, on the mining frontier and cod fisheries explored rather Canadian diversity and discontinuous development. Unifying, centralising or centripetal forces predominated in waterways and railways of the fur, timber, and wheat trades, but the fish, minerals, and pulp and paper staples were more noteworthy for the centrifugal forces they set working of diversity and decentralisation characterised the sailing ships, canals and automobiles.

### Imperial political economy

"Canadian history tends to be of absorbing interest to Canadians but of little interest to other peoples", Ferns (1980: 68) has written. This can perhaps explain the relative neglect of Innis's next major work, *The Cod Fisheries* (1940), both among Canadians and non-Canadians. It is a particular pity that Patterson (1990) has made no substantive use of it in his argument connecting the concerns of Innis's early and late writings. Sprung from contrasting observations made while working on the fur trade, *e.g.*, of fishermen's more hostile relations with Indians, it is in fact very much more than the mere padding in the Canadian staple thesis it is sometimes held to be. Its relation to the fur trade study can be surmised by looking at their respective subtitles. If *The Fur Trade* as 'an introduction to Canadian economic history', really studies the economic foundations of the political entity of the Dominion of Canada, by contrast, *The Cod Fisheries*, as a study of 'the history of an international economy', is really concerned with the economic foundations and character of the first British Empire and its offspring: it presents a new perspective on the history of Europe and North America, stressing the relationship of the fisheries to the maritime greatness of Britain and to the growth of New England as an important commercial power. Brebner (1953) pointed out that whereas the "patterns of force" in the fur trade of the St. Lawrence and the Great Lakes were centripetal, in the fisheries, scattered over extended coastlines, they were centrifugal. Such patterns of force became central tools in the understanding of Innis's last writings.

Canadian historiography before Innis was dominated by constitutional history, with important recent exponents in Martin's (1929) study 'in governance and self-government in Canada', and Livingston's (1930) on responsible government in Nova Scotia as the 'constitutional beginnings of the British Commonwealth'. Following up his study of the fur trade, Innis (1931: 38f.) wanted instead "to emphasize the continuous and powerful effects of the underlying technique of industry on the economic, social, and political activities of the communities concerned." Thus, already in the initial phases of studying the fisheries, he linked their findings on responsible government to trends occasioned by underlying geographical and economic patterns. The centralising tendencies of continental Canada were incidental to the fur trade built round the St. Lawrence, so Innis was arguing in a double sense against the influential Turner thesis. Innis (*ibid.*: 39) assumed "that the frontier of New England history was toward the sea and not, as Turner has suggested, towards the land." An incidental result of this outward pull of the fishing industries "was shown in the hostilities with the native populations. The bitter wars of New England and the extermination of the

Beothic in Newfoundland contrasted strikingly with the fur trade and its dependence on friendly relations with the Indians.”

In addition to the friendlier associations with the Indians, the story of the fur trade had focused on persistent pressures of centralisation, the growth and succumbing of monopolistic organisations under the pressure of technological innovations, and its re-emergence as a political entity. The study of the international economy of cod from 1497-1938 focused on the growth and relative maturity of a decentralised economic system, which ultimately succumbed to, was eroded and made obsolescent by, the competition of a centralised economic system. This, in Innis’s terminology, ‘commercial’ system came into existence when easily exploited fishing grounds were opened up to Europe, through improved maritime transportation. The capital investment in the fisheries as such was negligible and the investment in shipping both economically and physically mobile, though onshore bases of supply, of course, were not. These added efficiency and ultimately liberated the North American coastal trade from dependence on Europe and concomitantly from the mercantilist controls necessary for operating under the uncertainties and longer time horizons of trans-Atlantic voyages. The minimal capitalisation, easy entry, and flexibility in the face of shifting opportunities for profit, of this thereby decentralised commercial system, militated against tight control of European mercantilist states or empires. Some have suspected that Innis was in fact pulling his readers legs when suggesting that the English fishermen’s limited supply of salt, forcing them to dry their fish on land and thereby giving them an advantage in coastal settlements, was responsible for the English dominance in the north-west Atlantic. English superiority in coastal trade was the basis for long-run victory, but the same problems of centralised political control which defeated the Spanish and the French re-emerged prior to the American Revolution. Neill (1972: 47) summarises succinctly: “The significant victory was not the victory of one nation over another but of commercialism over mercantilism. Shifts in national dominance were symptoms of political problems caused by the bias towards decentralization in the maritime economic system.”

As in the *Fur Trade*, the story ended with the commercial system being defeated, or made obsolete, by the higher demands on capitalisation, centralisation, and development of new products accompanying the advent of steam transportation. Before final collapse, however, there was an economic and political Indian summer, during which the relative possibilities of inland development gave Nova Scotia an advantageous position for organised bargaining, making it the first colony in British North America to achieve independence under ‘responsible government’. This in itself affected the structure of confederation in Canada as a whole, counterbalancing the centralist tendencies of areas influenced by the railroad, and providing a temporary solution not only to the Imperial problem, but to the regionally divided Dominion, with its substantial French population. As before, Innis’s concern is fundamentally in the political implications of techno-economical changes, primarily as affected by means of communication, and it is here, too, that he (1940: 500ff.) for the first time explicitly puts “problems of empire” on the agenda. This extended not only to the centripetal or centrifugal side-effects of waterways within an imperial metropolis-hinterland system, but also to the differing tendencies of oral and written traditions with respect to ideals of centralisation or decentralisation. *The Cod Fisheries*, Innis (*ibid.*: xi) wrote, attempted “to add to the significant studies of mercantilism by Professors Heckscher and Viner.” On the political level it was thus partly conceived as a complementary volume to Heckscher’s *Mercantilism* (Eng. ed. 1935), but concerned with the decentralised ‘commercial system’, based fundamentally on oral communication, as opposed to the centralised mercantile system based on literacy: “The illiteracy of the fisherman is the reverse side of the literacy of the diplomat” (*ibid.*: x).

There was perhaps a certain ‘melancholy’, unnoticed by Patterson (1990), for this pre-industrial ‘commercial system’ as well as the pre-industrial one of the St. Lawrence

reminding of Martin's for the same era. In Innis's case it is most likely related to his fondness for systems in which more intimate economic relations and oral communication dominated – more conducive of friendly economic relations than of warfare – and certainly to his profound admiration for Smith. Easterbrook (1953: 291) remarked: “Although Veblen's influence left its mark on his work, Innis remained throughout a disciple of Adam Smith and no name appears more frequently in his observations on economics past and present.”

Smith (1937: 13) founded “the propensity to truck, barter, and exchange one thing for another” not on “one of those original principles in human nature, of which no further account can be given”, but saw it, “as seems more probable”, as “the necessary consequence of the faculties of reason and speech”. This translation of the Roman *ratio et oratio* exemplifies Smith's links with the Western tradition of rhetoricians and grammarians back to the Hellenistic Stoic exegetes of the Heraclitean *logos*, the creative spoken word. Although without classical schooling, Innis, too, with the help of Graham Wallace and the classicist Cochrane worked his way back to the spoken word and the fertile Greek culture, which, as Arendt (1993: 51) has noted, to an incredibly large extent consisted of “constant talk” among citizens. Closer at hand, the potential of a strong oral tradition was reflected in the Common law tradition. The self-love to which man should in Smith's view turn to for help from his brethren, was informed by the profounder ‘sentimentality’ and the retaining of ‘common sense’, which he had previously expounded, but which was apparently deranged by the selfishness of monopolies. Innis's preference for direct communication and experience (or even silence which is not easily ‘expressible’ by other means of communication than speech) relates to Smith's theory of sentiments. Patterson (1990: 17) noticed that like Smith, Innis was hostile to monopolies of power, “but beyond this he was opposed to the means whereby such power was entrenched and structures of government made resistant to change that necessarily attended shifts in the balance of power. It was not statutory prescription, he contended, but the flexible traditions of the common law that enabled the British constitution to adapt itself to such radical change in the nineteenth century; and it was in like fashion that he reflected upon the federal structure of Canada.”

Innis's work is often divided into an early and late phase not present in his own mind, which shows a consistent concern with both ‘empire’ and ‘communications’, or the long-term problems of large scale politico-religious organisations, even to the extent of including culture and science itself as means by which to retain their vitality. Questions of science and of empire had been traced in parallel, but became more unified in his later work, both ultimately relating to a problem of ‘biases’ and how to avoid them, that he had found in Veblen.

In *Empire and Communications* (1950a), Innis dealt with how means of communication ordained the chronological and geographical successes of empires, and the implications if this for the British Empire and Western civilisation. It is widely believed to be only superficially related to his earlier work, whether one has let oneself be inspired by the one or the other. In its final chapter, Innis demonstrated the impact of the introduction of paper and the printing press on the political and economic evolution of the West. An immensely condensed summary of this chapter, which was itself a summary of a 1000-page draft (Innis n.d.2), can be found in another essay from the same period, where Innis (1947: 29) comments on the interplay between the mechanisation of the vernaculars and the breakthrough of militarily organised nationalist states: “The effect of the discovery of printing was evident in the savage religious wars of the sixteenth and seventeenth centuries: Application of power to communication industries hastened the consolidation of vernaculars, the rise of nationalism, revolution, and new outbreaks of savagery in the twentieth century.”<sup>29</sup>

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<sup>29</sup> McLuhan (1969 [1962]: 280-282) commented that his own book, *The Gutenberg Galaxy*, was merely a footnote to this one sentence by Innis. The by now widespread literature relating the printing press to nationalism and cultural change only rarely acknowledges Innis's contribution. Yet, Innis was well known, if not well

The characteristics of the alphabet made it easily adaptable to mechanised reproduction in innumerable combinations, with a limited number of types: “In contrast with China, where the character of the script involved large-scale undertakings supported by governments, the alphabet permitted small-scale undertakings manageable by private enterprise” (Innis 1950a: 173). Being the first mechanisation of a medieval handicraft – the scribe –, it reinforced the types of state organisation favoured by paper as compared to the monastic ‘monopoly of knowledge’ based on parchment. Its spread initially followed the routes of commerce to Italy, where it contributed to the publicational revival of classical literature and exegesis in the Renaissance, purifying the language of learning to the brink of extinction, and Germany, where it changed the environment of debate heating up debate in the vernacular and contributed to both the political and religious side of the Reformation, thus ultimately to the devastation of the German lands in the Thirty Years War. The emphasis on the vernacular made it particularly appropriate for the ‘centralised feudalism’ (not Innis’s word) in England. The connection between the printing press, nationalism and capitalism caught but not expanded upon in by Anderson’s (1991) concept ‘print capitalism’, seems to be yet another of those unacknowledged re-inventions of which this branch of history – or rather sociology – has been so full.

Disregarding the First World War, Innis himself probably came upon the problem of the nationalist bias of the printing press when trying to resolve the problem of empire and the end of the First British Empire with the American Revolution. The unequal development of printing in Great Britain and the colonies, which – as Anderson also emphasises although he exaggerates the importance of Latin America and underestimates that of England – came more profoundly under the impact of the newsprint industry, gave prominence to the ‘freedom of the press’ (rather than the freedom of speech), and contributed to the break-up of the British Empire (Innis 1950a: 195ff.). In France, a parallel disequilibrium was created which contributed to the revolution: “The policy of France, which favoured exports of paper in Holland and England, created a disequilibrium which ended in the Revolution” (*ibid.*: 199). However, French politics, founded on a fusion of church and the state, had also managed to erect a vast empire in North America, which when lost to Great Britain contributed to the collapse of the first British Empire, and became part of the second. The impact resulting from mechanisation of the hand-press in the early 19<sup>th</sup> century, following the industrial revolution, in time entailed an enormous spread of nationalism, ultimately collapsing the internally relatively harmonious 19<sup>th</sup> century European diplomacy and civilisation. In a sense, Innis was still adding to the interpretation of mercantilism (and neo-mercantilism) as a form of nationalism.

The ‘problem of empire’ had also been with Innis from start, when he noted the centripetal effects of the Canadian waterways in his study of the fur trade, and the centrifugal effects of Atlantic fisheries. In his last writings, however, Innis conveyed more generally how the media of communication most central to societal organisation tended to reinforce, or bias, their respective societies and administrations relatively either towards spatial expansion and political organisation, or towards durability in time and religious organisation. Starting with an observation of Bryce (1901: 254f.) on the respective centripetal, centrifugal, and again centripetal trends from ancient prehistory to the Roman Empire, from its fall to the reorganisation of nation states from the 13<sup>th</sup> century onwards, Innis (1950a: 6f.) noted the correlation of these periods to the dominance of respectively clay and papyrus, parchment,

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understood, at the time of his death in late 1952, lecturing at a seminar presided over by Lucien Febvre over half a decade before the appearance of Febvre’s and Martin’s book *L’Apparition du livre* (1958). The impact on McLuhan, who also made extensive use of Febvre & Martin, is of course well-known, but Anglo-Saxon scholars of the press and nationalism seem to have an almost Oedipal fear of admitting anything of value in what he had to say on anything, although in France he is readily acknowledged (*e.g.*, Martin 1994: 331).

and finally paper. “The effective government of large areas depends to a very important extent on the efficiency of communication”, and the successful operation of these ‘centrifugal and centripetal forces’. Perhaps inspired by the language of relativity theory or the neo-Kantian Ernst Cassirer, time biased media, thus, tended to be durable like parchment, clay, or stone, whereas space biased were rather lighter and less durable, such as papyrus and paper. However, this was a relative affair, so that, for example, parchment was time biased in relation to papyrus or paper, but space biased compared to clay or stone. In addition, he (*ibid.*: 8f.) underlined that the *oral tradition* was too easily forgotten since it had left no material remains, posing difficulties for people schooled in written or printed traditions truly to appreciate it.

He then set out, after the fashion of the day (cf. Spengler, Toynbee, Kroeber, Mosca, Pareto, Sorokin, and others less familiar), but according to McLuhan as the first to use history as the physicist uses his cloud chamber, on a comparative study of empires, to demonstrate the importance of communications to historical and economic change as such, but in particular to the British Empire and statecraft. He studied the transformations and repercussions of strictly speaking invisible oral traditions, when ‘fenced’ by various systems of writing in a number of civilisations, how different monopolies of knowledge were erected around the respective dominating media, leading to rigidities and inviting alternative media. He also studied how enduring empires, incorporating ‘time’ and ‘space’ (or religious and political) elements, had emerged when media of contrasting bias were balanced, and finally, how periods of cultural creativity arose in the transition between two media of opposing character (particularly from orality to literacy), when culture is (temporarily) liberated from the screening of an earlier medium (cf. Innis 1950a: 215ff.). He mentioned how the radio reversed the space biased tendency of paper toward problems time, but his most illustrious follower, McLuhan, instead argued that the *global* electronic media made Innis’s distinction between biases of space and time obsolete (himself preferring to speak of respectively ‘visual’ and ‘audio-tactile’ media, or visual and acoustic space). The Canadian background explains this concern with imperial space and time, and the book in question was based on his ‘Beit lectures on Imperial economic history’. The problem suggested by Innis, the social scientist, of finding a statecraft able to cope with the bias of ‘time’ or ‘space’ was never posed by McLuhan, the literary humanist. In spite of McLuhan’s objections – or perhaps because of them – the problem of statesmanship could thus be updated, in the spirit of *res publica*, from concern with ‘empires’ to global forms of government, understanding, or life, aiming at the good of the world in the interminably long run, *e.g.*, concerning itself with the unsolved ‘space’ problem of global inequities, and ‘time’ problem of Earthly degradation, killing off future generations.

### Innis in the dependency and ecology traditions

Problems of ‘underdevelopment’ or ‘environment’ were not very high on the agenda of the interwar era. The problematic economic division between tropical and temperate countries did not become a great issue until after the Second World War. Though Innis pointed to the problems of a civilisation founded on ‘looting’, he did not concern himself overly either with underdevelopment or with the welfare of our non-human fellow earthlings. Notwithstanding, he has come to inspire studies within both the Third Worldist and environmentalist traditions, but oddly, one might think, not through his explicit treatment of the difficult problems of time and space as defined, but merely through his ‘staple thesis’. This has been transformed, on the one hand, into a ‘dependency’ theory of the kind applied primarily to Latin America, and on the other, into an ‘ecological’ variant of unequal exchange, both underlining the exchange of raw materials for manufactures, which, for one reason or another, has been considered detrimental at least since the mercantilists.

For all his emphasis on the disturbing factors, the weakness of Canada's 'dependent' economic structure, and the 'handicaps' flowing from her geography, plentiful resources and scanty population, there is no indication that Innis ever feared that Canada was not experiencing economic growth. Shifts between staples had never been sufficient to undermine Canadian development. Even though "no country has swung backward and forwards in response to such factors as improvements in the technique of transport, exhaustion of raw materials and the advance of industrialism with such violence as Canada," Innis (1933) noted, "the elasticity of Canada's political, economic, and social structure" had cushioned the blows of cyclonic resource development allowing it to adapt. New countries tended rather to experience 'the merits of borrowing' as Veblen had it: "Industrialization of the new countries given suitable political and social organizations, tends to become cumulative – the United States became industrialized more rapidly than Great Britain, and Canada more rapidly than the United States" (*ibid.*: 82, 88, 90-92). Innis was rather concerned with the disruptions of capitalism and industrialisation as such, and the regional disparities and asymmetries within the old and new British Empire.

For the fishing industries, 'the rise of capitalism', or the end of the previous commercial system, entailed an increased importance of capital equipment: the schooner giving way to the steamship, the railway, and the trawler, salt yielding to ice as the fresh- and frozen-fish industries expanded. Newfoundland, as the region most distant from continental influence and markets and most dependent on cod, had been less influenced by the demands for fresh fish. The decline of the dry fisheries in the United States and Canada contributed to her specialising on salt cod. Newfoundland was placed in a vulnerable position. Pushed out of European markets to the West Indies and South America "or regions with poorly organized societies unable to resist the effects of depression and marginal to more powerful areas" (Innis 1940: 510). Thus, noting Newfoundland's vulnerability he also commented briefly on the situation in Catholic and tropical countries, of which it became dependent:

The demand for salt cod in tropical and Catholic countries has been more directly exposed to the effect of fluctuations in economic activity incidental to regions producing tropical commodities. These tropical products, being luxuries, are subject to wide variations of demand from countries in the temperate zone. Such variations are due to many things – to cyclical business disturbances; to the influence of mechanization on tropical commodities as, for example, citrus fruits, bananas, sugar, and coffee; to the weakness of government machinery in countries whose peoples have low standards of living, as is made evident in bankruptcies, exchange rates, and revolutions – and these variations are also due to the possibilities of competition from fish produced as a by-product in mechanized countries. Demand for luxury products fluctuates sharply, as it does for dried cod, whereas fluctuations in the cost of provisions and supplies such as flour, salt pork, and salt beef from temperate continental areas have been less pronounced. (Innis 1940: 493.)

Here Innis identified many characteristic features that would re-emerge in the postwar discussion on underdevelopment, notably the difference between the products of tropical and temperate regions, related to the disadvantageous variations of demand for luxuries as compared to basic goods, the 'soft' state, and low standards of living. In his marginal notes reprinted in a later edition (Innis 1954: 510), the parallel between Newfoundland's politically weak position and the situation in certain tropical countries was again underlined, and related to the difference between the products of temperate and tropical goods: "Toughness of cultural background fundamental in withstanding the effects of severe strain. Marginal poorly organized regions suffer acutely with depression. Loss of responsible government in Newfoundland. Marginal staple-producing countries dependent on prices of raw material. Luxury goods high in price, subject to wide fluctuations [and] fixed income charges to make whole very unstable in New France, Brazil, West Indies. As transportation improves bulkier

lower value goods increase in importance and, because of character of necessities, [are] less subject to sever fluctuations.”

But it would be dishonest to say that he had a clear conception of the reasons behind ‘underdevelopment’, a word and problem not yet on the agenda in the interwar years, and certainly not on the mind of Innis, who was concerned principally with problems of empire and civilisation, extending political economy to political organisation and philosophy through his engagement with the British Empire. Had he lived longer he would have been in a better position than most to make sense of the different development paths in Latin and Anglo-Saxon ‘new countries’ or ‘regions of recent settlement’. As it was, his engagement in the political dimension was not (yet) global (as reflected in the United Nations), even if he was, if anyone, heading in that direction as a world historian of ‘empires’.

In 1963, Watkins (1963: 53) discovered “A Staple Theory of Economic Growth” in Innis’s writings, although he admitted:

The staple theory is [...] not [...] a general theory of economic growth, nor even a general theory about the growth of export oriented economies, but rather applicable to the atypical case of a new country. The phenomenon of the new country, of the ‘empty’ land or region overrun by the white man in the past four centuries, is, of course, well known. The leading examples are the United States and the British dominions. These two countries [*sic*] had two distinctive characteristics as they began their economic growth: a favourable man/land ratio and an absence of inhibiting traditions [...]. These conditions and consequences are not the typical building blocks of a theory of economic growth. Rather, the theory derived from them is limited, but consciously so in order to cast light on a special type of economic growth.

Watkins’s guarded connection between the production of staples and development only in certain regions of recent settlement was further relativised by others.

However, if Watkins initially found ‘a staple theory of growth’, with the rise of the ‘New Political Economy’ in the nationalist/socialist debates of the later 1960s and 1970s, this was rapidly turning into its opposite. Innis’s staple thesis was revived, even by Watkins himself (cf. 1977), as a ‘dependency’ theory of *underdevelopment*. Under the influence of the dependency school, comparisons with the failure of economic development in Latin America were becoming increasingly popular. The dependency school argued, along Frank’s (1967) lines, that the world was hierarchically organised in a rigid chain of international economic exploitation that accelerated development in the centre to the detriment of the thereby underdeveloping periphery. In 1969, Daniel Drache, James Laxer, and Watkins himself, started praising what they saw as the ‘anti-Americanism’, ‘anti-imperialism’, and ‘nationalism’ in Innis’s writings, expressing surprise that socialists had not before discovered this essential starting point for ‘a Canadian nationalism of the left’, apparently completely oblivious to what Innis himself had had to say on the matter in his later writings. Williams (1989: 122ff.) has collected a number of illuminating quotations. Thus, Laxer saw Canadian “de-industrialisation” resulting from U.S. manufactures. Drache explained Innis’s view that “Canada’s staple-oriented economy would remain fundamentally dependent because centre–margin relations under capitalism are such that dependencies are prevented from developing into self-generating industrialized economies”, finding, in Wallersteinian terms, that “Canada’s status has regressed from that of a semi-centre economy to a semi-peripheral one”, and concluding that Canada was brought to the “point of collapse [...] on a not too distant horizon”. Ian Parker and John Hutcheson noted the profound analysis Innis had accomplished of colonial dependency, a “peripheral” country dependent on a series of imperial countries, and Hutcheson found Canadian development “threatened”: “The succession of capitalist development by underdevelopment has been a common fate”. Kari Levitt saw Innis as “the chronological antecedent to the Latin American economists in developing a ‘metropolis-

hinterland' approach to American staple economics." And so, by invoking Innis, Levitt demonstrated Canada's "regression to a condition of underdevelopment in spite of continuous income growth".

Looking at the standard criteria advanced in the Latin American cases, these interpreters were moving fast in the direction of making Canada one of the underdeveloped countries of the world. Carroll (1985: 21) has summarised their influence as follows: "In Canada, the palpable hegemony of American imperialism in the 1960s and the availability of a complementary account of Canadian history in Innis' staples thesis were the social premises for the politically motivated acceptance of dependency theory, along similar lines to those discernible in Latin America." In fact, already in 1925, Tim Buck, the trade union secretary of the Canadian Communist Party argued that politically Canada "is still a colony, still part of the [British] Empire upon which the sun never sets", and was joined by other leading communists, such as Maurice Specter, who wrote in 1926 that "Canada was one of those transitional forms of dependency and that 'real independence' would be won only by overthrowing 'the capitalist government of this country and establishing 'a workers and farmers republic'" (quoted in Penner 1977: 86f., 91). This policy was soon abandoned but revived again with a vengeance after the war, when the nationalist struggle against the U.S. was underlined as the first stage to a socialist transformation of Canada. Indeed, nationalism was more important than socialism (cf. *ibid.*: 100-4, Kellogg 1989: 344f.).

As in the Latin American school, they found the problem to lie with the weak and dependent capitalist class in Canada. Drache (1983: 25; cf. 34ff.) has probably been the most vocal of these authors in identifying an "Innisian-based Marxism", finding in Innis a general theory of peripheral capitalism, with many parallels to be found in the theory of Samir Amin. Noting that Amin himself placed Canada firmly within the centre, Williams (1989: 125), who is still relatively benevolent towards the New Political Economy (indeed, considers himself part of it), cannot help remarking that "the unintended irony in Drache's argument is breathtaking." Despite Williams, it might be that the Canadian scholars have used the concept of 'dependency' with more consistency than others. The post-1970s successors of the Canadian dependency approach have been less obviously absurd, although their neo-Marxist class approaches continued to represent Canada as the resultant of a conflict between national capitals. In a later introduction to a collection of Innis's writings, Drache (1995: xliii ) still insists, *e.g.*, that "Canada's position in the world economy has been marked by the fact that it is simultaneously rich and underdeveloped".

Inspired by Emmanuel's contention that the high wage levels in the white dominions of the 19<sup>th</sup> century accelerated their mechanisation and industrialisation, Williams had in 1976 questioned the nationalist comparisons between Canada and Third World resource exporters. Instead, he (1976: 30) wanted to revive a perspective that was truer to Innis, of Canada as a marginal region within the centre: "Canada and the other white Dominions stood in sharp contrast to the colonies of conquest and impoverishment. The colonies of settlement were developed as overseas extensions, miniature replicas, of British society, complete with a large measure of local political autonomy. In terms of the standard of living, Britons who emigrated did so for the most part freely, induced by relatively high wages and opportunities to improve their material conditions." Higher wages created domestic consumer demand and forced industries to invest in labour saving machinery to remain competitive with low-wage countries, and was politically manifested in the debates on tariff and immigration policies around 1900. He (1976: 32) ended on the note that one should start paying greater attention to the 'political implications' of this centre position. This was part of a more traditionalist Marxist reaction to the dependency interpretation, already in the 1970s, reminding of Canada's economically advanced nature and urging that the nationalist stance be abandoned. Empirically, the fundamental difference pointed out in this interpretation between the

peasantry of Third World countries and the petty capitalist farmers of Canada specialising in wheat, contrasted starkly with their adversaries focus on the ‘new mercantilism’ based in and organised from the metropolis for the collection and extraction of raw material staples supplying their needs (Kellogg 1989: 345ff.).

Through many of these discussions, it is easy to get the impression that the obsession of older political traditions with Canada’s ‘place’ within the British Empire and on the North American Continent has merely been transfused to the international scene in neo-Marxist guise. One does not have to seek long to find precedents to the excessive emphasis on anti-Americanism, and here we have again the imperialist-capitalist ‘family compact’ standing against the nationalist-socialist ‘responsible government’ struggling for full employment and independence.

More recently still, scholars of a more ecological ilk have found in Innis a precursor. His emphasis on the influence of geographical, ecological, and climatic factors, the successive exports of staples peculiar to these factors, as well as the metropolis-hinterland perspective included in the so called staple thesis, makes him particularly tantalising to those searching for a theory of ecological unequal exchange. It is fair to say, however, that this influence has been less fruitful either in terms of theory or in historiography proper, although Innis is commonly included among the references of environmental histories on the fur trade. At least three exponents of an ecological unequal exchange, Stephen Bunker, Joan Martinez-Alier, Jason Moore have referred to Innis as a forerunner.

A student of the unequal exchange suffered by Amazonia, Bunker (1989; cf. Chapter 11) wanted to reset the distorted ‘neoclassical’ picture and policy conclusions drawn from Innis’s work, notably by Watkins (1963). Pointing out (1989: 590f.) that time and space worked differently in extraction and agriculture than in industrial production (cf. Duncan 1920: 278), ‘extractive economies’ were said to be constrained in ways alien to analysts formed in the study of ‘industrial’ experiences, and in ways difficult to generalise because of the peculiarities of individual commodities. Bunker’s (*ibid.*: 591f.) enemies were “theorists of regional development”, who had imbued Innis’s work with authority without ever understanding it, and who were in themselves “symptomatic of the close association between raw materials export and regional inequality as well as of the tensions between particularistic and generalizing analysis in the study of uneven development”. Innis, he informed (*ibid.*: 593), took the staple itself as the organising principle, “working outward from its physical characteristics – including its geographical location, the spatial and physical requirements of its reproduction, and the ratio of its weight and volume to the weight and volume of the factors required for its extraction and local processing” – and “inward from the financial, technological, political, demographic, and market conditions anywhere else in the world that affected the staple’s extraction, transport, and sale.” His staple studies had demonstrated how geography and topography, in directing communication and through environmental constraints, determined the local shape of such extractive economies.

By contrast to Innis’s intricate concept of space, Bunker (*ibid.*: 594) continued, Douglas North’s (1955, 1961) understanding had reduced it to a single variable, writing about staples exports “from an almost entirely optimistic “engine of growth” and “vent-for-surplus” perspective”, in which raw materials figured primarily as means to capture foreign capital, linked through multipliers to industrial growth. Mentioning resource depletion and market shifts as possible problems, he had not included them as pertinent to the “ways regions grow” or to the “significance of the export base in shaping the whole character of the region’s economy” (Bunker 1989: 594, North 1955: 338). Basically with his eyes on the United States, North (1955: 344) declared: “Historically, in a young region, the creation of a new export or the expansion of an existing export has resulted in the influx of capital investment both in the export industry and in all kinds of passive and supporting activities”. Neglecting the problems

underdeveloped exporting countries had in acquiring capital investments in the first place, he explained how “capital can pour back into the export industries only up to a point, and then the accumulated capital will tend to overflow into other activity”. Bunker (594f.), who objected to North’s unwarranted generalisation, countered with his own and reverse truth: “Capital typically searches for the highest rates of return; when the extractive economy is saturated, it will go to other regions unless the extractive economy happens [...] to be located near other resources or in an area of independent locational advantage”.

Thus, in Bunker’s view, like that of other dependency analysts, extraction and exports of raw materials will as a rule lead to underdevelopment, and the United States, Canada and the rest of the British Dominions, Scandinavia, and, as we shall soon see, Argentina, must basically also have belonged to the family of lucky exceptions of which he mentioned only certain urban areas (Pittsburgh, San Francisco, and the Ruhr Valley). We shall return to Bunker and his follower (in this instance) Martinez-Alier in Chapter 11. Let it be said that the only reasonable solution to the problem of linking extraction and export of raw materials necessarily to either development or underdevelopment must be that there is *no* such necessary connection, one way or the other, although there may still be interesting relations between the character of goods or respective environment, and differences in economic development.

Although a student of Chase-Dunn, Moore may legitimately be called Wallerstein’s most important disciple, wanting to add an ecological key to his master’s voice by combining it with a ‘social-metabolic’ perspective derived from a recent re-interpretation of Marx. Following Justus von Liebig, Marx had used the term metabolism (*Stoffwechsel*) on occasion to describe man’s exchange with nature, spoke of the destructive character of capitalist agriculture, which did not replenish the soil, *e.g.*, with those artificial fertilisers discovered by Liebig, and proposed that in the communist society the town-country ‘rift’ would be eliminated (cf. Foster 2000). Moore (2003: 324) claimed that: “Modern environmental history may be summarized in terms of unequal flows: from periphery to core, from colonized to colonizer, but perhaps above all, from countryside to the town.” Speaking of the early modern “silver-frontier”, he (*ibid.*: 334) emphasised, in the metropolis-hinterland tradition, what he considers to be the “profoundly unequal ecological exchange between American peripheries and European cores, enabled by a new, multi-layered and globalizing town-country antagonism.” Criticising Bunker’s view that Wallerstein had nothing to say on the environment, he (*ibid.*: 359) correctly noted that “[c]ontrary to Marx’s ecological critics, capitalism’s historically-specific value-form is something quite different from what is “valuable”.” Paying implicit homage to Turner rather than Marx or Wallerstein, he also maintains that the conception of the “commodity frontier” “balances place and space in the geographical expansion of capitalism, emphasizing production as well as exchange in contrast to the alternative market-centered formulations offered by Innis and Cronon.”

It is interesting to observe how the accusation of having neglected the true ‘sphere of production’ (etc.) is reiterated again and again with every generation of scholars from the mercantilist era onwards, including more heterodox Marxist accusations of the world-system approach, which Moore has troubled himself in trying to refute. I will not follow his example in the case of Innis, just as I would not bother making the same charge against Moore or Wallerstein. It is not evident that Marx added substantially to the understanding of Smith regarding the relations of city and countryside, including the ‘unequal exchange’ of agricultural and raw materials for manufactured goods of which ecological approaches make so much. In the case of Innis, Brenner’s (1976) denomination ‘neo-Smithian’ would appear to have been quite apt for other reasons, but in itself would have been no argument at all as to the validity of his approach, which could easily be seen as complementary to that of Brenner. Adding to understanding, however, is more difficult than adding terms together to make yet

other terms (whether ‘neo-Smithian’, ‘commodity frontier’, or a prospective ‘Brenner- or neo-Innisian’).

Although Moore would seem to be no absolutist on expanding the town-country metaphor to a global scale, this attempt to add to the world-system perspective unfortunately obliterates one of the more promising aspects of Wallerstein’s work, namely relating the capitalist to the ‘inter-state’ system, *i.e.*, to nation states and nationalism, with which Innis was, as we have seen, very much concerned. An approach centring on the town-country rift would have to face the problem of what characterised this rift in the other major regions of the world, which were more urbanised than Europe (cf. Bairoch 1985). One would also have to explain why the ‘rift’ between town and country is perhaps ten thousand years older than capitalism, and why what characterised Europe and the origin of capitalism was on the contrary, or so it is plausible be argued, that it extended market relations to the means of subsistence in *rural* areas, particularly, and in spite of Wallerstein, in England. In this instance, already early in the 20<sup>th</sup> century Veblen (1903) criticised the neglect of English and American specificity following the bias of Sombart’s (1902) town-centred approach.

Innis certainly did not neglect the impact of resource depletion on the evolution of those marginal societies he studied, and vice versa on the centre economies, so political ecologists are right to seek in him a predecessor in this respect. His concerns were primarily with economic and ultimately political repercussions, and – just like his descendants in the study of ecological unequal exchange – not essentially with the effects on the non-human part of the world on its own account. Although time has passed, much knowledge has been added, and the focus may for some have become global, the political ecologists and the ecological exponents of unequal exchange theories have a noticeably minor scope of interest than Innis, who aimed at an ‘all-inclusive approach’. Indeed, for Innis the environmental problem was only one of the avatars of a more general problem concerning a certain unresolved perversity of the Western world and how to resolve it:

European civilization lived off the intellectual capital of Greek civilization, the spiritual capital provided by the Hebrew civilization, the material capital acquired by looting the species reserves of Central American civilizations, and the natural resources of the New World.[...]

The enormous capacity to loot has left little opportunity for consideration of the problems which follow the exhaustion of material to be looted. (Innis 1944: 102.)

This was the problem with which Innis was fundamentally concerned in his last writings, in which the problems of large-scale politico-religious organisation and the importance of avoiding the biases of the world and of the very extensions of man himself, became the central, articulated concerns. It is, I would argue, very much a pity that the effort put by Innis into formulating this problem has had no reflection in current ecologist debate (cf. Odum & Odum 2001 on the ‘prosperous way down’). Although more than a merely theoretical or methodological stance, it was also reflected in what he had to say on those accounts, and for Innis the principal direct inspiration behind it was evidently Veblen. The constant effort to avoid bias, at all levels, was perhaps the closest he ever got to a solution.

If Innis’s Canadian perspective, centring on the periphery, was concerned with the general geographical and chronological disruptions of societies in a metropolis–hinterland relation, later theories have been more concerned with ways in which the prosperity of the centre has been achieved at the expense of the periphery. Although theories of centre-periphery relations are often assimilated into a discussion of development and underdevelopment the connection is not necessary. This will be the major point when we now turn to an Argentinean and Latin American context, in looking at the theory of Raúl Prebisch and the debate on the terms of trade in which his work played a seminal role.

## Chapter 4. Raúl Prebisch, raw-materials export economy, and the terms of trade

Raúl Prebisch (1901–1985) was one of the pioneers and most debated theorists in development economics. He presented a theory to explain what he saw as the declining terms of trade for primary products which is sometimes referred to as a theory of unequal exchange, and argued that rapid industrialisation through import substitution and development of basic industries, supported by vigorous state action, was necessary to catch up with the more developed countries.

Most of what became known as the CEPAL doctrine, was present in a document prepared for the United Nations Economic Commission for Latin America (ECLA, in Spanish CEPAL) in 1949, *The Economic Development of Latin America and Its Principal Problems* (ECLA 1950). According to one of Prebisch's most important interpreters, Joseph Love (1980: 45), his thesis "is probably the most influential idea about economy and society ever to come out of Latin America", and he himself certainly had an enormous influence on practical economic planning through the ECLA, the U.N. Conference on Trade and Development (UNCTAD), the Latin American Free Trade Association, the Central American Common Market, the Alliance for Progress, and in the development programs of several Latin American governments. Already in his title, Love also refers to him as the originator of 'the' theory of unequal exchange, supposedly adopted by Latin American dependency theorists as well as other scholars such as Arghiri Emmanuel, Andre Gunder Frank, Immanuel Wallerstein, Johan Galtung, and Samir Amin. Although Emmanuel referred to the 'Singer-Prebisch' thesis as "on the fringe of unequal exchange", Love evidently bases his case on Amin. In the 'Afterword' to the second addition of his *Accumulation on a World Scale*, Amin set out to rectify the unjustness he believed he had done to Prebisch:

There can be no doubt that the first edition did not do justice to the debt I owe, along with all concerned with nonapologetic study of underdevelopment, to the Latin American writers on the subject. Raul Prebisch took the lead in this field, and I have shown in this book that the theory of unequal exchange was founded by him, even if the conjunctural context in which he set it, in his first version, has lost its significance. It is also to the United Nations Economic Commission for Latin America, of which he was the moving spirit, that I owe the essence of the critical theory to which I adhere, for it was this Commission that led the way in the reflections from which all the present currents in Latin American thinking on these matters have developed – criticism of the policy of import-substitution and also the theory of dependence. (Amin 1970a, II: 609f.)

As Love depicts it, Prebisch's origination seems to have consisted basically in an analysis adopting a centre-periphery dichotomy, and some sort of concomitant trade relations. "It implied a hegemonic relationship between two discrete elements in a single economic system", but, in addition, "the elaboration of the idea of unequal exchange between the two elements led to the conclusion that the center derived part of its wealth from the periphery" (Love 1980: 46, 45). The relationship was an enduring one and it was argued that new centres in the periphery could only come into existence by breaking way from the old centre.

Below, I will cast some doubts on the sense in which Prebisch can usefully be seen as the originator of the debate on unequal exchange rather than as one of its inspirers. More concerned with formulating policy than pure theory or historical interpretation, he is certainly a link in the revival of 'mercantilist' policy and concerns in inter- to postwar Latin America. As has been observed: "The idea that the prices of primary commodities, both minerals and

agriculture, were in some sense unfairly depressed relative to imported manufactures went back as far as the era of the viceroalties during the eighteenth century” (FitzGerald 1994: 94). Although involved in the United Nations and in formulating general Third World policy as Secretary-General of UNCTAD, his perspective was Latin American, and his greatest success was in the ECLA, universalising primarily from his native Argentina. In this sense, he forms a contrast to many other pioneers in development economics, such as his fellow theorem originator, Hans W. Singer, whose perspective sprang from concern with distributive justice and was closer to the idealist superstructure of Truman’s Point Four program for U.S. foreign investment. Of course, the implications of exploitation proved indigestible for a U.N. under heavy influence of the U.S., which even undertook to close the ECLA down when the idea began spreading from there. Toye & Toye (2003) have already demonstrated how Prebisch latched Singer’s data and conclusions on the long-term decline in the terms of trade for primary products onto his own centre-periphery, business-cycle framework.

I will not challenge the historical importance of Prebisch for Third World policy making, nor as an inspiration to development studies, particularly as pertaining to falling terms of trade for agricultural over industrial products and the division of the world into centre and periphery. I will, however, argue that his perspective arose by mixing the interpretation of trading relations between ‘old’ and ‘new’ countries with those between developed and under-developed ones, in a way that could probably originate and become widespread only in Latin America, and that in doing so he significantly added to a confusion within development studies. I will contrast it, not always favourably, with that of some earlier and other theorists, and relate it to the overall development of Argentinean economic history, following the suggestion by Love, that the challenge posed by the Great Depression for the landowning oligarchy in the prosperous agricultural exporter Argentina provides the useful context in which the ideas to which Prebisch adhered emerged as a response.

## Prebisch converting to mercantilism

Prebisch was born in Tucumán, Argentina, in 1901. His father had come to Argentina from Germany as a child, and his mother came from an old Spanish family of Argentina. Prebisch studied at the University of Buenos Aires, whose Department of Economics was at the time probably the best of its kind in Latin America. Having earned his masters degree in 1923, he was asked to join the staff of the university, and already in 1922 he had been appointed director of the statistical office to the powerful stockbreeders’ association, the elite *Sociedad Rural*, “the bastion of the landholding elite in Argentina” (Sikkink 1988: 92f.). In 1924 they sent him to Australia where he studied statistical methods related to stockraising. His experience in Australia and later work for the Sociedad, gave him an appreciation of the international economic system. From the outset he was interested in policy issues, and pursued a dual career in education and government throughout his life. Already by 1925 he was both a teacher of the university and an official at the Argentine government’s Department of Statistics. In 1928 he became editor of the journal *Revista Económica*, published by the government-directed Banco de la Nación Argentina, but concerned not only with monetary matters, but also international trade, agriculture, and stockraising, although not with economic theory. In 1930 General José Uriburu seized power. Under his conservative government Prebisch became Under Secretary of Finance until 1932, and from 1933 to 1935, economic adviser to the Ministry of Finance and Ministry of Agriculture. He proposed the creation of a central bank, to control the interest rate and money supply. After a few rounds of revision, the Banco Central was launched in 1935 with Prebisch as Director-General until 1943 (Love 1980: 46f.). Prebisch’s background clearly reflects the nationally dominant ranching and agriculturalists’ interests.

Having started his economic life as a firm believer in neoclassical theories, it was only the world depression which prompted serious doubts in Prebisch (1984: 175; cf. 178 quoted below). Before the depression it was generally believed that “Argentina had prospered according to the theory of comparative advantage. [...] The benefits of export-led growth, based on an international division of labor, made the theory of comparative advantage a near sacrosanct doctrine” (Love 1980: 47f.). There was good reason for this. As two of Prebisch’s admirers, Dadone & di Marco (1972: 16), have noted, up to the 1930s, “there was no reason whatsoever for people with an economic background in Latin America to suspect that the economic theory devised mainly in England, France, Germany, and the United States was not the most adequate to solve the problems posed in that area of the world.” The great winners of Latin America were the temperate regions which had *not* undertaken to industrialise, and Argentina most of all.

After Argentina’s de facto independence in 1810, European industrialisation, the general rise in levels of income in the developed countries, and continuous expansion of international trade contributed to a long-term growth of Argentinean exports, consisting almost exclusively of animal products (cow hides, salted meat, wool, and tallow), at an annual rate of 5.5 percent, or 3 percent per capita. (Average per capita exports were about three times those identified by Bairoch and Etemad as ‘Developed’ and 25 times greater than those of the ‘Third World’; cf. Newland 1998: 410). The growth of inputs used in the pastoral sector, including the expanding frontier, the arrival of foreign capital and European immigration, an increase in livestock productivity through crossbreeding, and internal migration from low productivity provinces of the interior and the warmer regions of the north to the more dynamic littoral region, all contributed to this expansion, but until the 1860s, high transportation costs, as well as blockades and internal conflicts, put strains on this development. From 1800 to 1860, the Argentine proportion of exports from regions with European population decreased from 9 to 3 percent, but from then on until the First World War there was a remarkable increase – centring on the coast – to more than 12 percent. Trends were similar for population, much of which was due to net immigration (Bairoch 1997, I: 486, Taylor 1994: 435). If Argentinean productivity rose, that of imported goods increased even more, so terms of trade improved, just as they did for other primary goods exporters in this period (*e.g.*, Brazil, the United States, or Spain). The decade from 1810 to 1820 was particularly good in this respect, when prices of Argentinean pastoral products rose and those of imported cotton textiles diminished, and so were the 1850s when the Crimean War reduced Russian competition in hides and tallow. In the 1860s, the terms of trade fell somewhat because textile prices rose during the American Civil War and due to the American tariff of Argentine wool from 1867.

On the eve of the First World War and into the 1920s, Argentina was among the 6 to 9 richest countries in the world, while Chile and Uruguay were among the 10 or 15, and in many respects their economic development in the 19<sup>th</sup> century resembled rather that of the British Dominions and the United States, than their fellow Latin American countries (Bairoch 1997, I: 483ff.; cf. 491f. for Uruguay, 488ff. for Chile). This was due essentially to one of the highest agricultural productivities in the world, explained by a combination of important stockbreeding and extensive grain-growing. In 1913, each male agriculturalist disposed on average 230 hectares of arable and pastureland (compared, for example, with 26 in the United States, 81 in Australia, and 7 in France), and 260 head of cattle (17 per inhabitant). Economic historian Díaz-Alejandro (1970: 2) writes: “From 1860 to 1930 Argentina grew at a rate that has few parallels in economic history, perhaps comparable only to the performance during the same period of other countries of recent settlement.” By 1959, however, when one started dividing nations into developed and underdeveloped, almost every classification grouped

them with the latter, which was clearly problematic. Most would probably agree with Myrdal and Nurkse in calling them ‘Middle-class’.<sup>30</sup> How did this come to be?

Equally important for this growth as the expansion of international trade and division of labour, was the movement of labour and capital factors of production which made those changes possible (Conde 1993:49). Likely effects of this inflow include favouring the labour-intensive cultivation in the so called ‘wheat revolution’ on the pampas, behind whose successes and failures “stand the *estancieros*, the cattle ranchers who held almost all the good land, leasing it jealously on share-cropping or tenancy contracts which virtually prohibited grain farmers from acquiring land or even the hope of reasonable security” (McGann 1968: 198). Thus, immigration advanced this new staple export, transforming Argentina from a net importer of wheat in the 1870s to the third largest exporter in the world, killed off the *gaucho* way of life, promoted urbanisation and the rapid growth of Buenos Aires, paved the way for industrialisation, and worked towards a lowering of wages. Alan M. Taylor’s (1997: 100, 102) modelling suggests that immigration, by tripling cereal exports, “enhanced Argentina’s comparative advantage as a cereal producer, encouraged extensive growth of the pampa, and markedly lowered real wages” by pushing them down towards the level of Italy and Spain.<sup>31</sup> This was in contrast to British Dominions where, *e.g.*, a ‘white Australia’ policy, admitting a lower-rate and fairly homogenous stream of predominantly British immigrants, ensured a higher floor under wages (Taylor 1992: 913ff.).

The *belle époque* was finally brought to a halt by the dislocations associated with World War I. Although making no impression on health and nutrition, there was a lasting shock in capital markets. Throughout the 19<sup>th</sup> century, Argentina had been heavily dependent on external finance, particularly from Britain, as domestic savings were insufficient to satisfy investment requirements., and by 1913, almost half of the capital stock was owned by foreigners. The war signalled the end of Britain’s role as ‘the world’s banker’, first by the suspension of the gold standard and then by crippling war debts. Taylor (1994: 435) writes: “The new major creditor, the United States, was unwilling to fill the vacancy, and New York failed to adequately replace London as a center for international finance and as a source of loans for externally dependent countries such as Argentina.” In the Depression matters became even worse, when Great Britain tried to buy less abroad and played off suppliers against each other, while the products of Argentina’s new major supplier in the 1920s, the United States with its advanced agriculture, were much less complementary than the British. Per capita growth rates further retarded after 1929 and again after 1950. “In these years”, Taylor (1994: 435) explains, “Argentina’s economic policy stance was thoroughly overhauled by the rejection of the liberal export-oriented orthodoxy, the adoption of inward-looking import-substitution strategies, and the experimentation with ad hoc Keynesian policies and other forms of state intervention.” To the great chagrin of free-trade orthodoxy this reactive policy formula “was apparently successful in helping Argentina during the Depression years,

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<sup>30</sup> Cf. Díaz-Alejandro (1970: 1): “It is common nowadays to lump the Argentine economy in the same category with the economies of other Latin American nations. Some opinion even puts it among such less developed nations as India and Nigeria. Yet, most economists writing during the first three decades of this century would have placed Argentina among the most advanced countries – with Western Europe, the United States, Canada, and Australia. To have called Argentina “underdeveloped” in the sense that word has today would have been considered laughable. Not only was per capita income high, but its growth was one of the highest in the world.”

<sup>31</sup> Others suggest that real wages still increased nationally, but that just as in Antebellum United States, the United Kingdom from 1790 to 1850, and many other 19<sup>th</sup> century cases, economic growth and rising per capita income coincided with declining stature and health. At least initially, greater integration into the world economy had negative effects in terms of biological welfare, accompanied in the early 20<sup>th</sup> century by increased social tensions and strikes associated with declining nominal wages and rising prices of necessities. Paradoxically, according to Salvatore (2004) the prewar export-led growth thus coincided with an absolute deterioration of nutrition and health conditions, whereas the economic retardation of interwar period represented a steady improvement in these respects.

and evidence on the depth and duration of the troughs in Latin American suggests that the reactive countries fared best at delinking from the collapsing economies at the center and ensuring some protection for themselves at the periphery. By the end of the 1950s there stood in place a vast array of tariffs, duties, exchange controls, marketing boards, and other governmental interventions in the economy.”

Prebisch was deeply involved in this reorientation, as a member of an economic team groping with the Depression and crisis, notably under the Minister of Finance, Federico Pinedo (1933-35 and 1940-41). In the 1930s, Prebisch (1984: 175) was still recommending orthodox anti-inflationary measures, but departed from orthodoxy in advocating industrialisation when confronted with a serious balance-of-payments’ disequilibrium. In 1933, he attended a Preparatory Committee of the Second International Monetary Conference in Geneva from which he reported on the assembled monetary experts’ belief, in Love’s (1980: 49) words, “that the one basic blockage in the international economic system derived from the facts that the United States had replaced Great Britain as the world’s chief creditor country, and that high American tariff schedules [...] did not permit other countries to repay U.S. loans with exports. Consequently the rest of the world tended to send gold to the United States, and the bullion was not recirculated in the international monetary system.” Prebisch was thus confronted with the ingrained mercantilist, or protectionist, policies of the United States, and ultimately responded in a similar manner. From Switzerland he went on to help negotiations in London. Along with other statesmen and economists, he was willing to enter into the Roca-Runciman Pact of 1933, whereby Argentina promised to use all her sterling for purchases in the U.K. and the U.K. agreed to keep buying meat in exchange for debt service payments and tariff reductions for British manufactures. “Thus,” Love (1980: 49) notes, “beef exports, the traditional preserve of the Argentine oligarchy, were favored over wheat.” The controversial agreement was commonly perceived as disadvantageous to Argentine interests. Along with his connection to Sociedad Rural and General Urriburu, and his position as Director-General of the Argentina’s central bank for eight years (1935-1943), this “created a strong public perception of Prebisch in Argentine political and economic circles as an individual tied to traditional conservative landholding interests” (Sikkink 1988: 93).

In London he attended the unsuccessful World Monetary Conference, and came under the influence of J. M. Keynes’s proposals for ‘pump-priming’ of deficit spending to increase national income and employment, and for the creation of an international monetary authority to resuscitate credit for world trade. Love (1980: 50) finds it noteworthy that Argentina was among the seven countries qualifying for the maximum loan, noting: “In the next few years Prebisch would become an enthusiastic Keynesian”. Back in Argentina, Prebisch began attacking the orthodox equilibrium theories of his older colleagues as scholastic, and sought to understand the declining terms of trade wrought by the Depression. Love (*loc. cit.*) refers to an article published in 1934, which pointed out how agricultural prices had fallen more profoundly than those of manufactured goods. By then, Argentina had to sell 73% more than before the Depression to obtain the same quantity of manufactured imports, and double the amount in terms of gold on her foreign debt as in 1928.

In Geneva and London in 1933, Prebisch had tried convincing policymakers of the other three major wheat-exporting countries – the United States, Canada, and Australia – to cut back production, but before the end of the year all countries except Australia had already broken the agreement. While Europe and Japan managed to keep their economies going with armaments, another depression spread in 1937-38 from the United States to less developed countries, including Argentina. The price of wheat fell sharply and, along with other countries, Argentina imposed quantitative restrictions on imports, while banking officials such as Prebisch struggled to keep international credits and debits in balance. There was still no conscious effort to stimulate industrialisation, but as in Chile and Brazil, through sheer

necessity, output grew impressively throughout the 1930s into the 1940s. It was not until 1942, with Prebisch as the general director, that Argentina's Central Bank broke with tradition and began promoting industrialisation, arguing that exports and industrial development were not incompatible, and that the issue was to change imports from consumer to capital goods (Love 1980: 51).

Already in 1937, Love (1980: 52) explains, Prebisch "was beginning to formulate his theory of unequal exchange", quoting (*loc. cit.*; braces by Love) from the journal *Revista Economica*:

Manufacturing industries, and therefore industrial nations, can efficaciously control production, thereby maintaining the value of their products at desired levels. This is not the case with agricultural and livestock countries for, as is well known, their production is inelastic on account of the nature [of production] as well as the lack of organization amongst agricultural producers.

In the last depression these differences manifested themselves in a sharp fall in agricultural prices and in a much smaller decline in the prices of manufactured articles. The agrarian countries lost part of their purchasing power, with the resultant effect on the balance of payments and on the volume of their imports.

Focus was on the tighter 'control' of prices in manufacturing nations and on the elasticity of supply of manufactures, rather than on the bargaining power of industrial wage-labourers, which was added later on. In spite of Love's vague terminology of 'unequal exchange', it should be made clear that the theory of which Prebisch can be regarded as originator here concerns declining terms of trade for *primary* products and no other, due to the character of the product and the lack of organisation *among*, not yet *within*, *agricultural* nations, *including the United States, Canada, and Australia*. Furthermore, it sprang from the Argentinean experience of a *reversal* of the trend in terms of trade (rather than a continuous decline), the failed attempts at cooperation by said countries, and was conceived conjointly with trying to formulate economic *policy*.

Just as it would have been ridiculous to class Argentina or the major agricultural exporters as 'backward' – *i.e.*, in any other sense than the merely geographical equivalent of 'hinterland' – it was inconceivable that Prebisch's idea could be concerned with *underdeveloped* countries. This association was made later. As noted by Love (1980: 56): "Latin America, where center-periphery theory was born, was not generally considered part of the Third World until after the Cuban Revolution (1959)." If this link is more incidental, it would illustrate perfectly that the problem of 'underdevelopment' among economists was intimately connected to the Cold-War perspective in Truman's Point Four, to which we shall return in Chapter 5. Incidentally, although Prebisch used the statistics compiled by Singer for the U.N. publication on "Relative Prices of Exports and Imports of Under-developed Countries" (1949), even in the first major publication of his thesis for the CEPAL/ECLA that year, he spoke only of 'Latin America' and the 'periphery', not 'underdeveloped' countries.

As Arthur Lewis (1978a) observed, the Canadian 'staple thesis' (cf. Chapter 3) predated Prebisch's thesis. Following N. B. S. Gras, the former located the British Dominions in the hinterland, first, of the London metropolis and European markets, then of the United States, sometimes suffering disruption in various regions in the wake of rapid – 'cyclonic' – changes of events. In Innis's view, however, these disruptive fluctuations had been mitigated thanks to flexible political organisation, at least in Canada, and furthermore *lessened* in temperate countries with the export of wheat and meat, because of the steady (inelastic) demand for such products. By contrast, tropical countries, which continued producing and exporting high-value, low-bulk luxury goods, also continued suffering greatly from these variations of demand. With respect to Latin America, he also observed the inherited stale political organisation in Catholic countries. In addition to his general lack of enthusiasm for industrial civilisation and his disrespect for scholars whose ambition was to become bureaucrats in

political administration, Innis made the crucial distinction in this instance between temperate and tropical regions, noting differences in political organisation that often corresponded to them. For Prebisch the important dividing line was one, inherited from the mercantilists or from contemporary central European debates, between industrial and agricultural products and countries, and which he associated with centre and periphery respectively. In fact, there does seem to be some correspondence between the European centre exporting manufactures, and the neo-European periphery exporting agricultural products, only it has nothing to do with the rift between developed and underdeveloped regions. The latter does not relate to a rift between agricultural and industrial sectors, but to one *within* either or both of them.

FitzGerald (1994: 101) thinks it unlikely that the center-periphery model originated autochthonously, based on the experience of the interwar years. The identification of 'backward' with 'agricultural' countries was made by the Romanian economist, Mihail Manoilescu, whose *Théorie du protectionisme* (1929: 61, 65, 184, on agriculture as backward; cf. 1934: 28), soon appeared in England (1931) and Brazil (Manoilescu [sic] 1931a; cf. 1931b), as well as in Franco's Spain (1943), having already appeared in serial form in a Spanish journal. An article (1947) appeared in a Santiago journal slightly before Prebisch's arrival there. The similarities between Prebisch's and Manoilescu's main arguments were soon widely recognised (Buchanan & Ellis 1955), Meier & Baldwin 1959), whether on agricultural inferiority as an economic activity compared to industry or favouring tariffs to protect industry. Although Love largely rejects direct influence of Manoilescu on Prebisch (Love 1996: 134ff.), he confirms that Manoilescu had deep influence on the Spanish and Brazilian debate – along with the German Historical School whose tendency towards economic nationalism and state intervention met with sympathy in Spanish academic circles. This prepared the ground for the reception of structuralism and dependency on the Iberian Peninsula (as did Perroux in Portugal, cf. Love 2004), but in Love's view (1996: 222) the central European theories were not 'transmitted' from Romania to Latin America.

As noted by FitzGerald (1994: 94), the idea that prices of primary products were inherently disadvantaged went back at least to the 18<sup>th</sup> century in Latin America, but he is incredulous of Prebisch not 'remembering' any of his intellectual forefathers. Since Sombart became a convert to National Socialism and Manoilescu had been a member of the Iron Guard, it is "perhaps understandable that in the immediate postwar period Prebisch preferred to overlook the central European antecedents of his model", and that his intellectual autobiography preferred to gloss over the 'first stage' in his thought (*ibid.*: 101; cf. Prebisch 1984). It acknowledged no intellectual mentors and, FitzGerald (1994: 101f.) remarks, he "continually claimed the sole authorship of the ECLA model, scarcely mentioning the work of his colleagues in Santiago or elsewhere in Latin America". Ernst Friedrich Wagerman had introduced the Sombartian centre-periphery perspective to Latin Americans with his *Evolución y ritmo de la economía mundial* in 1933 (*ibid.*: 94f.), and there were numerous contemporaries with similar concerns and observations to Prebisch's before 1945, such as Alejandro Bunge and Luis Colombo in Argentina, Roberto Simonsen, Alejandro Siciliano, Jr., and Octávio Pupo Nogueira in Brazil (cf. Love 1994: 396, Toye & Toye 2003: 440). Another potential influence would be that of Friedrich List (2001 [orig. 1841]), but according to Love (1994: 396) his influence was mostly limited to Chile and the popularisation of the 'infant-industry' argument found in Malaquías Concha between 1880s and the First World War. On the other hand, government concern to industrialise was revived in the late 1920s as a question of national defence, and it was on Chilean initiative that the United Nations Economic Commission for Latin America (ECLA, CEPAL) was set up after the Second World War.

In 1943, Prebisch had been removed from his position at the Central Bank after eight years, but was asked to organise the Central Bank of Mexico. All the while he was also a professor of political economy at the University of Buenos Aires – in FitzGerald's (1994) view adding

to the unlikelihood that he was unfamiliar with the central European theorists – until he was removed in 1948. At the time he was working on an unfinished book on ‘money and the rhythm of economic activity’, recalling not only Wagerman above, but also the primary concern with the international business cycle, in line with Mitchell (1927) and Schumpeter (1939). It was then that he was free to accept an invitation by the Secretary General of the United Nations to go to Santiago, Chile, to be an adviser to the ECLA. By then it had already published its first report, and Prebisch’s contribution, which was to make him famous and two years later its Executive Secretary, concerned primarily international trade.

Toye & Toye (2003: 444) give a glimpse of Prebisch’s interesting, if less unique, overall research program at the time, translating a letter to Eugenio Gudín (20 Dec. 1948):

I believe that the cycle is the typical form of growth of the capitalist economy and that this is subject to certain laws of motion, very distinct from the laws of equilibrium. In these laws of motion the disparity between the period of productive process and the period of the circulation of incomes therefore holds a fundamental importance. So I have tried to introduce systematically the concept of time into economic theory and also that of space, which in the ultimate instances resolves itself into a problem of time. It is precisely the concept of space that has led me to study the movement in the centre and the periphery, not with the aim of establishing formal distinctions but to point out transcendent functional differences.

The interesting notion of the disparity between the periods of production and circulation perhaps recalls contemporary post-Keynesian debates, some of which also inspired Emmanuel (Chapter 8). The vocabulary of ‘time’ and ‘space’ had been evoked also by Innis, notably in a 1942 article trying to promote an all-embracing approach emphasising communications, thereby hoping to enlighten the workings of Grasian metropolises, which tended to develop separate equilibria, the Schumpeterian understanding of the business cycle, which neglected significant technological innovations in communication as well as the links to war and disequilibria, the monetarist concern with the velocity of monetary circulation, which would profit from studying that of newspapers, and the Keynesian ‘liquidity preference’ of money which needed to be related to the preferences for other goods. The paper, reprinted in a 1946 collection of his articles on ‘political economy in the modern state’ which may well have been included in Prebisch’s in his own words ‘extensive’ reading list, ended by declaring its design “to emphasize the importance of a change in the concept of the dimension of time, and to argue that it cannot be regarded as a straight line but as a series of curves depending in part on technological advances. [...] The concepts of time and space must be made relative and elastic and the attention given by the social scientists to problems of space should be paralleled by attention to problems of time” (Innis 1942: 34; cf. 1940b).

Prebisch’s policy ideas were probably less important in themselves than as part of a general trend, which was underway with or without him. During the Peronist government he was excluded from all official posts, “perhaps because of his long and close association with the nation’s traditional economic elite” (Love 1980: 57), and for which he remained bitter (Sikkink 1988: 93, 110, n. 11). There is no evidence indicating that he had any significant influence on Peronist economic policy, which was “well in place by the time Prebisch published his most important works for the CEPAL”, although some of his students at Buenos Aires remembered him discussing the centre-periphery system (Sikkink 1988: 94, 110, n. 12). Nor did Prebisch’s and CEPAL policy ideas and recommendations differ substantially from those of the Peronist and Frondizi governments. However, since various groups in Argentina sharing pro-industrialization and developmentalist ideas were often bitter political opponents, the image of Prebisch came to differ substantially depending on where one was (*ibid.*: 92). His and CEPAL’s ideas became most influential in Chile and Brazil, met with enthusiasm in Central America and the Caribbean, but less so in Argentina, Mexico, Peru and Colombia,

where government request for CEPAL-trained students were less (*ibid.*: 92, 110, n. 6). Thus, while much of Latin America saw him as a progressive and innovative development theorist and policy activist, government circles in the United States viewed him as a leftist critic of standard economic wisdom, whereas in Argentina he was identified with conservative groups and liberal economic thought (*ibid.*: 91).

After Peron had been overthrown in 1955, Prebisch was asked to return as economic advisor and to prepare an economic plan, which he did. Soon, more military sectors with a more punitive and repressive attitude toward the Peronist party and the unions took over, and Prebisch was asked to remain as an advisor and continue working out his economic program, which he did (*ibid.*: 95). The plan said nothing on the centre-periphery or terms of trade themes, but demonstrated “a grudging refusal to recognize any of the successes of Peronist policies”, though he failed to articulate an alternative vision (*ibid.*: 96). He made no strong case for industrialisation, for which he was hastily criticised as wanting to return to the good old days. The impression was reinforced by the failure to mention the need for agrarian reform, the recommendation, popular among allies of the government and the Sociedad Rural, that relative prices be reversed to favour agricultural producers, though his aim was thus to generate the foreign exchange necessary for capital goods imports to support continued industrialisation. The response of the industrial sector and the middle-class party was more mixed. Even General Aramburo did not dare execute the wage-reductions proposed by Prebisch. The only ones considering the worsening terms of trade were among Prebisch’s critics, and though ideas similar to those associated with Prebisch and CEPAL were adopted, these seem rather to have been ‘in the air’ (Sikkink 1988: 96-108). This would imply that for large parts of the Third World and Latin America, though significantly not in his home country, Prebisch became the mouthpiece of a change of perception brought about by other forces, although naturally he may have given his touch.

How was it possible that things could look so very different on the world scene, both among Third Worldists and U.S. WASPs? Prebisch’s admirers naturally like to find that he had a profound impact, for example in the creation of UNCTAD, which was, Dadone & di Marco (1972: 25f.) explain, “fundamentally, the result of Prebisch’s personal effort”, and in its first meeting in Geneva in 1964, where he inspired the formation of a ‘majority front’ consisting of the 75 underdeveloped countries jointly submitting agreed-upon propositions. The resulting proposals included a “universal desire for increased exports (industrial ones, in particular) as a means to attain a substantial improvement in the international balance of payments”, and “a reduction of tariffs by the advanced countries in favor of the underdeveloped ones”, as well as external aid in order to offset the effects of unfavourable terms of trade. If there is any novelty or originality in these proposals it cannot be their content, but their form, *i.e.*, presenting the mask of a common, united will among under- and less developed actors on the world stage, following the Bandung Conference of 1955. The second UNCTAD conference in New Dehli 1968, the *Comercio Exterior* wrote afterwards, “submitted to world opinion, in a rather dramatic fashion, a complete outline of the demands of about eighty underdeveloped countries from Latin America, Africa, and Asia”. One proposal, “relating to preferential access to markets of more advanced countries for manufactures and semimanufactured goods coming from underdeveloped areas was universally approved”, Dadone & di Marco (*loc. cit.*) comment, but any schedule for its enactment or the goods concerned was carefully avoided, and thus actual results were very limited.

Love admits that Prebisch’s economic theory is very hard to separate from his economic policy, and notes the great similarities with traditional mercantilism. Similarly, Hettne (1993) spoke of Prebisch, structuralism and dependency under the heading: “mercantilism comes to the Third World”. Indeed, he did not find this Listian tradition – “a mercantilist approach applied to a Third World context” – distinguishable enough even to qualify as *neo-*

mercantilism. The depression of the 1930s and the disruption of world trade, dramatised the dimensions of Latin American dependence and, in line with the European tradition of economic nationalism, initiated more systematic economic research, which crystallised in the import-substitution development strategy of the ECLA under Prebisch. Dependency theory, then, was simply “a more “socialist” application of the Listian approach in the Third World context.”

Hettne may be extending the concept of mercantilism to the breaking point, as Magnusson’s appended commentary holds, but the problem here is not the usefulness of concepts but the similarity of approach. In this case the similarities extend to ideas originating more or less as *ad hoc* responses to practical problems (cf. Taylor 1994: 435 cited above). Let us also remind of Prebisch’s (1984: 178) convictions and self-proclaimed aims: “as a young economist, I was a neoclassicist and fought against protection. But during the world Depression, throwing overboard a substantial part of my former beliefs, I was converted to protectionism.” His seminal diagnoses of the situation in Latin America from 1949 and the early 1950s, had industrialisation as its main objective, but, he confesses (*ibid.*: 177): “In reality, my policy proposal sought to provide theoretical justification for the industrialization policy that was already being followed”. In a sense, this is similar to Manoilescu who wanted to provide a theory with which to justify the ever-present protectionist policies already being pursued by states. In addition, there is a direct lineage via the German Historical School. “The ideals of Mercantilism”, Schmoller wrote, “meant the shaking off of a commercial dependence on foreigners which was continually becoming more oppressive, and the education of the country in the direction of economic autarchy” (quoted in Coleman 1969a: 102). Myint (1965: 477) noted that the criticism of the universality of standard economics had been advanced since its beginning: “In the nineteenth century, Hamilton, Carey, and List questioned the applicability of the English classical free-trade theory to the underdeveloped countries of that period, namely the United States and Germany. They have been followed, among others, by Manoilescu from southeast Europe and by Prebisch from Latin America.”

Quoting Prebisch as admitting that his ideas were all contradictory in the 1930s, Sikkink (1988: 93) concludes that despite his theoretical reorientation toward industrialisation, “Prebisch nevertheless remained in many ways an essentially conservative man, drawn by events and his analytical mind to propose sometimes unorthodox theories and policies”. For a politician and policy maker it should not be considered a vice to abandon theoretical coherence if the problems of the world so dictates, just as it cannot be a virtue for a highly coherent and formalised orthodox theory that for centuries its policy prescriptions has stubbornly stood in stark and fundamental contrast to practical economic policy. Prebisch at least attempted to face the reality of his day and to formulate a theoretical response, even should it ultimately not satisfy the intellect.

It was only after his dismissal from the Banco Central in 1943, that Prebisch (1984: 175f.) had time to start reflecting on his experiences, commence working out a theoretical stance, and, as he explained to Love (1980: 52), when he began to read widely in recent economic literature. Unfortunately, neither Prebisch nor Love report on which literature that was or was not included, which leaves us with equally wide options. He was at one time a self-professed Keynesian, and later tried to liberate himself from this influence. A generous interpreter such as Love, thinking of his response to the Depression, could present Prebisch by quoting Keynes: “When the facts change, I change my mind – what do you do, sir?” But if this game is started one is easily led to another, more famous, quotation from the conclusion of the *General Theory* (1973: 383): “Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist.”

Gras’s (1922) introduction to economic history reviewed in the previous chapter, was published already a year before Prebisch’s graduation in Buenos Aires and presumably not

among that recent literature. Its Schmoller-inspired argument presented the London metropolis and its relations with the uplands, evolving through four stages and ending up as a financial centre until the process was repeated in the United States' metropolises. In the 1920s, Innis had rejected the generality of the approach emphasising the peculiar development of hinterlands, and the same went for a host of attempts to apply theories developed in 'old countries' to the situation in new ones. Prebisch made a similar argument although the opponent was left more unspecified. He prepared a series of lectures in 1944 in which he referred for the first time to 'centre' and 'periphery', proposing an historical argument in which Britain was the 19<sup>th</sup>-century centre of trading and monetary system based on the gold standard. In Love's opinion this fitted at least the Argentinean situation fairly well. Britain was the centre generating the trade-cycle, equilibrating gold flows and the balance of payments over the course of the cycle: gold left Britain in the upswing and returned in the downswing. The problem for Argentina – the periphery – was this outflow, which could only be diminished by contracting credit through raising the discount rate. But this was inconceivable in competition with London. So, in the periphery, monetary stability was maintained at the cost of economic contraction, making the gold standard an automatic system for the periphery but not the centre, which could adjust its rediscount rate according to its domestic needs. After World War I the situation changed, and by 1930 the United States had absorbed the world's gold, forcing the rest of the world to adopt 'inward-directed development' (Love 1980: 53). This concept was later elaborated by ECLA-theorists, following up the observation that industrialisation had been greatest during the Depression and times of war when Argentina had to produce for herself.

Prebisch started thinking about Argentina more in terms of Latin America and its relations with the United States, probably encouraged in this direction by his work and meetings in Mexico. This illustrates a significant point not sufficiently underlined by Love with respect to the origins of Prebisch's thinking, namely that though he had reached his conclusions based on the Argentinean experience, he nevertheless formulated them in Latin American terms. Prebisch himself (1984: 176, emphasis added) even says as much but, concerned as he is with policy, without seeing the snag from the scientific point of view:

*My entry into CEPAL in 1949 took place when my ideas were already reaching maturity, and I was therefore able to crystallize them in various studies published in the early 1950s. In these studies I tried both to diagnose the problems and to suggest policies which would serve as alternatives to those proposed by orthodox thinking. Thanks to the broader horizon which my new responsibilities permitted me, these studies concerned not only Argentina, but Latin America as a whole.*

According to Love (1980: 54), his interest in industrialisation as a solution to Latin America's economic problems "originally arose from a desire, shared by many other Argentine contemporaries, to make Argentina less economically "vulnerable", a vulnerability painfully evident for the whole period 1930-45." In 1944 he noted that, unlike Argentina, the United States had a low propensity to import, and followed up the implied threat of international disequilibrium which he had encountered in 1933. His first usage in print of the terminology of centre and periphery appeared in 1946, identifying the United States as the 'cyclical centre' and Latin America as the 'periphery of the economic system', which therefore could not apply the same monetary tools as the centre, for example in the pursuit of full employment (*loc. cit.*). When during the downswing peripheral prices fell, the peripheral governments could not affect world prices for their goods as the centre supposedly could, thus, he charged the economic science of industrial countries, making equilibrium theories of international trade unacceptable. Back in Buenos Aires in 1948, he specifically attacked the theory of comparative advantage, whose principles were repeatedly violated by the industrial nations even while used as an ideological weapon. On a more factual level he asserted that in both the

United States and Britain, technical progress did not manifest itself in lower prices but in higher wages, although because Britain had sacrificed its agriculture some of the benefit “had been transferred to the “new countries” in the form of higher land values”, something unfortunately no longer the case under the hegemony of the United States (*ibid.*: 55).

The founding of the Economic Commission for Latin America (ECLA, or CEPAL) was undertaken on Chilean initiative in 1947 at U.N. headquarters in Lake Success, New York. It was approved in February 1948 by the U.N. Economic and Social Council, and the first meeting was held in June that year in Santiago, Chile. Latin America’s need to industrialise was emphasised already in the opening session, and a chief outcome of the meeting was a resolution calling for a study of Latin America’s terms of trade (Love 1980: 56). Prebisch’s ideas were already known to the Chilean leaders and his reputation had been enhanced by a publication on Keynes in 1947. While he declined the first offer in 1948 to direct ECLA, a few months later he went to Santiago and to elaborate his theses on the terms of trade. In May 1949 the Spanish version of *The Economic Development of Latin America and Its Principal Problems* appeared, to which Prebisch had contributed most of the ideas on international trade. In it was made use of another study, which had appeared in February (cf. ECLA 1950: 9), at the U.N. Department of Economic Affairs, and whose main author was Hans W. Singer (U.N. 1949).

### Singer and the debate on the terms of trade statistics

Born in the Rhineland in 1910, Singer had fled from the Nazi persecution and with the help of Schumpeter’s contacts with Keynes been placed at Cambridge to undertake a Ph.D. on secular trends in land values. His doctoral work led him to wartime employment, and in 1940 he was placed on Gestapo’s list of specially wanted persons in Great Britain in the case of German invasion. After the war wanted to return to academia, but was soon invited to join the U.N. DEA, which he reluctantly accepted, and where in the end he came to remain for 22 years (Toye & Toye 2003: 446). Arriving in New York in 1947, he was free to choose his research subject and came under the strong influence of the Swedish economist Folke Hilgert, who had shaped the League of Nations publications on the Network of World Trade, thus providing the link with its statistical studies, primarily the final volume on *Industrialisation and Foreign Trade* (1945), from whose statistical appendices, but not in the summary of findings, could be derived that the price index for manufactures had fallen less than for agricultural goods. Discussions soon led his attention to problems of terms of trade (Singer 1984: 280), and Hilgert had expressed his puzzlement over the behaviour of the British terms of trade data (Toye & Toye 2003: 448). The original and official objective was only the short-term problem that during the war underdeveloped countries had run into export surpluses that they subsequently wished to use to import capital goods for development. Singer’s study was thus occasioned by the problems to foreign borrowing, which had been observed in a previous study as arising from “the high prices of goods imported by the under-developed countries, and especially of machinery and equipment” (U.N. 1949: iii), and as its title shows was primarily concerned with the postwar period. However, unlike Hilgert and other colleagues, and unlike Prebisch, Singer had no interest in cyclical effects on the terms of trade. With his experience in long-term problems, and more influenced by Gunnar Myrdal’s concern with structural differences between industrial and nonindustrial countries, their effects on the long-term evolution on the terms of trade, and distributive justice (Toye & Toye 2003: 448), the study (U.N. 1949: 21) noticeably included a section on historical perspective compiling comparable data from the Board of Trade as well as the earlier studies by the League of Nations (1945) and Schlote (1938) for 1876-1938. On the terms of trade for primary commodities revealed there he concluded:

The general trend from the 1870's to the last pre-war year, 1938, notwithstanding marked fluctuations, was unmistakably downward. In other words, average prices of primary commodities relative to manufactured goods have been declining over a period of more than half a century. By 1938, the relative prices of primary goods had deteriorated by about 50 points, or one-third, since the beginning of the period and by 40 points, somewhat less than 30 per cent, since 1913. (U.N. 1949: 23.)

Schlote's data for the United Kingdom went further back, and the trend up to the 1870s showed, by contrast, a market increase for the goods imported compared with those exported – as had, indeed, been the common and self-evident assumption among the classical economists.<sup>32</sup> By applying Ricardo's theorem for a closed economy to the world – that growth would raise the relative price of food and therefore the rent of land until a 'stationary state' was approached – political economy had become unison in its belief that the development of productive forces in manufactures and the limited expansive possibilities of raw materials and 'land', would assure that the terms of trade change in favour of the latter (Findlay 1987: 626). The same belief underpinned the equally strong tradition of pessimism from Malthus to Keynes about the sustainability of population growth, revived again by the ecological Protestants/neo-Malthusians to be discussed in Chapter 10. "That manufacturers' terms of trade would decline, and that rapid population growth was therefore unsustainable, were two propositions that caused political economy to be dubbed the 'dismal science'" (Toye & Toye 2003: 438; cf. Toye 2000: Ch. 1). By contrast to the Malthusian strain, much of the 'leftist' ecological renewal of the 1970s seems to have endorsed rather the contrary Prebisch-Singer/dependency view that primary production was somehow linked to underdevelopment and poor terms of trade.

There are several possible reasons for the strong reaction to Singer's statistics and his and Prebisch's explanations of them. Paul Samuelson (1948, 1949) had just given a formal demonstration of the Heckscher-Ohlin thesis, stating that under certain conventional, albeit perhaps unrealistic, assumptions, trade could serve as a complete substitute for the movement of factors of production from one country to another, indication that international trade could potentially equalise incomes among nations. "Thus", Love (1980: 63) suggests, "the less rigorous (but much more realistic) arguments of Prebisch and Singer burst upon the scene just after Samuelson had raised neoclassical trade theory to new heights of elegance, and against this theory the new ideas would have to struggle". In the 1970s, Prebisch recalled "a sense of arrogance toward those poor underdeveloped economist of the periphery" (reported to and by Love 1980: 63), but of course Singer was nothing of the kind.

Ironically indeed, as Toye & Toye (2003: 441) have observed, even Samuelson (1948: 183f., emphasis added) remarked that the terms of trade of those postwar days, were "abnormally favourable to agricultural production", and that "one can venture scepticism that this abnormal trend of the terms of trade, *counter to historical drift*, will continue." Belief had already begun to gain ground that agricultural products were at a disadvantage. Love (cited in Toye & Toye 2003: 440) noted the 1927 observation by Gustav Cassel in the League of Nations that from 1913 "a very serious dislocation of relative prices has taken place in the exchange of goods between Europe and the colonial world". In 1944, Sanford A. Mosk noted that "[t]he relatively unfavourable price position for raw materials and foodstuffs that

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<sup>32</sup> In addition to Ricardo (1821; 1953, Ch. II-IV) this view was embraced by Malthus (1820, Ch. III), Torrens (1821), J. S. Mill (1848, Bk. IV, Ch. II), Jevons (1865), Marshall (quoted in Rostow 1950, cf. 1951), Keynes (1920: 23ff.), Beveridge, Robertson (1915: 169), Graham (1932), Clark (1938; 1942: 49-54), Moret (1957: 120), Viner (1950), Haberler (1947), Lewis (1949; 1952), E.A.G. Robinson (1954: 456), as well as Marxists (Marx & Engels 1978: 220, Bukharin 1915). It is well illustrated in the cock-and-bull story of Jevons stowing enormous amounts of coal in the basement. Findlay (1987: 626) sees this tradition revived in the Club of Rome.

prevailed in the interwar period, and especially during the depression of the 1930s, profoundly affected the outlook of Latin Americans” (in Whitaker 1945: 143; cf. Toye & Toye 2003: 440). That primary producers were at a disadvantage was becoming increasingly commonplace, and certain Latin American governments began to see their future economic security in terms of promoting industrialisation. Invoking ‘Engel’s law’ of demand against classical orthodoxy on the terms of trade, Charles Kindleberger (1943b) wrote that “inexorably [...] the terms of trade move against industrial and raw material countries as the world’s standard of living increases”. Love (1994: 421) has established that Prebisch himself was familiar with another of Kindleberger’s (1943a) articles at the time, arguing for industrialisation based both on the differing elasticities of demand for primary and manufactured products and on the special “institutional organisation of production in industry”.

In fact, some of the critics adduced a contrary bias against promoting agriculture: “Since underdeveloped regions are primarily agricultural, chief emphasis should be placed initially on increasing agricultural output in attempts to raise incomes. This is frequently not the conviction of national leaders in countries that are economically underdeveloped. Desire for self-sufficiency or military power, national pride, or a purely romantic association of manufacture with affluence – these and other noneconomic motivations frequently result in an almost contemptuous attitude toward farming and the glorification of gigantic industrial or public utility projects” (Buchanan & Ellis 1955: 259). The reaction was particularly strong against the idea of a long-term deterioration of the terms of trade for primary products, and is perhaps most plausibly understood as a conditioned reflex from the more than century-long assumption to the contrary – referred to, but not endorsed, by Viner (1952: 114) and Haberler (1988: 39f.).

Critics started by questioning the empirical validity, explaining deviations from standard prognostics by changes in transportation costs and quality of goods, most of which had indeed been noted in an appendix to Singer’s U.N. study. According to Spraos (1983: 6) – for whom the episode lent support to the thesis that “partisanship, conscious or subconscious, prevails over academic detachment” – “they may be fairly judged to have completely failed.” However this may be, and though Spraos is often seen as authoritative, still others continue to dispute it. Ironically, just as the theories purporting to explain falling terms of trade for primary products started to be formulated, the terms of trade themselves became reversed during the Korean War, but, alas, only to drastically deteriorate by the end of the decade, so that the overall outcome was rather indecisive. Looking at the period of the whole century from 1876 or 1900 onwards, the majority of scholars appear to be on the side of an overall deterioration for primary goods, although the debate – and the data gathering – continues (e.g., Spraos 1980, Thirlwall 1983, Sapsford 1985, Sarkar 1986, Grilli & Yang 1986, Evans 1987, Darity 1990, Diakosavvas & Scandizzo 1991, Bloch & Sapsford 1998).

The most obvious empirical objection struck at the identification of primary/agricultural production with underdevelopment or backwardness. There was as critics pointed out an abundance of exceptions to this ‘rule’. One of Manoïlescu’s early reviewers and scathing critics, as well as being a friend of Harold Innis, Jacob Viner (1952: 61ff., 1932), wondered why the world’s sympathies should not turn to Denmark exporting butter and bacon, New Zealand exporting lamb, wool, and butter, Australia exporting wool and wheat, or to California, Iowa, Nebraska, and so on. Looking at Italy and Spain, he remarked that neither was it evident that industrialisation was synonymous with prosperity. His point was that the problem in poor countries is not to be found in agriculture as such, or in the lack of manufactures as such, but in underdevelopment due to poverty and backwardness as such, to poor agriculture and poor industry. Primary production is not a cause of poverty, but merely an associative characteristic of poverty and low agricultural productivity (Viner 1952: 50, Kuznets 1954: 222ff.).

The most significant contribution to the debate was made with Kindleberger’s study of

industrial Europe's terms of trade with the world, which separated the question of deteriorating terms of trade for underdeveloped countries from that of deteriorating terms of trade for primary products as against manufactures. He (1956: 232f.) pointed out that the British terms of trade did not provide a good measure in reverse of the terms of trade of underdeveloped countries, and the "widely publicized statistic that the purchasing power of underdeveloped countries had fallen in international trade by some 40 per cent of its level of the 1870's down to 1938 [...] cannot be supported". However, he continued, the "invalidity of this statistical demonstration does not necessarily disturb the conclusions drawn from it." Looking at the terms of trade of eight industrial Western European countries by areas gave the index in Table 6: A.

Table 6. *Kindleberger's indices on terms of trade and prices (\$US relatives, 1913 = 100).*

A. Net Barter Terms of Trade (by region)							B. Double Factorial Terms of Trade (in trade with):						
Year	Indus- trial Europe	Other Europe	Total Europe	Areas of Recent Settle- ment			World (incl. Industr. Europe)	World (excl. Industr. Europe)	Indus- trial Europe	Other Europe	Areas of Recent Settle- ment		
				United States	All Other	Other					United States	Other	Other
1872	112	102	114	137	108	123	119	119	100	55	160	135	120
1900	96	98	100	114	115	122	108	112	100	70	110	115	100
1913	100	100	100	100	100	100	100	100	100	100	100	100	100
1928	103	96	101	101	104	119	102	104	100	130	90	110	150
1938	104	116	108	114	144	176	135	143	100	190	110	170	250
1952	100	96	98	82	120	155	117	122	100	130	65	110	210

  

C. Terms of Trade of Manufactures/Primary Products * (excl. Ger.)				D. Prices (unit value)		Sweden	U.K. &
Year	Industrial Europe	World		Industrial Europe		(Timber Products, Paper)	(Coal and Coke)
		League of Nations	Lewis (1952)	Manu- factures	Primary Products		
1872	120 (98)*	93	95	152 (123)*	126	123	122
1900	108	99	102	93	86	102	110
1913	100	100	100	100	100	100	100
1928	97	112	112	132	136	161	124
1938	131	138	134	127	98	150	145
1952 (1950)	109	—	(98)	272	250	559	456

Source: Kindleberger 1956 (Index A: 234, B: 240, C: adapted from 259, D: adapted from 259 & 266, n. 12).

From 1913 the (net barter) terms of trade of industrial Europe deteriorated against United States, remained relatively unchanged against Other Europe, improved somewhat against Areas of Recent Settlement and sharply against All Other (= non-European underdeveloped) countries. (If the base is moved to the more uncertain earlier dates, the general picture remains, although the deterioration against the United States is accentuated and the deterioration against Areas of Recent Settlement and All Other countries is moderated.) In line with, e.g., Viner above, Kindleberger (1956: 235) here made a fundamental point: "The sharp decline of the terms of trade of All Other countries *vis-à-vis* Industrial Europe is less than conclusive evidence of a deterioration of the terms of trade against primary-producing countries in general. Other Europe and Areas of Recent Settlement are mainly sources of raw materials and foodstuffs, and the majority of Industrial European imports from the United States are of the same character (and incidentally [...] have done very well in price)." The rise in the price index of Swedish timber (Table 6: D) had been exceptional (in spite of substitutes, although long fibres of northern conifers differentiate them from many other kinds of wood), and the relatively beneficial terms of trade of Other European countries was largely attributable to the wood and wood products.

Looking closer at the intra-European variation, Kindleberger (1956: 239) nevertheless found that "it is a fair conclusion that in the European context the terms of trade favor the developed

and run against the underdeveloped countries.” The price of coal, which was exported by the U.K. and Germany even to the Third World, had shown a similar trend, whereas the price of oil (before OPEC) had declined in spite of the enormous increase of demand. “The fact of the matter is that coal, and timber and timber products behave very differently from, say, cotton, fats and oils, and petroleum products” (*ibid.*: 265f.). On the other hand the price of textiles had declined in spite of their being manufactures, and so on.

Reviewing the various attempts to determine the overall terms of trade for manufactures over primary products, such as League of Nations (1945), on which Singer had largely based his conclusions, or Arthur Lewis’s more recent attempt (Table 6: C), Kindleberger (1956: 263) found his own series for industrial Europe, purged of German bias in 1872, as good as any. However, this “showed very little trend of any kind. The 1938 movement in favor of manufactures, subsequently reversed, is the product of depression” and over the 70 years covered, the net change amounted to merely 10%, which of course was smaller than the margin of error. “It may be fair to conclude that there is no long-run tendency for the terms of trade to move against primary products in favor of manufactures.” Indeed, if allowance was made for probable quality differential, the reverse would be the case. “Unweighted by quality,” however, “the terms of trade run heavily against underdeveloped countries, or rather against those many underdeveloped countries represented by the All Other category [...], but not against primary products.” Furthermore, as he (*ibid.*: 240) maintained and hesitatingly attempted to provide numerical estimates for (Table 6: B): “If the terms of trade run in favor of developed and against underdeveloped countries, the double factorial terms of trade that take account of changes in productivity must do so still more.” As we shall see, this was in fact one of the main points all along.<sup>33</sup>

Indeed, Singer himself had already noted as a major limitation of his U.N. study that it was based on price relations between primary commodities, which formed the major export articles of underdeveloped countries, and manufactured goods – specifically capital goods – which formed an important part of their imports. “It may, however, be very misleading to conclude that changes in total terms of trade as they affect under-developed countries follow directly from changes in price relations between these major classes of commodities. In particular, the high prices of food imported into under-developed countries must be considered before conclusions are drawn from simple changes in price relations between primary and manufactured goods” (U.N. 1949: 4). Neither did his study attempt to say anything on the internal or distributional effects of price changes within underdeveloped countries, emphasising (*ibid.*: 5) that price relations were “only one of many factors determining the distribution of gains from trade between under-developed and industrialized countries”, and “only a part of the broad problem of economic development.” So, from this point of view some of the critics were battering at an open door and clearly overreacting.

Nevertheless, as evidenced by the types of explanation offered, the original emphasis was still on the type of product and what has been called the ‘fundamental inferiority of trade in basic produce as compared with trade in manufactures’. This age-old ‘mercantilist’ idea had a renaissance with the Prebisch-Singer theorem, as it has had for example in ecological attempts to formulate unequal exchange. However, continued allegiance becomes a bit odd in view of the fact that Singer himself, responding to Kindleberger’s criticism, already by 1958 had

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<sup>33</sup> A later stock-taking by Bairoch (1975: 111-134; cf. Lipsey 1963: 12-17) came to largely the same conclusions regarding the secular trend of the terms of trade for primary commodities, which he held had even benefited over the period from the 1870s to the 1950s. He also maintained that the terminal year of the original study (1938) was abnormal, and cited trade figures for the United States and France diverging from the original British ones, as well as long-term studies of terms of trade for several exporters of primary products contradicting the U.N. study. Furthermore, he (cf. Chapter 11 below) has repeatedly pointed out that the developed world was more or less self-sufficient in primary products up to the 1950s, although it has since become a net importer.

partly abandoned this conception in favour of the idea that it was instead the terms of trade of developing countries *as such* that are deteriorating, whether they produce raw-materials or manufactures (Singer 1958: 87f., 1974-75). Singer I, he (1975: 58) explained, *i.e.*, in 1949, had discussed the problem very largely in terms of different commodities and their attributes: “Quite specifically, like others of the day, I thought of industrialization as the great saviour”. Singer II, of 1974, wanted to put the emphasis differently: “Singer I assumed the central peripheral relationship to reside in the characteristics of different types of *commodities*, *i.e.* modern manufactures versus primary commodities. Singer II now feels that the essence of the relationship lies in the different types of *countries*” (*ibid.*: 59). Recollecting the early years, Singer (1984: 292f.) wrote of the “point first made by Charles Kindleberger, that the tendency toward deterioration is more a matter of the characteristics of different countries than of different commodities”, dubbing it the ‘Kindleberger effect’ as supplementing the ‘Prebisch-Singer effect.’

In his 1987 contribution to *The New Palgrave*, Singer concluded that prices on primary products of developed countries 1954-72 sank yearly by on average 0.73%, while the corresponding figure for developing countries was 1.82%. The terms of trade for manufactures was similarly less in developing than in developed countries. The factors to be taken into account in explaining the deterioration in terms of trade of developed countries are:

- (1) the rate of deterioration in prices of their primary commodities compared with those of primary commodities exported by industrial countries;
- (2) a fall in prices of the manufactures exported by developing countries relative to the manufactures exported by industrial countries; and
- (3) the higher proportion of primary commodities in the exports of developing countries which means that the deterioration of primary commodities in relation to manufactures affected them more than the industrial countries. (Singer 1987: 628.)

The original Prebisch-Singer hypothesis included only the third aspect, while later theories, shifting emphasis from commodity factors to country factors, tried to cover all three. Of these, Singer mentioned the dependency approach of the later Prebisch, the ECLA, Celso Furtado, as well as the centre-periphery analysis of Dudley Seers, and “particularly” (*loc. cit.*) Emmanuel’s theory of unequal exchange. For this unusual acknowledgment of ‘unequal exchange’ by one of the pioneers of development theory, we may thank his colleague at the Institute of Development Studies, David Evans, from whom he learnt about it, rather than from Emmanuel (Singer 1984: 280, n. 13; refers also to Lorenz 1970 & 1982).

## Explaining the trend

Turning to explanations, the critics of the Prebisch-Singer theorem have a stronger case. Sticking with the original declining trend for primary products, trying to explain them was quite another matter, particularly within the established framework, which, as noted above, had hitherto uniformly predicted the opposite. It would not be surprising, then, if those rare attempts at generalised explanations which appeared for the most part only half-heartedly managed to break with tradition, grabbing for straws within and outside that framework, and therefore tending to become overdetermined. Although such a discussion is all but absent, it would for example be odd if the explanations proposed were so general that they predicted perpetually deteriorating terms of trade for primary products, since Singer himself had noted that there was a shift in the 1870s. But let us first see what Prebisch and Singer actually said, and if there was indeed a single theorem.

Singer’s initial statistical study refrained from any attempt “to analyse the causes of the continued downward trend over the long period in the prices of primary products, relative to

manufactured articles”. More importantly, perhaps, it at least rejected some explanations. In principle, the trend could be an effect of a relatively greater increase in productivity in the output of primary over manufactured goods, but although such data were lacking this explanation could be dismissed: “There is little doubt that productivity increased faster in the industrialized countries than in primary production in under-developed countries”, as was “evidenced by the more rapid rise in standards of living in industrialised countries from 1870 to the present day”:

Hence, the changes observed in terms of trade do not mean that increased productivity in primary production was passed on to industrialized countries; on the contrary, they mean that the under-developed countries helped to maintain, in the prices which they paid for their imported manufactures relative to those which they obtained for their own primary products, a rising standard of living in the industrialized countries, without receiving, in the price of their own products, a corresponding equivalent contribution towards their own standards of living. (U.N. 1949: 126.)

If there is any single origin for the postwar debate on ‘unequal exchange’ in Love’s (1980) sense, this conclusion is a good candidate. This was the report’s most controversial implication, and, as Toye & Toye (2003: 450) have shown, Singer’s “clear message of historical injustice”, was “very shortly to be rejected by the subcommission”. It was, in fact, the reason why Prebisch avoided the general fate of U.N. authors to remain anonymous (*ibid.*: 456f.). It had been announced even earlier, at a seminar to the New School of Social Research, New York, on 23 December 1948, where he said (1949: 2f.): “Marxist analysis, in which rising standards of living for given groups and sections are somehow held to be compatible with general deterioration and impoverishment, is much truer for the international scene than it is for the domestic.” The reason for the growing inequality in the distribution of world income was attributable to the change in price relations between primary products and manufactures, or to “a structural difference between countries where increased efficiency of production leads to higher incomes and those where it leads to falling product prices” (Toye & Toye 2003: 460, n. 48).

In May, following Singer’s report, Prebisch quoted both the data (in slight modification) and the above conclusion (ECLA: 10, n. 3) to make the same point, only adding the centre-periphery terminology:

Speaking generally, technical progress seems to have been greater in industry than in the primary production of peripheral countries [...]. Consequently, if prices had been reduced in proportion to increasing productivity, the reduction should have been less in the case of primary products than in that of manufactures, so that as the disparity between productivities increased, the price relationship between the two should have shown a steady improvement in favour of the countries of the periphery.[...] The benefits of technical progress would thus have been distributed alike throughout the world, in accordance with the implicit premise of the schema of the international division of labor [...]. (ECLA 1950: 8.)

As we have seen, this had not happened. Prices had not fallen with increasing technical progress; rather, the rewarding of entrepreneurs and other factors had increased prices:

Had the rise in income in the industrial centres and the periphery been proportionate to the increase in their respective productivity, the price relation between primary and manufactured products would have been the same as if prices had fallen in strict proportion to productivity. Given the higher productivity of industry, the price relation would have moved in favor of the primary products.

[...] Since [...] the ratio actually moved against primary products in the period between the 1870's and the 1930's it is evident that in the center the income of entrepreneurs and of productive factors increased relatively more than productivity.

In other words, while the centers kept the whole benefit of the technical development of their industries, the peripheral countries transferred to them a share of the fruits of their own technical progress. (*Ibid.*: 10.)

The 'inequality' which both Singer and Prebisch point to, is the fact that deteriorating commodity terms of trade reflect a transfer – of some sort – 'in the wrong direction' from low to high productivity countries. The importance of this is implied by the complete reversal of the liberal prediction that the more saturated with capital the industrial countries became, the lower would profits become. Thus, opportunities for investment would decrease and capital flow to the underdeveloped countries. As Meier (1963 [orig. 1953]: 65) admitted in passing, however, "this conclusion [...] depends [...] on the qualification of *ceteris paribus* (particularly no change in the terms of trade)."

The deteriorating net barter terms of trade suggested a more important deterioration, if not in the actual double factorial terms of trade, then at least in what the terms of trade *should* have been. As noted by Streeten (1982: 8), "the debate over the course of the terms of trade has been shunted onto the wrong track, by disputing the question as to whether they had deteriorated historically. The relevant question is not what are the terms of trade compared to what they were, but what are they compared with what they should and could be." When Singer looked back once again from the 1980s, he remarked that his early papers "concentrated on the issue of distributive justice or fairness or desirability in sharing out the gains from trade." He did not deny that there *may* be actual gains from trade, as compared with no trade – and neither did Emmanuel, although there is some confusion and 'guilt' by association with Samir Amin on this issue – or claim that there was necessarily an actual deterioration of welfare, which would have required study of factorial terms of trade for which the data were not available. Singer did, however,

look into productivity trends, and by implication argued that if productivity in manufacturing increases faster than productivity in primary production – surely a justifiable assumption then and now – it must be assumed that the distribution of welfare gains based on double factorial terms of trade (allowing for change in productivity in the production of exports and imports) would a fortiori become even more unequal (unfair, undesirable). [...] Naturally, deteriorating terms of trade mean a welfare loss for the developing countries as compared with a situation in which their terms of trade do not deteriorate while everything else, specifically including export volume and factorial terms of trade, is exactly the same – but that is clearly a hypothetical comparison. (Singer 1984: 284.)

Following Streeten above, it would still be this hypothetical comparison that is important, notably because orthodox economics had for over a century had envisioned and predicted precisely the opposite hypothetical situation. As far as historical and economic interpretation and the detection of trends go, it is clearly a valid exercise, indicating what goes on under the empirical 'surface' of observable price changes. This is what makes the terms of trade interesting in the first place. They could for example be placed in a dynamic and international context, such as that suggested by Nurkse (1952, 1953) in the early 1950s where relative lack of purchasing power meant reinforcing a vicious circle of geographical disparities in investment opportunities. The case for a dynamically vicious circle was found in Myrdal's *American Dilemma* (1944) and developed in the field of international economics by himself, Hilgert, Prebisch, Nurkse, and Emmanuel, the latter for whom a comparison between the actual and a hypothetical situation was the very definition of unequal exchange (although he sometimes identified it with the double factorial terms of trade).

In the above passage, Prebisch made no distinction between ‘entrepreneurs’ and ‘productive factors’, which indicates that the benefits could equally well show up in higher rates of profit as in wages or rents. Later, he and the ECLA were to focus on ‘monopolistic pricing’ at the centre, but elsewhere in his original study Prebisch singles out the trade-union factor, which was insignificant in the periphery.<sup>34</sup> In the developed countries progress in manufactures led to increased wages, whereas in the underdeveloped countries, progress in the food- and raw-materials branches led to lower prices. This could only be understood in relation to trade cycles and the way in which they occur in the centres and at the periphery: during the upswing prices of primary goods rose more sharply than those of industrial goods, but during the downswing they fell more steeply. “In the cyclical process of the centres,” he explained,

there is a continuous inequality between the aggregate demand and supply of finished consumer goods. The former is greater than the latter in the upswing and lower in the downswing.

The magnitude of profits and their variations are closely bound up with this disparity. Profits rise during the upswing, thus tending to curtail excess demand by raising prices; they fall during the downswing, tending in that case, to counteract the effect of the excess supply by lowering prices.

As prices rise, profits are transferred from the entrepreneurs at the centre to the primary producers of the periphery. The greater the competition and the longer the time required to increase primary production in relation to the time needed for the other stages of production, and the smaller the stocks, the greater the proportion of profits transferred to the periphery. Hence follows a typical characteristic of the cyclical upswing: prices of primary products tend to rise more sharply than those of finished goods, by reason of the high proportions of profits transferred to the periphery. (ECLA 1950: 12f.)

But if this was so, how does one explain that over time and throughout the cycle, income has increased more in the centre than in the periphery? Prebisch (ECLA 1950: 13) saw no contradiction, since even if “prices of primary products rise more rapidly than industrial prices during the upswing” they also “fall more in the downswing, so that in the course of the cycle the gap between prices of the two is progressively widened.” So far, however, he had offered no explanation of this progressive widening. He could conceivably have referred, in an Innisian ‘cyclonic’ manner, to the socially disruptive side-effects of the heavier fluctuation themselves, but instead argued that centre profits could not fall in the same way during the downswing as they rose in the upswing.

In the upswing the working classes of the centre absorbed real economic gains, but during the downswing (real) wages did not fall proportionately because of downward rigidities enforced by trade unions. Ill-organised peripheral workers, particularly in agriculture, meant that the downswing contraction of income was redirected towards the periphery:

The reason is very simple. During the upswing, part of the profits are [*sic*] absorbed by an increase in wages, occasioned by competition between entrepreneurs and by the pressure of trade unions. When profits have to be reduced during the downswing, the part that had been absorbed by wage increases loses its fluidity, at the centre, by reason of the well-known resistance to a lowering of

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<sup>34</sup> According to Flanders (1964: 313f.), Prebisch assumed a single factor of production (labour), with which to compare productivity and make an index of comparative advantage. This is only permissible if both countries produced the same goods that enter into trade and with roughly the same combinations of labour and other inputs. Since Prebisch “argues that there is a significant ‘profit’ element included in wages in the centre but not in the periphery”, even this is questionable. But even so, “it is impossible to say that the productivity of labour (or of anything else) in coffee production is four times as high in Brazil as in Canada, because nobody knows what the productivity of labour in coffee production is in Canada. Furthermore, it would be wrong to say that if productivity per man in beef production in Argentina are three times as high as in the United Kingdom, and wages in Argentina are half as high as in the United Kingdom, then beef must cost one-sixth as much in Argentina as in the United Kingdom [...] because we know from this nothing about the relative amounts (and costs) of non-labour inputs – land, feed, shelter, etc., involved in beef production in the two countries.”

wages. The pressure then moves toward the periphery, with greater force than would be the case if, by reason of the limitations of competition, wages and profits in the centre were not rigid. The less that income can contract at the centre, the more it must do so at the periphery.

The characteristic lack of organization among the workers employed in primary production prevents them from obtaining wage increases comparable to those of the industrial countries and from maintaining the increases to the same extent. The reduction of income – whether profits or wages – is therefore less difficult at the periphery. (*Loc. cit.*)

Again there was the theoretical indifference as to whether the reduction hit the rate of profit or the wage-rate. It should also be noted that the trade-union factor was only a ‘passive’ force, so to speak, able to protect an increase in productivity as wages, but unable to raise wages by itself. The primacy of market forces was even more underlined in the subsequent passage, which undermined his first explanation:

Even if there existed as great a rigidity at the periphery as at the centre, it would merely increase the pressure of the latter on the former, since, when profits in the periphery did not decrease sufficiently to offset the inequality between supply and demand in the cyclical centres, stocks would accumulate in the latter, industrial production contract, and with it the demand for primary products. Demand would then fall to the extent required to achieve the necessary reduction in income in the primary producing sector. (ECLA 1950: 13f.)

From his Argentinean experience, Prebisch knew well the intensity which this movement could attain, in the “forced readjustment of costs of primary production during the world crisis”, but he forgot to mention that in his experience it included the wealthy wheat producing ‘new countries’ Argentina, Australia, Canada, and the United States.

Instead of pursuing the argument on trade unions, he preferred to extend on the ‘cyclical centres’ Just as the Canadian discussion and the monetary theorists of the 1930s, Prebisch emphasised how Great Britain had now been replaced by the United States as the principal cyclical centre of the world, elaborating on the consequent Latin American ‘dollar shortage’ following the much lower U.S. import coefficient (ECLA, Ch. 4). This centre position was crucial both in obtaining wage increases and in redirecting loss of profit to the periphery:

The greater ability of the masses in the cyclical centres to obtain rises in wages during the upswing and to maintain them during the downswing and the ability of these centres, by virtue of the role they play in production, to divert cyclical pressure to the periphery (causing a greater reduction of income of the latter than in that of the centres) explain why income at the centres persistently tends to rise more than in the countries of the periphery, as happened in the case of Latin America.

That is the clue to the phenomenon whereby the great industrial centres not only keep for themselves the benefit of the use of new techniques in their own economy, but are in a favourable position to obtain a share of that deriving from the technical progress of the periphery. (ECLA 1950: 14.)

In spite of this ‘clue’, there was nowhere any mention of other divisions than that between primary and industrial goods or countries: centres were all industrial, peripheries all agricultural, fitting rather well the 19<sup>th</sup>-century relation between Argentina and the U.K., but, as is indeed evident from the ‘import coefficient’, not the U.S. Despite the warnings in Singer’s original statistical presentation, then, this division was as good as a definition for Prebisch. No subdivision was made among different agricultural products, such as food in Singer, or among temperate and tropical producers and regions as in Innis and later Lewis. It is not pointed out, as it was by Singer that the terms of trade had in all probability *ameliorated* for primary products up to the 1870s.

By transposing his Argentinean experience to all of Latin America, Prebisch overemphasised the unity of Latin America as a 'periphery', perhaps fittingly for United Nations' organs based on continents. He neglected both the early, more or less failed Latin American attempts at industrialisation, such as in Brazil, and the evident fact pointed out by critics that 'industrial' centre-countries included many agricultural exporters. His division into centre and periphery blurred and meshed at least two different phenomena, one reflecting the mercantilist colonial policy of (European) mother countries importing raw materials and exporting manufactures to their (neo-European) colonies, itself perhaps modelled on the town-country dichotomy; the other reflecting the newly experienced division into under-developed vs. developed, or 'industrialised', which was central in the United Nation's conception of the world. These shortcomings can perhaps be explained by the principally policy oriented approach, a bias no doubt shared with most of his colleagues in development economics, which leads analysts in different and perhaps theoretically neglected directions depending on circumstances and personal experience, but does not always foster either coherent general theory or profound historical interpretation.

On the policy plane, Prebisch mentioned various alternative solutions. First, he pointed out that "since prices do not keep pace with productivity, industrialization is the only means by which Latin-American countries may fully obtain the advantages of technical progress" (ECLA 1950: 16). Nevertheless, in spite of this focus on industrialisation he could later on explain (tautologically) that economic growth of Latin America, depended on an increase in population, and an increase in average income per inhabitant. The latter could, however, be achieved either through an increase in productivity, or, in parallel fashion to industrial trade unions, "assuming a certain level of productivity, through an increase in income per man engaged in primary production, in relation to the income of the industrial countries which import part of that production". This would tend "to correct the disparity in income brought about by the way in which the benefits of technical progress are distributed between the centres and the periphery" (*ibid.*: 43).

Furthermore, he had found an alternative solution to industrialisation in the classical theory. If the advantages of technique were not passed on through prices, they would have extended to the same degree by the raising of income, just as had happened in the United States and in the other great industrial centres. But the practicality of this classical economic solution was seriously hampered in the real world, as Prebisch and anyone else with experience from Mexico must have been well aware. For it to have occurred in the rest of the world, "would have required, throughout the world, the same mobility of factors of production as that which characterized the broad field of the internal economy of the United States" (*ibid.*: 16). That mobility was one of the essential assumptions of the theory, but in the real world a series of obstacles hampered such easy mobility. This implied a difference between the actual situation and a hypothetical one:

Doubtless the high wages paid in the United States, as compared with those of the rest of the world, would have attracted large masses to that country, with a very adverse effect upon wages, tending to reduce the difference between them and those of the rest of the world.

Thus the observance of one of the essential rules of the classical game would have resulted in a considerable lowering of the standard of living of the United States, as compared with the levels actually achieved.

It is easily understandable that the protection of this standard of living, attained by great effort, should have prevailed over the uncertain advantages of an academic concept. (ECLA 1950: 16.)

A similar point was to be made again with greater emphasis by both Lewis and Emmanuel, the latter whose very definition of unequal exchange consisted in comparing the actual

situation with such a hypothetical one. For neither of them the importance lay in the definition, however, but in the light theory cast on our understanding of history.

Other points also found in many of the early development economists – such as Rosenstein-Rodan, Nurkse, Singer, Baran, and Lewis – concern the problems of capital formation, for Prebisch concentrated to Latin America and particularly related to inflation. Productivity in some Latin American countries, said ECLA (1950: 37), “is very low owing to lack of capital; and the lack of capital is due to the narrow margin of savings resulting from this low productivity. The temporary help of foreign capital is necessary if this vicious circle is to be broken without unduly restricting the present consumption of the masses”. This was the angle from which Singer was to broach the problem of terms of trade. The ECLA (*loc. cit.*) also noted another problem: “Throughout most of Latin America, the characteristic lack of savings is the result, not only of this narrow margin, but, in many cases, of its improper use”, *i.e.*, “certain types of consumption peculiar to relatively high income groups.” There is nothing to say that these questions were not as important to Prebisch as the terms of trade, of which there was to be so much criticism. Indeed, in the argument of Toye & Toye (2003), these other matters were what really concerned Prebisch until after reading Singer’s 1949 U.N. report, and which he soon reverted to afterwards. Prebisch’s argument on how the periphery transfers the fruits of its technological progress through the deterioration in the terms of trade, consisted partly in that prices and wages were flexible upward in the centre but not in the periphery, and partly in the ‘technological density’ of the centre as compared with that of the periphery; finally, a case was made for the tendency of the periphery to develop a balance-of-payments deficit because of the higher propensity to import than the centre, whereas the significance of price-elastic demand for primary products “has been given much more attention in the “commentaries” than in Prebisch’s own work” (Flanders 1964: 316). The latter point seems, however, to have been the main focus for Singer.

Singer did not make public his own interpretation of the falling terms of trade until the 62<sup>nd</sup> annual meeting of the American Economic Association after Christmas 1949 (published in May 1950), a full ten months after the initial presentation of his statistics and a seven months after Prebisch’s attempted interpretation of them. Being in New York, there is no indication that he had any contact with Prebisch in Santiago, the English version of whose *Economic Development of Latin America* appeared only on 27 April 1950, and on Love’s inquiry they both denied having had any contact. Presumably based on these publications the argument was sometimes referred to as the ‘Singer-Prebisch’ theorem, but it is now commonly referred to as the ‘Prebisch-Singer’ theorem of which they are seen, then, as independent originators. There seems not to have been much debate on who actually came up with it first. Love argues, based on the Spanish edition from May 1949, that Prebisch was first, but he seems to have been unaware that it was Singer who produced the original U.N. study, something which for the generous interpreter would surely have changed the picture.

Actually, Love’s (1980: 65) case is another, which I think one could also be generous enough to admit: “Not paradoxically, I hope, I have also argued that Prebisch had formulated the elements of his thesis before the appearance, in 1949, of the empirical base on which the thesis rested in its first published form – the U.N. study, *Relative Prices*.” In fact, Toye & Toye (2003: 445) argue, the 1948 lectures to which Love refers, did not include the terms ‘centre’ and ‘periphery’ and the conditions under which the unequal distribution of gains from trade appeared were too confused to allow any clear-cut statement on the direction of the terms of trade. He never referred to the secular decline in the terms of trade before having read Singer’s U.N. study (something Singer had, on Toye’s & Toye’s inquiry, always presumed), and his interest was still with the study of the business cycle. Prebisch feigned not to have been aware of Singer in New York, but it was only after a letter by G. Martinez Cabañas in New York to Prebisch, 5 March 1949, urging him to study the findings of señor

Singer's "much debated" study on the terms of trade – a problem which was "one of the most important of those that will be treated in the general study that we [*i.e.*, the ECLA] are going to present at the Havana Conference" – that he turned his mind to the question of the terms of trade (quotation in Toye & Toye 2003: 453; they also demonstrate two other transmission channels at least one of which mentioned Singer by name as the author of the *Relative Prices* study). Even in the final text, Prebisch dealt extremely briefly with the whole issue of the secular decline in the terms of trade, but it "powerfully reinforced his other main arguments – that the international division of labor was an "out-dated schema," and that "industrialization is the only means by which the Latin-American countries may fully obtain the advantages of technical progress" (Toye & Toye 2003: 455, quoting ECLA 1950: 1, 16).

Even should Prebisch have been the first to formulate the then correctly labelled Prebisch-Singer theorem, it would not imply that he was thereby also the originator of the postwar debate on unequal exchange as Love assumes. Love's usage of the term is consistently vague, speaking as if it were a constituent element of the dependency tradition in general, even though neither Baran's (1952, 1957) nor Frank's (1967) paradigmatic writings gave any consideration to terms of trade or transfers of value through trade. If we allow, with Love, to let 'unequal exchange' stand for a broader debate on the inequality of trading relations between developed and underdeveloped regions of the world, then Singer's U.N. study pointed to these before Prebisch, and in a way that indubitably concerned developed and underdeveloped regions and no other couple. If on the other hand, one is to use some more precise definition of the debate on 'unequal exchange', or the spread of the actual term, as distinct from 'non-equivalent exchange' common in Marxist literature, then it seems equally indubitable that the origination was Emmanuel's (1962) essay on '*L'échange inégal*'.

While Prebisch met with acclaim when presenting the ECLA thesis in Havana, the controversial lessons drawn by Singer had not been endorsed by the U.N. Sub-Commission on Economic Development. When confronted with it in the ECLA study it therefore adopted the extreme, and as it turned out completely failed, measure of attributing it to Prebisch as an individual in the hope of thereby limiting its impact (Toye & Toye 2003: 456ff.). However, Singer's emphasis on "the distribution of gains between investing and borrowing countries" was nevertheless different, addressing the problem from the angle of 'U.S. foreign investment in underdeveloped areas' (the section under which it appeared), and with reference both to the Marshall Plan (1950: 483) and Truman's Point Four (*ibid.*: 484). He certainly did not focus on Latin America, mentioning (*ibid.*: 476) specifically only the "tea plantations of Ceylon, the oil wells of Iran, the copper mines of Chile, and the cocoa industry of the Gold Coast," in a sample of important industries from representative geographical areas. He began (*ibid.*: 473f.) by pointing out that underdeveloped countries often present "the spectacle of a dualistic economic structure", in which the export industries, "whether they be metal mines, plantations, etc., are often highly capital-intensive industries supported by a great deal of important foreign technology", whereas by contrast, "production for domestic use, specially of food and clothing, is often of a very primitive subsistence nature." Arthur Lewis figured in the acknowledgements, and the same 'dual' economic pattern, with widely diverging productivity levels, reappeared in his writings. Singer (*ibid.*: 475) wished to cast doubt on the common view that investments were necessarily always beneficial, and that "the productive facilities for export from underdeveloped countries, which were so largely a result of foreign investment, never became part of the internal economic structure of those underdeveloped countries themselves":

Economically speaking, they were really an outpost of the economies of the more developed investing countries. The main secondary multiplier effects, which the textbooks tell us to expect from investment, took place not where the investment was physically or geographically located but [...] they took place where the investment came from. (*Loc. cit.*)

Indeed, he (*ibid.*: 477) argued, these investments could even have harmful effects by making countries specialise on supplying the industrialised countries with raw materials, and withholding the possible side effects on the general level of education, skill, way of life, inventiveness, habits, store of technology, creation of new demand, etc. that Singer believed were more closely linked to manufacturing industries. He thus contended that, for several reasons, “the specialisation of underdeveloped countries on export of food and raw materials to industrialized countries, largely as a result of investment by the latter, has been unfortunate for the underdeveloped countries”. First, he maintained, “because it removed most of the secondary and cumulative effects of investment from the country in which the investment took place to the investing country”. Secondly, “because it diverted the underdeveloped countries into types of activity offering less scope for technical progress, internal and external economies taken by themselves, and withheld from the course of their economic history a central factor of dynamic radiation which has revolutionized society in the industrialized countries.” Finally, however, (*ibid.*: 478) there was also a third reason, “of perhaps even greater importance”, relating to the terms of trade.

Referring to his previous study for the United Nations, Singer established that ever since the 1870s the trend had been heavily against sellers of food and raw materials and in favour of sellers of manufactured goods. Again dismissing the possibility that this might be explained by greater productivity increase in the former line of production, the following interpretation then presented itself:

The fruits of technical knowledge may be distributed either to producers (in the form of rising incomes) or to consumers (in the form of lower prices). In the case of manufactured commodities produced in more developed countries, the former method, i.e., distribution to producers through higher incomes, was much more important relatively to the second method, while the second method prevailed more in the case of the food and raw material production in the underdeveloped countries. Generalizing, we may say that technical progress in manufacturing industries showed in a rise in incomes while technical progress in the production of food and raw materials in underdeveloped countries showed in a fall in process. (*Loc. cit.*)

In a closed economy the two groups could be considered as identical, but where foreign trade was involved the producers were at home and the consumers abroad. Singer established that higher remuneration of domestic producers would constitute a burden on foreign consumers, but even should an increase in domestic income follow productivity, this would entail a lack of gain on behalf of the foreign consumer:

Rising incomes of home producers to the extent that they are in excess of increased productivity are an absolute burden on the foreign consumer. Even if the rise in income of home producers is offset by increases in productivity so that prices remain constant or even fall by less than the gain in productivity, this is still a relative burden on foreign consumers, in the sense that they lose part or all of the potential fruits of technical progress in the form of lower prices. (*Ibid.*: 479.)

Singer proposed to explain how income levels could be raised above those of productivity through “the notorious inelasticity of demand for primary commodities”, but there were other factors such as “the absence of pressure of producers for higher incomes”. Singer’s silence on any distinction between wages and profits is unfortunately even greater than Prebisch’s. Extrapolating from Ernst Engel’s law that the proportion of income spent on foods decrease as income rises, Singer (*ibid.*: 479) held that technical progress “operates unequivocally in favor of manufactures – since the rise in real incomes generates a more than proportionate increase in the demand for manufactures – has not the same effect on the demand for food and raw materials”. Furthermore, in manufacturing, it “actually largely consists of a reduction in

the amount of raw materials used per unit of output, which may compensate or even overcompensate the increase in the volume of manufacturing output. This lack of an automatic multiplication in demand, coupled with the low price elasticity of demand for both raw materials and food, results in large price falls, not only cyclical but also structural.”

Returning to the question from which his original exposition set out, Singer explained how foreign investment in the production of primary commodities benefited the investing country, first, through beneficial cumulative effects in the investing country, second, as a consumer in lower prices resulting from higher productivity in primary production, and, finally, as a producer in not sharing the fruits of technical progress in the production of manufactures, partly through specialisation in high productivity branches.<sup>35</sup> Thus, he explained (*ibid.*: 479f.):

The industrialized countries have had the best of both worlds, both as consumers of primary commodities and as producers of manufactured articles, whereas the underdeveloped countries had the worst of both worlds, as consumers of manufactures and as producers of raw materials. This is perhaps the legitimate germ of truth in the charge that foreign investment of the traditional type formed part of a system of “economic imperialism” and of “exploitation.”

The benefits of foreign trade and investment had not been equally shared between the two groups of countries (*ibid.*: 480): “Perhaps the widespread though inarticulate feeling in the underdeveloped countries that the dice have been loaded against them was not so devoid of foundation after all as the pure theory of exchange might have led one to believe.”

Prebisch’s focus had been on Latin America’s relations with the United States and the problems arising from its low import requirements, but by 1951, ECLA emphasis had shifted to disparities in income elasticities of demand at the centre for primary products, and those of the periphery for industrial goods, thus adopting Singer’s terms and dealing instead with the centre countries as a group (Love 1980: 59). Amin (1970a, 1: 83f.) also saw a difference of emphasis between the arguments of Prebisch and Singer, the former pointing to the rigidity of wages in the centre, while the latter focused on the differences in demand for agricultural and industrial commodities. The main difference was perhaps rather Prebisch’s concern with medium-term business-cycles, and the centre-periphery terminology which implied a corresponding historico-geographical framework. While highly suggestive and appealing to Latin Americans with traditional export economies and a sense of having fallen behind, when linked to the dichotomy ‘developed–underdeveloped’ it also introduced a confusion of analysis more evident with respect to the other, *e.g.*, Anglo-Saxon, historico-geographical peripheries. The inability to handle this problem has lived on in the dependency tradition (cf. Chapters 5, 14).

According to a later summary by Singer (1987: 627), the underlying economic argument of the combined Prebisch-Singer theorem can be put under four headings:

(1) The lower elasticity of demand for primary commodities than for manufactured goods, meaning that a drop in the price of primary inputs will only mean a proportionately less drop in the price of the finished product and no great effect in demand can be expected. Singer tries to explain how this is bad, since if prices fall (presumably through technological progress) the volume sold will not be able to compensate and this will show up in the balance of payments. (If the price of food drops, consumers will not just buy more food but rather other goods.)

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<sup>35</sup> Singer (1950: 480) enumerated: “The capital-exporting countries have received their repayment many times over in the following five forms: (a) possibility of building up exports of manufactures and thus transferring their population from low productivity occupations to high-productivity occupations; (b) enjoyment of the internal economies of expanded manufacturing from industries in a progressive society; (d) enjoyment of the fruits of technical progress in primary production as main consumers of primary commodities; (e) enjoyment of a contribution from foreign consumers of manufactured articles, representing as it were their contribution to the rising incomes of the producers of manufactured articles.”

Although Singer does not underline this, such inelasticity naturally also means that if prices rise there will be gains which are just as great. He instead points out that the original analysis “did not always quite clearly distinguish the disadvantages [...] due to price instability from those due to a deteriorating trend.” The former had been pointed out by Singer’s old teacher, J. M. Keynes, in 1938 and at the Bretton Woods conference when proposing “even a world currency based on commodities.”

(2) Demand for primary products is bound to expand less than demand for manufactured products, partly because of the lower income elasticity of demand for primary products, especially agricultural products (Engel’s Law), and partly because the technological superiority of industrial countries is devoted also to economies in resource use and to the development of synthetic substitutes for primary commodities. Such divergent trends in demand introduce a tendency towards balance of trade deficits, which will enforce currency depreciations and a further circle of terms of trade depreciation.

(3) In line with the argument of another of Singer’s old teachers, J.A. Schumpeter, the technological superiority of the industrialised countries, concentrated in multinational firms based there, means that the prices of manufactured exports “embody a Schumpeterian rent element for innovation and also a monopolistic profit element because of the size and power of multinational firms.”

(4) The structure of both commodity markets and labour markets is different in industrial and underdeveloped countries. Here, Singer is referring mainly to Prebisch and other contributors (even Arthur Lewis, whose theory must be considered as quite distinct) than to his own article (though he had brushed the subject), which may explain the inverted commas: “In the industrial ‘centre’ countries, labour is organized in trade unions and producers in strong monopolistic firms and producers’ organizations,” meaning that “the results of technical progress and increased productivity are largely absorbed in higher factor incomes rather than lower prices for the consumers.” By contrast, in the underdeveloped countries (and Singer here enforces his and Prebisch’s argument with that of Lewis and others) increased productivity is likely to show up in lower prices, benefiting the overseas consumer rather than the domestic producer.

As to the first points, Kindleberger (1956: 268) at one point questioned not only the empirical validity, but the whole concept of commodity groups allegedly sharing either price- or income-elasticities, since “these elasticities may well differ for the same commodity in different parts of the world.” Explanations by income-elasticities of demand were of doubtful validity and even of doubtful meaning: “Wheat is income-elastic in developed countries, income-elastic in densely populated. The obverse is possibly true of petroleum products” (*ibid.*: 266). On the demand side, “income- and price-elasticities for basic food are high in underdeveloped countries, low in countries with a high standard of living. In each separate part of the world economy the elasticity concepts are relatively clear and precise; the average elasticity for the world as a whole is of dubious meaning.” On the supply side, the question was even more complex, with commodities going through stages depending on innovations and discoveries, in addition to idiosyncrasies in occurrence and ownership of mineral deposits, combined with the exercise of power. The difficulties became even greater when considering that there may be more than one production function for the same commodity, and long-run elasticities of supply may differ in different countries (*ibid.*: 268f.). “If demand and supply elasticities for a single commodity are different in the underdeveloped, adult and mature portions of the world economy, there is some question as to the meaningfulness of world demand and supply elasticities when national markets in separate sectors are concerned. It is rather like measuring the average height of a family consisting in father, mother and several children; it can be done, but it is not clear that the results are worth trying to interpret” (*ibid.*: 270). As to economists trying to predict future terms of trade in order to prove

themselves true scientists (or aid policy decisions), this was perhaps an even less meaningful task – a science comparable to astrology: “It must be recognized that in a field with many variables there is a grave risk of claiming too much credit through getting the right answer for the wrong reasons. Scientists can make a reputation in this way, but the science itself is likely to be set back” (*loc. cit.*).

Myint (1954: 132) wanted to turn the focus from tastes and demand factors as determinants of the terms of trade to the supply and cost factors, particularly in the vast expansions of output induced by foreign investment. This had not followed the competitive ‘norm’ taught in the textbooks: “in the typical situation where foreign enterprises in the backward countries are large enough to be monopsonistic buyers of labour and peasant produce, their behaviour may depress the terms of trade.” A ‘monopsony’ is a market with only one buyer, and here means that they may meet the pressure of competition by depressing wages and cutting prices rather than output, “while retaining their ‘normal’ profit on an unreduced volume of output.” It is interesting that Myint should refer to this normal profit which for a foreign enterprise would seem to be an *international* norm, but at this point Myint found that “we have clearly passed from the external factors determining the terms of trade to the internal factors arising from the domestic economic structure of the backward countries.” He pointed out that Prebisch and Singer, too, were obliged to fall back on the internal factors: “It is maintained that while wages in the advanced countries rise during the upswings of the trade cycles, they are extremely resistant to cuts during the downswings, whereas in the backward countries, due to monopsony and less powerful trade unions, wages and incomes do not rise as much during upswings and are certainly more easily cut during the downswings. Thus with each trade cycle, the costs and prices of the manufactured goods are irreversibly jerked upwards relatively to the costs and the prices of the raw materials.”

Kindleberger, too, felt that more attention should be paid supply factors, but still criticised the way Prebisch and Singer adduced monopolies in the factors market. He noted their common stance that although increases in productivity had been faster in manufacturing than in agriculture, export prices in the former had been maintained at a higher level, because wage pressure tended to maintain prices and raise (in Kindleberger’s interpretation) factor incomes, whereas in the latter increased productivity only resulted in lower prices. As has been suggested, Singer basically evoked elasticities while mentioning the trade-union factor, while Prebisch at least initially laid more stress on the trade-union factor, while also pointing to elasticities. Kindleberger (1956: 246) satisfied himself with a little less subtlety: “The basis for this asymmetry is said to be the differences in effectiveness of organization at the factor level in the two countries.” Although the focus of critique had been on the empirical validity, this was quite unnecessary, since the explanatory theory itself was flawed (how he would square this critique with the above one of elasticities is not explained):

There can be no monopoly elements in factor markets in separate countries, which impinge on terms of trade, apart from the existence of monopoly in the goods markets. If foreign demand and supply in international trade is inelastic, national price-wage policy can have no effect on the terms of trade. A difference between the price and wage policies of two countries will affect their balances of payments, and through them possibly exchange rates, but the terms of trade will be unchanged. [...]

If foreign demand and supply are inelastic, differences in price and wage policy can bring about a change in the terms of trade [...]. But it is questionable whether it is the monopoly elements at the factor level, rather than those in goods markets, which are effectively responsible for the changes.

The ECLA-Singer thesis on this basis is super[er]ogatory: If it can be conclusively established that the elasticities facing the underdeveloped countries are lower than those facing the developed, there is no lack of forces to explain why the terms of trade work as they do. (Kindleberger 1956: 247)

Here, Emmanuel (1972a: 82) wholly agreed with Kindleberger: “Indeed it is hard to see what

a more dynamic posture of the factors could do in the face of a defective structure of external demand, if it is really demand that determines prices.” “It must be agreed that as long as the premises of the prevailing theory are not challenged, Kindleberger will be in the right as against Prebisch” (*ibid.*: 85).

However, for Emmanuel the problem lay rather with the premises of the prevailing neoclassical theory, and with allowing wages to be determined by prices and these by the demand side of the equation in the first place. If it was the nature of the product that dictated whether a rise in productivity would be reflected in lower prices or higher wages, then

the independent variable of the system remains the state of demand, since, as use values, the products differ from the economic standpoint only in the kind of demand they arouse. The fact that primary products are put on one side of the barrier and manufacture on the other merely supports the impression that the Singer-Prebisch thesis is in the last analysis only a sophisticated reformulation of the fashionable doctrine that, for reasons left undefined, the former category of goods encounters always and everywhere a less satisfactory demand than the latter. (*Ibid.*: 80f.)

If such defective structures of demand were supposed to explain lower wages, there were innumerable difficulties, which we can only graze. Pointing to the production of French wines and Scottish whisky (in which an almost superstitious hostility to novelty reigned), he also found it difficult to see why the application of ‘monopoly’ wages should be restricted to cases in which technical advance and increased productivity were involved (a criticism that would be equally true of some versions of Lewis’s model). The highest degree of paradox according to the Prebisch-Singer thesis, was that since the textile industry had been taken over by the underdeveloped countries – in ultramodern Egyptian, Indian, and Hong Kongese plants – the old European producers still obtained wages 20 or 30 times as high, by turning toward the semi-craft production of artistic and luxury goods. Emmanuel had many more such examples, real, imaginary, or amusing, all to the same effect, suggesting, *e.g.*, that when the whole Third World has become industrialised we might see Congolese or Indonesian locomotives exchanged for the tulips of Holland, the lace of Bruges, or the gowns of Paris, but still with the same wage differential.

Contrary to Prebisch, but in line with the classical economists and, Emmanuel (1972a: 86) maintained, “to the universal consciousness of mankind (what is called common sense), wages depend not on the productivity of the branch in which the worker works but on that of the branches that supply the goods he consumes.” The standard good could change, of course, and Emmanuel agreed that the trade-union factor and well-organised workers in export industries could exploit good economic conditions to gain improved wages. However, Prebisch’s argument added causes to causes without worrying if they were internally consistent. Ultimately, Emmanuel (*ibid.*: 87) argued, they amounted to a theory where wages alternated as cause and effect and the explanation thus became circular.<sup>36</sup>

How does Prebisch get out of all these contradictions? By taking wages sometimes as cause and sometimes as effect. He assumes that it is the productivity in *each* branch taken separately that determines wages in the first place, and this apparently leads him – though he does not explain himself clearly on this point – to think that, in the event of a disparity in technique, the wages in the primary sector tend to fall. This prevents the prices in this sector from rising, despite its low productivity, and consequently enables the advanced industrial sector to freeze its own wages in

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<sup>36</sup> After reviewing many problems in Prebisch’s approach, Flanders (1964: 320f.) found one that was “even more troublesome” concerning the mechanism of wage-determination. What Flanders refers to is that wages appear to be determined by both the terms of trade and by overall, or average, productivity in the whole economy, and he believes that it may be explained by Prebisch, as he frequently did according to Flanders, implicitly going from a static to a dynamic analysis.

spite of its high productivity. This wage freeze brings about in its turn a fall in prices in this exporting sector and a transfer of value abroad.

Here we have a perfect instance of reasoning in a circle. Prebisch is looking for a cause for a certain evolution of world prices. He thinks he has found this in a certain evolution of wages, which is in turn conditioned by a certain evolution of productivity. Now, productivity can in no case affect wages except *through prices*.

Based on another well-known study (Prebisch 1959), Andersson (1972b: 55) came to basically the same conclusion that for all its relative merits, Prebisch's theory was ultimately both incomplete, because it included only the labour factor, not capital or land, and inconsistent, because of wages and prices alternating as the independent variable.

Through the work of Prebisch, certain age-old conceptions of the disadvantages suffered in the periphery/hinterland against the metropolis/centre, and in agriculture against industry, found a modern exponent and form. Possibly inspired by Central European precedents and Keynes, it represented more generally a revival of traditional 'mercantilist' concerns, both with respect to the disadvantages inherent to exporting raw materials and to the concern over the balance of payments. Although the theoretical responses eventually stimulated did not always stand up to the tests of internal consistency, policy practitioners nevertheless had to confront real problems, which were dismissed as non-existent by mainstream theory. The difficulties in formulating novel explanations based on a theoretical framework which had for a century predicted the opposite, are understandable. Prebisch's attempt mixed arguments from demand with others from costs and rigidities of wages in an unsatisfactory way.

More generally, the identification of geographical peripheries as agricultural was largely consistent with the more prosperous of Latin America's export economies, the British Dominions and the United States in relation to Europe and Britain in the 19<sup>th</sup>-century. Sprung from Argentinean soil and the economic setbacks suffered by land-holding interests in the 1930s depression, Prebisch's theory transposed the paradigm to Latin America as a whole in line with U.N. organisational principles. Subsequently it linked up with the postwar debate on development and underdevelopment, in which form it was extensively criticised and, in essence, refuted. Peripheral underdevelopment, or at any rate 'Latin America's principal problems', was partly due to the inherently falling terms of trade for primary goods against manufactures, due to peculiarities of demand, relative lack of organised labour, and, in passing, even to non-equalisation on the factors market, though no distinction was made between the labour and capital factors. Continuing the search for a true explanation of the falling terms of trade it was suggested that it was not so much the type of good as the type of country that mattered.

Admitting this difference, an important step was taken at an early stage by Arthur Lewis, to whom we shall now turn, and who instead suggested that it was the different evolution of wage-levels between these types of countries that explained the evolution in the terms of trade. If Prebisch, as an Argentinean, was sensitive to the fortunes of agricultural exports, Lewis, as a black West Indian, was obviously sensitive to racial discrimination in wages as well as migration policies. However, having moved to England, and after the Chinese revolution had accentuated the political need for non-communist paths out of underdevelopment, Lewis was first of all inspired by the example of the British industrial revolution, in which he noticed the impact on wage-levels of the high level of agricultural output and of the possibility of emigrating to new and 'uninhabited' lands overseas.

# Chapter 5. Arthur Lewis on differential agricultural productivity and directed migration

In their recent semi-centenary, Kirkpatrick & Barrientos (2004: 679) remark that Lewis's (1954) most famous article "is widely regarded as the single most influential contribution to the establishment of development economics as an academic discipline." Below I shall first remind of the Cold War context and the place of development economics in it. Lewis's 'one big idea', presented in said article, originated to solve what he considered to be one of the two problems with which this branch of learning was obsessed in the 1950s: how to finance modernisation. Looking at the principal capitalist case, the British industrial revolution, and following the observations of contemporary political economists, who were experiencing a vogue at the time, he assumed an 'unlimited supply of labour' at subsistence wages. This implied that with increased productivity, savings would also increase and with them modernising investments. As an aside, this model also solved the problem of the terms of trade, or why 'steel' was dear and 'coffee' cheap, which basically depended on the level of productivity in the subsistence sector.

Lewis's model came in two versions, one closed and one open. The closed version, to which we shall then turn, was the more influential in development economics and it basically tended toward the same stationary state as classical economic models. The open version, ending our presentation, was the one relating to the terms of trade and unequal exchange, and also the one extended into important historical interpretations. Since, formally, the basic difference between his model and that of Emmanuel lies in the determination of wages at subsistence or in accordance with productivity levels, rather than through exogenous political forces, something will have to be said on Lewis's many, rather inconsistent, acknowledgments of politically determined wage-levels and differences. Lewis was himself much concerned with explaining the rise in urban wages, described (1979: 224) as "the real theoretical puzzle of the period" (cf. Kirkpatrick & Barrientos 2004: 686f.). Finally, it shall be argued that the great explanatory powers of Lewis's model relating to international mobility of labour and the factoral terms of trade, has no counterpart with respect to the mobility of capital. Contrary to expectations raised by his model, but consonant with his historical argument that growth in the poor export countries has followed the growth of markets in the rich, capital investments have been just as attracted to high-wage areas as has labour.

## Lewis and the Cold War context of development economics

If our first example of a peripheral contributor to the unequal exchange perspective was a Virginian apologist of slavery and no great theorist, the Nobel laureate W. Arthur Lewis (1915–1991) was by contrast a coloured West Indian, who became one of the most widely acclaimed theorists in development economics. Similarly to Schumpeter's (1939) study of business cycles, his contribution to the terms of trade debate was both statistical, theoretical, and historical. His explanation centred on different agricultural productivities establishing a wage differential between the tropical and temperate world, which was crucially fortified by a politically guided migration policy, and which, together with different developments in the productivity of regionally specific branches, determined the terms of trade. Thus, the perspective was that of a classical economist where different wage levels were determined

exogenously by the level of subsistence. His explanation was inspired by the example of the English industrial revolution and the opportunities open for surplus populations to migrate. Contrary to Prebisch, then, his policy recommendation consequently relied not exclusively on import substitution in industry, but more profoundly on agriculture. At the same time his approach was more firmly set in the Cold War debate on 'population' and the relative benefits of the planned, mixed, or free economies, which not only constitutes the counterpart of contemporary debates in the Socialist bloc, but also informed the contribution of Baran (cf. Chapter 2 & n. 1), Emmanuel (Chapters 6-8), and the neo-Malthusians (Chapter 10). The spectre of communism (Leffler 1994), reinforced by the popularised growth rates of Stalinist Russia in the 1930s and underlined by Mao's surge to power in China, made it urgent to propose alternative, corner-cutting paths to prosperity that would not turn into roads to serfdom.

The American side of the controversy was crucial for the institutional support of development economics in the United Nations. Harry S. Truman and his advisers believed that British retrenchment, political instability, and economic dislocation, afforded the Soviets opportunities to expand into the eastern Mediterranean and Middle East, thereby gathering strength that would enable them to challenge the United States in still more important areas. Truman maintained that the administration faced the greatest selling job in U.S. history. After careful preparatory public-information campaigning by officials in business and the media ("a full-scale public relations blitz"), Truman appeared before Congress to request \$US 400 million for aid to Greece and Turkey. A "fateful hour" had arrived, where nations "must choose between alternative ways of life". The United States must not falter in their leadership, if it were not to "endanger the peace of the world." The media instantly hailed the Truman Doctrine as a "historic landmark in American foreign policy", no less important than the Monroe Doctrine and the decision to oppose Hitler (quoted in Leffler 1992: 145). "Underlying the ideological crusade were deeply rooted geopolitical convictions that defined national self-interest in terms of correlations of power based on the control of critical resources, bases, and industrial infrastructure. Newspaper editors, sharing these same assumptions, supported the Truman Doctrine because of their concern with prospective shifts in the balance of power" (*ibid.*: 146). Defining the enemy as inveterately hostile eliminated the prospect for compromise and accommodation, and expressed an ideological fervour that could entice isolationists into the interventionist camp.

Truman's inaugural address in January 1949 was dominated by foreign policy. It reaffirmed his global struggle against the "false philosophy" of communism, and was infused with the same ideological fervour that had permeated the Truman Doctrine address two years before. In rhetoric with which we have again become familiar, Truman saw himself as the leader of the free world, fighting evil and safeguarding core values and national security at the same time. Truman's administration would take four courses of action through which the United States would "create the conditions that will lead eventually to personal freedom and happiness for all mankind." First, it would support the United Nations; second, promote world economic recovery; third, strengthen "freedom-loving nations against the dangers of aggression"; and forth, launch "a bold new program for the improvement and growth of underdeveloped areas" (quoted *ibid.*: 267).

The speech became known after its forth article, aid to the "underdeveloped areas", as the 'Point Four Program'. *The Oxford English Dictionary* (1989: 960; cf. Linnér 2003: 43) has this speech as its first recorded entry of 'underdeveloped' in its modern sense. Derivatives of *Entwicklung* in German can be found much earlier, but even in English this neglects Wilfrid Benson's, member of the ILO Secretariat in Britain, case for "The Economic Advancement of Underdeveloped Areas" in 1942 (National Peace Council 1942: 10). Arndt (1973: 27) instead believes this to be the first use of the word in the postwar sense, noting it in a more literal

sense already in Bowman (1937: 1). However, as indicated by the *Oxford* entry, Truman's usage gave the expression a legitimacy and circulation it had thitherto lacked.

Point Three was a call for a collective defence arrangement in the North Atlantic area, which eventually resulted in the formation of the North Atlantic Treaty Organization (NATO). The enlightened humanitarian self-interest of Point Four, which became the American program of foreign aid, was set in the midst of a call for building military strength against the communist threat. "Military treaties like NATO and technical assistance like Point Four were merely opposite sides of the same coin" (Perkins 1997: 145). Whereas point three was thus the overt military component of the program, Point Four was the effort to spread American influence in the less developed countries, not by force of arms but by the transfer of technology and the institution of capitalism:

More than half the people of the world are living in conditions approaching misery. Their food is inadequate [...]. Their poverty is a handicap and a threat both to them and to more prosperous areas [...]. The United States is pre-eminent among the nations in the development of industrial and scientific techniques [...]. Our imponderable resources in technical knowledge are constantly growing and are inexhaustible. I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life. And, in cooperation with other nations, we should foster capital investment in areas needing development [...]. The old imperialism – exploitation for foreign profit – has no place in our plans. What we envisage is a program of development based on the concepts of democratic fair dealing [...]. Greater production is the key to prosperity and peace. And the key to greater production is a wider and more vigorous application of modern scientific and technical knowledge [...]. To that end we will devote our strength, our resources, and our firmness of resolve. With God's help, the future of mankind will be assured in a world of justice, harmony and peace. (Public Papers 1964: 114ff.)

It is interesting to note that the 'old' imperialist exploitation for foreign profit is to play no part, and that the new program (new imperialism?) is instead to be based on 'fair dealing'. In a sense, Truman had thereby already countered much Marxist, later dependency, critics of 'monopoly capitalism' and imperialist motives. These were then left with the mere 'liberal' retort that his and the capitalists' intentions were not really honest, and the unintended implication is of course that if they had been, all would have been well. By contrast, an expatriate former member of the Greek communist resistance, Arghiri Emmanuel, would meet these claims head on, demonstrating how exactly the assumptions of equal rates of profit and normal 'fair-dealing' free-trade conditions could mean an unequal exchange between high wage and low wage countries. Lewis provided a crucial stepping stone between the Prebisch-Singer argument and Emmanuel, and is of course very interesting in itself. Though he said nothing of rates of profit and fair dealing, Lewis's argument fitted nicely in the corresponding shift when the British government transformed its Law of Development of the Colonies into the Law of Development *and Welfare* of the Colonies in 1939. His stance on planning was a well-argued intermediate between the extreme left and right, and can be profitably compared with that of another historian of the industrial revolution, Walt Whitman Rostow.

Development economics was firmly set in the cold war context, and one had not even to wait long for its own 'non-communist manifesto'. "In the grandiose design of Truman's speech, there was no room for technical or theoretical precision. The emblem defines a programme conscious of Mao's arrival, looking for evolution as an antidote for revolution" (Esteva 1992: 11). Striving for said precision, many of the early development economists bear witness to the "growing sense of political urgency concerning the promotion of economic development in the underdeveloped regions in order to maintain international stability and to contain the spread of communism" (Hunt 1989: 45; cf. Myrdal 1957: 7, Myint 1963 [orig.

1954]: 135, 151f.), but it was nowhere more evident than in Rostow's work. Shortly after the Korean War (1950–1953), he wrote:

We as a people (the United States) have made a momentous choice. We have now clearly ruled out one conceivable approach to our international problem: namely a military attack on the Soviet Union and Communist China initiated by the United States [...] That American decision has an important consequence, it means that the American people must find other ways for protecting their interests. The alternative to total war initiated by the United States is not peace. Until a different spirit and a different policy prevail in Moscow and Peking the alternative for the United States is a mixture of military, political and economic activity (Rostow 1955: vii).

The United States must develop a more vigorous economic policy in Asia. Without such a policy our political and military efforts in Asia will continue to have weak foundations [...] Asia's economic aspirations are linked closely to the highest political and human goals of Asia's peoples: and American economic policy in Asia has, therefore, important political as well as economic meaning. (*ibid.*: 43)

Rostow's theoretical work was guided by his ideological perspective and anti-communism, and his most ambitious work, *The Stages of Economic Growth: A Non-Communist Manifesto*, sought to be "an alternative to Karl Marx's theory of modern history" (Rostow 1960: 2). Being an able historian of the British industrial revolution, his claims and stages nevertheless had no great success with his colleagues in economic history, except for introducing the terms 'take-off' and 'leading sector'. What he earned was attention and a more direct counter reaction in the form of the Marxist-structuralist blend found in Frank's dependency and particularly Wallerstein's world-system perspective, for which, still after three decades, this counter-position is more vital than hazarding any more theoretical exposition of its own. In a later review, Hirschman (1982: 374) found this 'neo-Marxian' stance no better than the dominant neoclassical 'pre-development' economics: "A cozy internal consistency, bent on simplifying (and oversimplifying) reality and, therefore, favourable to ideology formation, is immediately apparent in both the orthodox and the neo-Marxian positions." This would lend them a stability not accredited his own preferred development economics, behind which he apparently saw no particular ideological motivation, which consisted of a more 'conjunctural' group of activist 'problem-solvers' therefore tending to disintegrate. Lewis fitted into this latter group, but his stance is no more liberated from ideology than any of the other.

Lewis's parents were devout Anglicans and St. Lucia, where he was born, was a Creole community of mostly Roman Catholics. The black majority was not subjected to the daily humiliations of U.S. African Americans, and growing up on this small Caribbean island rather than in the turbulence of Trinidad or Jamaica, where racial divides and economic inequalities were pronounced, he was less likely to join political and cultural radicals such as Eric Williams, a life-long friend, politician and historian linking Britain's industrial revolution to the slave trade, or, from the French Caribbean, Franz Fanon, whose *Wretched of the Earth* called for peasant violence against European imperialism. From Lewis's seventh year, when his father died, he had been raised by his mother, who instilled in him a determination to succeed academically and not be defeated by racial discrimination, but formed part instead of the West Indian 'social compromise' of the 1930s and 1940s (Tignor 2006: 8-15). In 1932, at the age of 17, Lewis won a university scholarship and began studies at the London School of Economics for the Bachelor of Commerce degree., which he was awarded in 1937. He remained for another ten years, obtaining his doctorate in 1940.

Having experienced widespread poverty, the British West Indies exploded in labour violence in the 1930s, "as the decline in world prices for primary products, gradual in the 1920s, but catastrophic in the 1930s, took a heavy toll on agricultural and industrial workers"

(Tignor 2006: 13). In a 1937 paper on “African Economic Problems”, Lewis (1937: 15) expressed his stance: “This much is clear: uncontrolled industrialism destroys more happiness than it creates. Study England in the throes of the Industrial Revolution or any country from America to Japan, and we find always that legacy of slums and misery, which uncontrolled industrialism hands down to future generations.” This was in line with the socially conscious historiography of Toynbee, the Hammonds and the Shaws, and Lewis himself was involved with the Fabian Society, which published his first books. His “life-long interest in economic history and the world economy” (Kirkpatrick & Barrientos 2004: 680) was awakened by Friedrich Hayek, then Acting Chairman of the LSE Department of Economics, who asked him – as the best way to learn – to teach a course on the interwar years, and which resulted in his first book (1949).

By the time he arrived in Manchester in 1948, the agenda had changed somewhat. In an appendix to his *Theory of Economic Growth*, Lewis (1955) asked, but along with all of development economics and economics in general did not really question whether economic growth was desirable. For him the benefits of economic development lay not in that it increased happiness, but in that it increased man’s control over his environment, and thereby his freedom. He remained a Social Democrat and was anxious to avoid both the harsh realities of the English industrial revolution, and the social revolution they may entail. In Tignor’s (2004: 708) words: “Although most development economists were not active participants in the Cold War debate, they were aware of the political dimensions of their work. If poverty was not overcome and economic growth did not take place, social revolutions were likely to follow. Lewis himself was a Fabian and was entirely opposed to highly coercive, non-democratic approaches to economic development. Nor did he favor authoritarian and highly centralized economic planning.” The defects of the market, he believed, could fortunately be overcome through state intervention of a much milder sort, rigorous development planning and programs of domestic taxation and incentives for foreign investment.

In a 1922 book, elaborating a 1920 article, and even having a profound impact on the staunch Bolshevik Bucharin (cf. Erlich 1960: 9), Ludvig von Mises (1981) had argued that a socialist government could not make the economic calculations required to organise a complex economy efficiently. In the 1930s, Keynes nevertheless defended the enlargement of the functions of government so as to adjust the propensity to consume and the inducement to invest to one another, against what he believed to be an excessive individualism of the 19<sup>th</sup> century and the contemporary American financiers. It was “the only practicable means of avoiding the destruction of existing economic forms in their entirety and as the condition of the successful functioning of the individual initiative” (Keynes 1973: 380). The purpose was to avoid disruption similar to the Great Depression, which if nothing was done would eventually supplant communism, or worse, for capitalism. Thitherto, “the increment of the world’s wealth” had “fallen short of the aggregate of positive individual savings”. Part of the problem had been solved in the systems he particularly wanted to avoid:

The authoritarian state systems of to-day seem to solve the problem of unemployment at the expense of efficiency and of freedom. It is certain that the world will not much longer tolerate the unemployment which, apart from brief intervals of excitement, is associated – and, in my opinion, inevitably associated – with present-day capitalistic individualism. But it may be possible by a right analysis of the problem to cure the disease whilst preserving efficiency and freedom. (*Ibid.*: 381.)

Liberal as he was, the system Keynes aimed at was not only a bulwark against communism and fascism, but also against the archenemy of liberalism. Realist it may be, but mercantilism was an economic nationalism driving peoples to war. Thus,

if nations can learn to provide themselves with full employment by their domestic policy (and, we must add, if they can also attain equilibrium in the trend of their population), there need be no important economic forces calculated to set the interest of one country against that of its neighbours. There would still be room for international lending in appropriate conditions. But there would no longer be a pressing motive why one country need force its wares on another or repulse the offerings of its neighbour, not because this was necessary to enable it to pay for what it wished to purchase, but with the express object of upsetting the equilibrium of payments so as to develop a balance of trade in its own favour. International trade would cease to be what it is, namely, a desperate expedient to maintain employment at home by forcing sales on foreign markets and restricting purchases, which if successful, will merely shift the problem of unemployment to the neighbour which is worsted in the struggle, but a willing and unimpeded exchange of goods and services in conditions of mutual advantage. (*Ibid.*: 382f.)

Keynes was still an idealist in the sense that he believed ideas to be stronger than vested interests and practical men. He cut through the absolute choice between free-trade capitalism and state communism, and it is difficult to see, at least afterwards, how the problem facing Western capitalism could have been resolved in any essentially different way than by a mixed-economy policy of the kind proposed by Keynes. Old-style liberals such as Viner and Innis did not like this turn of events, and to a Marxism which had learnt to contrast the anarchy of capitalist production with the ordered one of communism, it presented a rather grave problem of reinterpretation, which was faced most commonly by joining hard-core liberals in a charge against ‘monopolies’ and ‘state capitalism’. However, some were also intrigued to pose new questions and try to find a more basically Marxist approach incorporating Keynes’s observations (cf. Baran & Sweezy 1966). Emmanuel, to whom we will return, responded to the argument on mercantilism, as well as the problem of inefficiency in both capitalism and socialism, by finding a more profound lack of purchasing *power* substantiating the lacking *will* to purchase in Keynes’s system (cf. Chapter 8). In this perspective, the problem with the international order was not the “express object of upsetting the equilibrium of payments so as to develop a balance of trade in its own favour”, as Keynes put it above, but one of compensating for an already pre-existing domestic *disequilibrium*, inherent to the capitalist mode of production. More commonly, economists reacted by extending or elaborating on Keynes’s argument, and by trying to build up a case for economic planning *within* the capitalist system. Such was the approach of Lewis.

After Keynes and the war, then, there was widespread belief in ‘economic planning’, the degree of which was the subject of much discussion in face of the necessity of distinguishing it from the Soviet model and winning over the poorer regions of the world. As Bhagwati (1982: 15-20) has noted, Lewis’s *Principles of Economic Planning* (1949a) served such a purpose, placing him somewhere in between Friedrich Hayek and Thomas Balogh as a believer in ‘planning through the market’ rather than ‘planning by direction’. However, his critique of centralised economic planning was not motivated by mere ideology, but also on grounds of economic efficiency, the impossibility of taking everything into account, and the inflexibilities involved even should one succeed, in a sense turning the argument from ‘alienation’ against the possibilities of the planner to succeed.

Thus, Lewis (1949a: 16f.), found “a formidable case against planning by direction, and in favour of using the market”, since the central planner “cannot hope to see and provide for all the consequences of his actions”: “In planning by direction the result is always a shortage of some things, and a surplus of others. Planning through the market (e.g. the state placing an order for watches, or paying a subsidy) handles all this better because [...] the flow of money and the adjustment of prices acts as a ‘governor’, turning on or off automatically without any central direction.” The plan is destined to become inflexible, resisting any demand for revision, “simply because you cannot alter any part of it without altering the whole”, whereas

the “price mechanism can adjust itself from day to day”. Furthermore, standardisation was too tempting because it facilitated the planner’s job, hampering invention of new goods and processes: “The future of this country depends on bold and free entrepreneurs”, he (*ibid.*: 18) exclaimed, and any form of planning which prevented it “will be the ruin of Great Britain.” Assuming that centrally planned economies would be in equal need of foreign exports (rather than imports) as were market economies presented additional problems in adjusting to consumer demand. In general, he (*ibid.*: 18f.) argued, “the more one tries to overcome the difficulties of planning by direction, the more costly planning becomes in terms of resources”, since acquiring the necessary knowledge requires elaborate censuses and an array of clerks: “The better we try to plan, the more planners we need”, as demonstrated by the 800,000 ‘economists’ connected with planning in the Soviet Union.

Like Veblen’s distinction between making goods and making money, and in line with the long tradition counter-positioning ‘productive’ and ‘unproductive labour’, he noted the parallel “hangers-on” in a market economy, “who contribute to profit making rather than to production,” *i.e.*, its contract men, sales promoters, stockbrokers and the like, believing, however, that “they are not as essential to it as are the planners to planning.” Just as his predecessors he clearly underestimated the inherency of *selling* in a market economy, which is *precisely* as necessary as *planning* to a planned economy. In any case, Lewis (*ibid.*: 19) perceptively linked the complexity of planning by direction to the rise of a technocratic bureaucracy, which tended not to increase, but on the contrary diminish democratic control by the people, parliament, or cabinet, providing innumerable opportunities for corruption: “The more we direct from the centre the less the control that is possible. When the government is doing only a few things we can keep an eye on it, but when the government is doing everything it cannot even keep an eye on itself.” And as noted above, for Lewis, ‘control’ was even more important than happiness.

Taking economic growth and development as the self-evident goal, Lewis was mainly concerned with the causes and constraints of capital accumulation. The fundamental constraint to growth in output was the lack of accumulation of productive capital and the overriding constraint to capital accumulation was the rate of savings. “The central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 per cent of the national income, or less, converts itself into an economy where voluntary saving is running at about 12 or 15 per cent of national income or more. This is the central problem because the central fact of economic development is rapid capital accumulation (including knowledge and skills with capital)” (Lewis 1954, in Agarwala & Singh 1963: 416; while citing Lewis’s ‘1954’ article below – so as to be easily distinguished from his related 1958 article – page references will be to the reprint). This suggestion was taken up in another influential article by Rostow (1963 [orig. 1956]: 160, 162) as an important target value for the ‘take-off into sustained economic growth’: “it is nevertheless useful to regard as a necessary but not sufficient condition for the take-off the fact that the proportion of net investment to national income rises from (say) 5 per cent to over 10 per cent, definitely outstripping the likely population pressure [...] and yielding a distinct rise in real output per capita.”

With China having taken the communist road, eyes were the more fast on the second most populated country in the world. As Hunt (1989: 95f.; cf. 107) observes, a similar goal had been put forth already in 1953 by the authors of India’s *First Five Year Plan*, acknowledging the Harrod-Domar model, which, incidentally, Rostow had previously criticised. Perhaps indicating instead the influence of Nurkse (1952), the two main factors determining the scale of investment/growth were the rate of savings and the volume of unutilised human and material resources. While the development of a modern industrial sector was a major objective, the plan, with a reference to the experience of Britain and Japan, and in line with

the program of the Rockefeller Foundation, also advocated agricultural improvements, including irrigation and power, to increase the output of food and raw materials necessary for industrialisation.

As Lewis (1982: 121f.) recalled it, the “two major obsessions” of the 1950s concerned ‘what limits the size of the manufacturing sector’, and ‘how is modernisation to be financed’. On the first issue there were two major groups supporting either agriculture or industry and each pointing out the inadequacies of the other. Lewis never fell in with either crowd, stressing that he supported strategies favouring both agriculture and industry. The answer provided by Steuart or Smith (1937, III, Ch. 1), that the limiting factor was the productivity of the farmers whose marketable surplus would exchange for manufactures, had been forgotten, but Lewis (1950: 50) adopted another suggestion found in Smith that when the farmers’ output is small, industry might expand by exports.<sup>37</sup>

Exporting manufactures was “the obvious strategy for countries that are overpopulated”, Lewis (1982: 128) recalls, “and several of us were saying this from the 1940s onward.” Starting as import substitution fast industrialisation could then only be sustained by exports:

This was like the breaking of a spell. For over a century tropical peoples had been told that manufacturing industry was unsuitable for their countries, and that their comparative advantage lay in exporting agricultural commodities. Then suddenly they were selling manufactures in the markets of developed countries, and the leaders of these developed countries were running around in a panic and adopting social discriminatory measures to keep out LDC manufactures. It involved a spiritual revolution as great as that experienced by economists over the age of thirty who were converted to Keynesianism in 1936. (*Ibid.*: 129.)

The high level and rate of technological change in manufacturing made it different from agriculture, public utilities, banking, or wholesaling, and meant that it could not be accomplished without dependency on multinationals and foreign entrepreneurs. These “tend to be indispensable”, even for standard items, “in initiating exports of manufactures to other markets in which they are already established”, until domestic entrepreneurs have learnt how to sell overseas (Lewis 1982: 129). Though he had “received much criticism for this stand over the past thirty years,” Lewis reflected in 1982, he had never felt that the less developed countries should “hold back the diversification of their manufacturing sectors from fear of multinationals, since in independent countries they operate on the country’s terms or not at all.” Lewis’s critics had been tempered with time, but even as he was writing a very heated controversy on this very question was carried on over Emmanuel’s (1982) book on ‘appropriate or underdeveloped technology?’

Import substitution and export of agricultural products, both of which Lewis endorsed, were common alternative strategies to exporting manufactures. Starting with arguments similar to Manoïlescu in 1931 – that protection is justified in less developed countries because, it was claimed, wages are always higher in manufacture than agriculture and therefore exaggerates the real cost of manufacturing – Lewis (cf. 1982: 125f.) and others built an argument that

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<sup>37</sup> His two articles in the *Caribbean Economic Review* in 1950 gave rise to the term “the Lewis Strategy of Industrialisation by Invitation” and also to some emotion at the time, but became very influential for West Indian growth strategies. In the 1930s, labour discontent had grown in the West Indies and Lloyd George had set up a committee under Lord Moyne to determine the causes of unrest and the way to handle it. The committee found that social reforms were necessary but that the desire to industrialise should be restrained because these isolated islands lacked not only minerals, but also the appropriate traditions and climate for sustained industrial labour, and demonstrated why agriculture was and necessarily would remain their only proper activity. It was this conception that Lewis attacked, suggesting that the budding industries should be protected and that incentives be created to attract foreign capital to finance further industrialisation. Lewis was attacked by the Ministry of Colonial Affairs’ informants, but already by 1952 the secretary of the Caribbean commission concluded that industrialisation had become an issue of high priority (Danielson 1990: 152f.; see also Tignor 2006, Ch. 1-2).

success in one industry, increasing its wages and pulling up wages in surrounding industries beyond what they could pay, would be paralleled by an even greater unemployment elsewhere.<sup>38</sup> Other arguments for protection in the development literature at the time concerned the time factor (learning), scale, externalities, or complementary networks, to which Lewis (*ibid.*: 126ff.) added considerations of resource mobility (migrant labour and foreign capital) and inelasticity of export earnings. Import substitution did not only concern manufactures, and self-sufficiency was that part of the strategy relating to food production for the domestic market. “Once one has grasped the point that agriculture and industry provide markets for each other’s output, theoretical dispute ceases”, Lewis (*ibid.*: 128) contends, though the practical planning problems remain, particularly in the dry tropics where physical conditions thus far had impeded success. However, the Third World’s failure in increasing agricultural productivity was not merely one of physical constraints, but “mainly at the political level, in systems where the small cultivator carries little political weight.” Here is one of many implications in Lewis’s work that even ‘agricultural productivity’, which is taken as the theoretical baseline, is also something profoundly ‘institutional’.

As for agricultural exports, Lewis (*ibid.*: 124) maintained, in the 1950s two arguments were developed against this strategy: the dependency argument and the terms of trade argument. The dependency argument was “not like the usual arguments against imports, which turn on the difference between money costs and real costs,” but was “primarily about power and its accumulative accretion.” Lewis summed it up as follows, in a composite from many writers:

A peripheral country that begins to export agricultural commodities becomes paralyzed in ways that preclude an industrial takeoff. Its trade and all that goes with it – shipping, banking, insurance, port facilities – fall into the hands of a few foreigners, with or without association with a few rich local families. The profits of this trade are transferred overseas instead of being invested in the country. The best jobs are reserved to foreigners, so that local talent is untrained and unable either to compete with the old trades or to start new ones. The talented young become frustrated, lose confidence in their abilities, emigrate, or lower their horizons. Domestic industries are destroyed by imports. The foreign companies are interested in foreign trade and, if they can, will block attempts to create new industries that might diminish their trade or render it more costly. Mass advertising teaches the people to prefer imported consumer goods over to their own products, thereby raising the propensity to import foreign brands or materials or machinery in place of local resources. This trend imperils the balance of payments, makes it harder to provide jobs, and pushes displaced workers back into the subsistence sector. (*Loc. cit.*)

Although it exaggerated the share accruing to foreigners and underplays the higher investments in schools and other services in the colonies with the highest exports, Lewis (*loc. cit.*) found this a reasonable description of what was happening in most tropical – not temperate – colonies in the first half of the 20<sup>th</sup> century. The theory was, according to him, important for the study of colonies in the second half of the 19<sup>th</sup> century – excepting countries such as Brazil, Argentina, or the countries of Southern and Eastern Europe, whose stagnation through the 19<sup>th</sup> century “is as much a puzzle for dependency analysts as is the history of Mexico”. It was not so in the second half of the 20<sup>th</sup>, however, when independent governments were engaged in restructuring the place of foreigners in their countries. Lewis admitted the validity of elements of this theory in the 1950s and 1960s, but of greater consequence for him was the problem of the terms of trade.

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<sup>38</sup> Neglecting the argument from unemployment, Findlay (1982: 9) finds “a case for intervention in the prices mechanism to expand the output of manufactures and contract the output of food”, but as noted, Lewis did not believe in having to choose between agriculture and industry, and certainly not in a policy of contracting food production.

The terms of trade argument against agricultural exports consisted of one historical part, stating that since the commodity terms of trade had a long-term bias against agriculture, primary production should be avoided, and one theoretical, stating that if primary producers develop their exports faster than the industrial countries demand, then the terms of trade must move against them. Lewis (cf. 1949b: 197) never subscribed to the former argument, and considered the latter to be of merely short term interest. In the long run, respective price levels were determined by the differing real wage levels, which themselves were determined by the differing levels of productivity in food production. The case made on this issue in his most influential article could almost be put in an epitaph:

In a 1954 article I argue that in the long run in the less developed countries (LDCs) it is the factoral terms of trade that determine the commodity terms of trade, and not the other way around. (Lewis 1982: 124f.)

Indeed, the argument on the terms of trade was only a part, and at the time a mostly unnoticed one, of this article on “Economic Development with Unlimited Supplies of Labour”, which summarised the path Lewis’s thinking was to take and whose influence on subsequent development economics was to be considerable.

### The ‘Lewis model’ with unlimited supplies of labour

In Tignor’s (2004: 691) recent evaluation, the article (Lewis 1954) is said to have “galvanized the new field of development economics, providing it with a legitimacy that it had not previously enjoyed”, and nearly all of Lewis’s later studies in economic history bore the imprint of this paper. Using Isaiah Berlin’s classification of thinkers into ‘hedgehogs’ and ‘foxes’, Findlay (1982: 3) finds Lewis indubitably to be a hedgehog, *i.e.*, a man of ‘one big idea’ set forth in his 1954 article: “His own subsequent work, and in fact a large part of the literature of development economics, can to a large extent be seen as an extended commentary on the meaning and ramifications of this central idea.” Tignor (2004: 691f.) suggests that in addition to being short (some would say ‘long’), well-written and original, one of the things making it an overnight sensation and producing a wide readership was that it was easy to understand, “at least to non-specialists”, and that “its major tenets fit comfortably within the economic consensus of the period.” I would add that a significant aspect of this consensus was a compulsory optimism on the possibilities, even destiny, of development – through state intervention but, of course, within the market economy –, which his basic model shared with Rostow, but which was not as evidently apparent in the work of some other pioneering development economists, *e.g.*, Rosenstein-Rodan, Nurkse, Leibenstein, Myrdal, or Baran.

It was when ruminating on the second ‘obsession’ of the time, on how modernisation was to be financed, that Lewis had hit upon his model. The bulk of the finance had to come from increases in private domestic saving, but how had it come about in the 19<sup>th</sup> century? For Europe it had been from a rising share of profits in the national income, but what had caused this rise? The toolboxes and answers provided by neoclassical, monetarist or Keynesian economics, “was of no use”, he concluded:

As I was walking down a road in Bangkok one morning in August 1952, it suddenly occurred to me that all one needed to do was to drop the assumption – then usually (but not necessarily) made by neoclassical macroeconomists – that the supply of labor was fixed. Assume instead that it was infinitely elastic, add that productivity was increasing in the capitalist sector, and one got a rising profit share. It also occurred to me that this model would solve another problem that had long bothered me since undergraduate days: what determined the relative prices of steel and coffee? I had been taught that marginal utility was the answer to this question, but this answer made no sense to

me. If, however, one assumed an infinite elasticity of labor in terms of food to the coffee industry, and an infinite elasticity also in terms of food to the steel industry, then the factoral terms of trade between steel and coffee were fixed, and marginal utility was out the window. (Lewis 1982: 132.)

So, Lewis reasoned, with one change of assumptions and in only three minutes he had solved two major problems occupying him for some time – why so many of the countries in the less developed world had impoverished populations, *i.e.*, the problem of the wealth and poverty of nations, and why steel was relatively expensive when compared to coffee: “Throw away the neoclassical assumption that the quantity of labor is fixed. An ‘unlimited supply of labor’ will keep wages down, producing cheap coffee in the first case and high profits in the second. The result is a dual national or world economy where one part is a reservoir of cheap labor to the other” (Lewis 1980: 3). However, writing it up “would take four articles from me, and further exploration by Fei and Ranis and others. The thing became for a time a growth industry, with a stream of articles expounding, attacking, testing, revising, denouncing, or approving” (Lewis 1982: 133; cf. 1954, 1958, 1972, 1979, Ranis & Fei 1961).

His dissatisfaction with neoclassical marginal utility and his search for insight into the problems of the wealth and poverty of nations, had driven him to study the classical economist, whose writings and arguments were currently being revived through the efforts of leading Cambridge-based economists such as Piero Sraffa, Joan Robinson, and Nicholas Kaldor. Their common fascination with the classical economists was due to the attention they had paid questions of economic growth and the distribution of wealth. As Tignor (2004: 698) points out, the reading of Smith, Ricardo, Malthus, and Marx, “persuaded Lewis that these men had lived through and written about the great period of transition from predominantly agrarian societies to industrial countries.” Their observations, rather than the writings of neoclassical economist like Marshall, or even Keynes, and the texts that were required reading in university economics departments, were more appropriate to the conditions facing less developed countries. Thus, in the opening sentence Lewis pledged allegiance:

This essay is written in the Classical tradition, making the classical assumption, and asking the classical question. The classics, from Smith to Marx, all assumed, or argued, that an unlimited supply of labour was available at subsistence wages. They then enquired how production grows through time. They found the answer in capital accumulation, which they explained in terms of their analysis of the distribution of income. Classical systems thus determined simultaneously income distribution and income growth, with the relative prices of commodities as a minor by-product. (Lewis 1954: 401.)

In Europe, labour had ceased to be unlimited and the neoclassical economists had forgotten about and changed the assumption. However, it remained valid for the greater part of ‘Asia’: “Asia’s problems, however, attracted very few economists during the neo-classical era (even the Asian economists themselves absorbed the assumptions and pre-occupations of European economics) and hardly any progress has been made for nearly a century”. Important as Keynes was, “from the point of view of countries with surplus labour, Keynesianism is only a footnote to neo-classicism” (*ibid.*: 403f.).

In addition to the classics, Lewis’s study of the labour and economic histories of Britain from the works of the Hammonds, Ashton, and Deane & Cole, had provided evidence, contrary to common assumption in neoclassical economics, that workers’ wages had stagnated even as the industrial sector expanded. Ashton’s recent authoritative overview of *The Industrial Revolution, 1760-1830* (1948: 129; cf. Tignor 2004: 699, 2006: 90ff.) had ended by pointing out the parallels between the periods: “There are today on the plains of India and China men and women, plague-ridden and hungry, living lives little better to outward appearance, than those of the cattle that toil with them by day and share their place of

sleep at night. Such Asiatic standards, and such unmechanized horrors, are the lot of those who increase their numbers without passing through an industrial revolution.”

As indicated in the classification into ‘European’ and ‘Asian’ economies (cf. ‘modes of production’), and as pointed out by Tignor, there were evident conservative features to Lewis’s intellectual breakthroughs:

By positing traditional and modern sectors, admittedly abstractions and ideal types rather than precise descriptions of any less developed economy or economies of Europe at the beginning of the nineteenth century, he was aligning himself with a vast body of non-economic, social scientific literature, loosely labeled at the time modernization theory. Whether consciously or not, Lewis was writing in the tradition of the leading social scientists of this period, who believed that the world was divided between the modern countries, mainly to be found in Western Europe, Australasia and North America, and the traditional ones. The great challenge of the post-war era was the transition of the traditional countries to modernity – a process that they labelled modernization. Thus, although Lewis saw himself as breaking moulds, founding a new field, and challenging prevailing assumptions of an established field, his formulations were deeply rooted in European experience and dove-tailed with the predominant social scientific vision of the period. (Tignor 2004: 700.)

The main achievement of the article was to present a model of a ‘dual’ economy, so called because it divided the economy into two sectors, capitalist and non-capitalist, where ‘capitalist’ meant a man who hires labour and resells its output for a profit. In the 1960s and 1970s, Tignor (2004: 706) explains, “the dual sector model stood alongside the social science theory of modernization as a dominant scholarly paradigm for understanding the processes of economic and social change in third world countries.” Lewis’s (1954: 401) stated purpose was to bring the classical framework up-to-date, and “to see how far it then helps us to understand the contemporary problems of large areas of the earth.” Later, he (Lewis 1972: 75) reminded of how the original purpose of the model was “to provide a mechanism explaining the rapid growth of the proportion of domestic savings in the national income in the early stages of an economy whose growth is due to the expansion of capitalist forms of production. The chief historical example on which the model was based was that of Great Britain”. For the period after 1870s he also developed an open version, inspired by Britain’s interaction with the rest of the world, in which the terms of trade were “determined by international rather than national forces” (*ibid.*: 91). We shall first take a closer look at the initial ‘closed’ model, as worked out also in later writings, before turning to its open variant involving the explanation of the terms of trade.

In the model, the non-capitalist sector, which included, *e.g.*, a domestic servant working in a private home but not in a hotel, served as a reservoir from which the capitalist drew labour. Hirschman (1982: 376f.) has suggested that Lewis’s focus on rural underdevelopment as the principle economic characteristic of underdevelopment, which he nevertheless shared with Rosenstein-Rodan, Nurkse, and others, was at the heart of his contribution to development theory: “he managed – almost miraculously – to squeeze out of the simple proposition about underemployment a full set of ‘laws of motion’ for the typical underdeveloped country, as well as a wide range of recommendations for domestic and international economic policy.” In fact, the source of labour is not all from agriculture or even the countryside, but apart from peasant farmers also comes out of casual workers, petty traders, retainers (domestic and commercial), wives and daughters of the household, unemployment generated by increasing efficiency, what Marx referred to as the ‘reserve army’, and finally population increase (Lewis 1954: 403-6). He later confessed that he and his contemporaries had greatly underestimated the impact of the growth in population.

The capitalist sector, which included both agriculture and industry, could be said to have unlimited access to a labour supply in those countries “where the marginal productivity of

labour is negligible, zero, or even negative”, Lewis (*ibid.*: 402) wrote – something which apparently led to much confusion on the part of professional economists –, but this “is not, however, of fundamental importance to our analysis. The price of labour, in these economies, is a wage at the subsistence level [...]. The supply of labour is therefore ‘unlimited’ so long as the supply of labour at this price exceeds the demand. In this situation, new industries can be created, or old industries expanded without limit at the existing wage; or, to put it more exactly, shortage of labour is no limit to the creation of new sources of employment” (*ibid.*: 403).

Since 90% of the population was too poor to save a significant proportion of its income, the necessary increase in savings could not occur simply by the whole population becoming thriftier. Experiences from the United Kingdom and the United States indicated that of the remaining richest 10% only capitalists had the necessary propensity to save and invest, whereas landowners and the middle classes were either involved in conspicuous consumption or in a perpetual struggle to keep up with the Jones’s. The question then became one of determining under which circumstances their share of the national product could be increased, since under the circumstances the share of savings (=investments) would also increase (*ibid.*: 417ff.).

Lewis’s model had the good fortune of answering this question in a way which must have whetted the appetite of development optimists. The major benefits could only be reaped, oddly but in line with classical economics, precisely by trusting it all to capitalists in whatever guise they came and by keeping the population in poverty as long as possible, until such a time as the whole economy had become capitalist (*ibid.*: 419): “if unlimited supplies of labour are available at a constant real wage, and if any part of profits is reinvested in productive capacity, profits will grow continuously relatively to the national income, and capital formation will also grow relatively to the national income.” In this way, “practically the whole benefit of inventions goes into the surplus, and becomes available for further capital accumulation”, and the latent pessimism in other interpretations was out the window, such as, *e.g.*, Nurkse’s (1953) where low incomes impeded both investment stimulants and savings: “If we ask, ‘Why do they save so little?’, the truthful answer is not ‘Because they are so poor’, as we might be tempted to conclude from the path-breaking and praiseworthy correlations of Mr Colin Clark. The truthful answer is ‘Because their capitalist sector is so small’” (Lewis 1954: 419). This did not exclude the possibility of a ‘state capitalist’ doing the saving, which, he argued, it could even do at a more rapid rate than private capitalists, because it could also add what it could force or tax out of the subsistence sector (*loc cit.*). Nothing in this argument would have surprised Preobrazhensky or the Soviet planners, whose arguments had been brought to the attention of Westerners by Erlich (1950), and Lewis’s comments may even have profited from Baran’s 1952 article in the *Manchester School*, of which Lewis was the editor.

On the origin of either sort of capitalist, Lewis did not have much to say, other than that it was, in line with Smith and Schumpeter, “probably bound up with the emergence of new opportunities, especially something that widens the market, associated with some new technique which greatly increases the productivity of labour and capital used together.” At any rate, this was apparently of no great concern so long as it did: “Once a capitalist sector has emerged it is only a matter of time before it becomes sizeable. If very little technical progress is occurring, the surplus will grow only slowly. But if for one reason or another the opportunities for using capital productively increase rapidly, the surplus will also grow rapidly, and the capitalist class with it” (*ibid.*: 420).

The rate of expansion of this ‘capitalist nucleus’, as Hunt (1989) calls it, could be raised by inflationary stimulus if it favoured private capitalists or went to finance government capital formation as in the U.S.S.R. Nor need this capital withdraw resources from other activities

when there was an unlimited supply of labour, since, in contrast to food, which could not be created without land (or 'sea'), capital may be created by labour alone without having to withdraw land or capital from other uses. The effectiveness of monetary expansion was constrained if investors lose confidence in price rises and start turning to unproductive uses, if money went to other, less productive consumers than capitalists, or, in an open system, if money flowed out of the country instead of being invested.

In Lewis's closed model, capitalist expansion would continue until it has caught up with the supply of labour. Then the economy ceased to function according to classical rules – labour ceased to be available at the ruling wage rate – and instead started functioning according to neoclassical ones, where wages increased according to productivity. However, even before this happened capitalists' profits may have been checked either by an exogenous rise in wages, faster than productivity and not due to the expansion of the capitalist sector itself, or, because of its expansion, by profits falling relatively to wages, through adverse terms of trade with the subsistence sector. Neither fate was unavoidable, however, and in that case there would be an exhaustion of the surplus of labourers: "the capitalist sector will expand until capital accumulation catches up with the labour supply, whereupon we reach a new stage of development" (Lewis 1958: 24). Lewis finds Smith more perceptive than either post-Adamite classical economists or Marxists. (Marx had rejected the Malthusian population theory, but still believed that there would always be a surplus of labourers.) Nevertheless, even in the presence of a perfectly elastic labour supply at a wage rate that was constant in terms of what it can buy, the capitalist sector could cease expanding for any one of basically three reasons, concerning (i) a rise of real wages in the subsistence sector, (ii) the terms of trade, and (iii) an exogenous rise in wages:

(i) Some of the reasons have to do with the effects on capitalist wages of a rise in real wages in the subsistence sector. Thus, "if capital accumulation is proceeding faster than population growth, and is therefore reducing absolutely the number of people in the subsistence sector, the average product per man in that sector rises automatically, not because production alters, but because there are fewer mouths to share the product." Furthermore, "the subsistence sector may also become more productive in the technical sense", Lewis (1954: 431f.) explained. Giving an interesting illustration of what he meant by 'exogenous' he (1958: 21) elaborated: "wages may rise exogenously because the source from which labour is recruited is experiencing increasing productivity. Thus, if labour is being recruited from abroad, through immigration, from countries where wages are rising, wages will have to rise at home, too, or the rate of expansion will be checked. [...] Similarly, if labour is being recruited from peasant agriculture, where productivity is rising, it may be necessary to pay higher wages." The consequences in the latter, 'dual economy', case depended on whether the capitalist and peasant sectors traded with each other. If not, rising productivity in the peasant sector would definitely force up wages in the capitalist sector. If they do trade, he (*ibid.*: 21f.) added, rising productivity may "be offset by deteriorating terms of trade, even to the point where wages, considered not in terms of wage goods in general, but in terms of the commodities produced in the capitalist sector, may actually be reduced because the terms of trade are moving in favour of the capitalist sector."

Interestingly, since earnings in the subsistence sector were determined by productivity, and in turn determined the wage-level in the capitalist sector, capitalists may possibly gain from, e.g., colonial or imperialist policies: "The fact that the wage in the capitalist sector depends upon earnings in the subsistence sector is sometimes of immense political importance, since its effect is that capitalists have a direct interest in holding down productivity of the subsistence worker's income" (Lewis 1954: 409f.). Thus, plantation owners had no interest in seeing knowledge of techniques or seeds spread to peasants, would use their influence in

government to the same effect, and, as Marx had noted with his 'primary accumulation', as Lewis called it, apparently following Baran, were often seen turning peasants off their lands. This was "one of the worst features of imperialism", Lewis (*ibid.*: 410) explained:

The imperialists invest capital and hire workers; it is to their advantage to keep wages low, and even in those cases where they do not actually go out of their way to impoverish the subsistence economy, they will at least very seldom be found doing anything to make it more productive. In actual fact the record of every imperial power in Africa in modern times is one of impoverishing the subsistence economy, either by taking away the people's land, or by demanding forced labour in the capitalist sector, or by imposing taxes to drive people to work for capitalist employers. Compared with what they have spent on providing facilities for European agriculture or mining, their expenditure on the improvement of African agriculture has been negligible. The failure of imperialism to raise living standards is not wholly to be attributed to self interest, but there are many places where it can be traced directly to the effects of having imperial capital invested in agriculture or mining.

The only thing that is odd about this is perhaps that Lewis nevertheless, albeit not in the same place, advocated precisely such increase in the share of capital, and preferably on behalf of the subsistence economy. It would of course be of great importance for an open economy, but since nothing is said on expatriation of profits or the effect on terms of trade between high- and low-wage countries, it is difficult to see in what the fault of imperialists consisted from the perspective of capital accumulation.

(ii) Profits may be checked if the expansion of the capitalist sector would moves the terms of trade against it. If the capitalist sector exchanges (different) goods with the subsistence sector (and if the marketed output from this sector is price inelastic), then as the capitalist sector increases relatively to the subsistence sector, this may turn the terms of trade against it. Capitalists will be forced to pay workers a higher percentage of the value of output to the payment of wages, in order to sustain real incomes at subsistence. As to policy concerning subsistence productivity, this contradicts the foregoing reason, where an increase in subsistence productivity caused a rise in capitalist wages.

Classical economists all predicted that diminishing returns in agriculture would move the terms of trade in favour of the landlords. According to Lewis, Smith had stated the opposite, leaving ample space for technological improvements in agriculture and constantly diminishing rents relative to national income. Smith had so far proved right in all countries where agriculture was on a capitalist basis, but things were quite different where agriculture was on a peasant basis. So, if the capitalist sector (including agriculture) trades with the peasant sector – *e.g.*, if it depends on it for food or raw materials and therefore for markets – "its continued expansion would be menaced if the peasant sector were stagnant, since this would move the terms of trade against the capitalist sector." Indeed, as has been noted, for Lewis, "failure of peasant agriculture to increase its productivity has probably been the chief reason holding down the expansion of the industrial sector in most of the under-developed countries in the world" (Lewis 1958: 23). Even with failing domestic agriculture, capitalist industry still had the opportunity to expand through foreign trade. This will lead to ever-increasing imports of food and raw materials, Lewis maintained, and depend on the ability to open up foreign markets. Otherwise the terms of trade would turn against it, and the expansion of home industry be slowed down to the rate which the expansion of foreign trade was able to carry. Finally, an adverse movement of the terms of trade was "due to "unbalanced growth" of the various sectors of the economy", and "probably the main reason why only a few countries have made substantial progress" (*ibid.*: 23).

(iii) For those habituated to seeing Lewis's model in terms of productivities in the food sector, the possibility of *an exogenous rise in wages* will sound odd. Exogenous factors include anything from natural disasters, such as earthquakes or the bubonic plague, to social revolutions, but Lewis preferred to consider some economic examples. He began by reiterating the baseline of his classical model: "In the classical system the normal level of wages is the subsistence level at which the working class exactly reproduces its numbers. In Africa or Asia the wage floor is set by the productivity of small scale agriculture: men will not accept wage employment unless it yields at least as much as they would consume if they remained on the farm. In practice it must yield even more, perhaps as much as 50 per cent. more; and thus the floor is set to wages" (Lewis 1958: 20). In its pure form, Lewis's model does not depend on a difference between wages in the traditional and wages in the modern sector, but in practice wages are normally higher in the latter. It does predict that "this margin should remain constant in the early stages of development," Lewis explained, given the abundance of labour seeking jobs in the modern sector. "It predicts quite well for nineteenth century Europe, on whose experience it was based, but", he (1979: 223) admitted, "when applied to one hundred LDCs over the past quarter century its performance is spotty." In particular, urban wages had been rising faster than he had predicted.

However, in addition to this lower limit, there were other factors at work, especially those related to 'non-competing groups' of various kinds. Large firms may prefer to take "their advantage in rents (profits, salaries, wages) instead of using it to reduce prices and bankrupt the smaller firms" (*ibid.*: 224). While the existence of excess labour made it possible for capitalists to hold wages at the lower limit, they did not necessarily do so, Lewis (1958: 20) suggested, either because they had "moralistic notions which limit the rate of profit on capital", such that they may deliberately raise wages as productivity increases, or "they may react in the same way towards trade union pressure, or even to ward off the growth of unions." "If this is the way capitalists normally behave," Lewis (*ibid.*: 20f.) continued, "there will be an ever-widening gap between the wages they pay, and the subsistence wage at which unlimited labour is still available", and rising wages would not be "an exogenous but an endogenous check." Indeed, if wages rose proportionately with productivity, capitalist expansion will not be stopped at all, but would make profits a constant proportion of income in the capitalist sector.

Later, Lewis (1979: 225) followed up the suggestion that the labour market tended to segment into two classes of jobs, good and bad: "The superior earning power of the good job set is due not to superior innate capacity of those selected for it, but to strict control of entry. Trade unions are strongest in the good job industries, and have used their power to maintain wages by controlling numbers. [...] Discrimination is built into these processes, for and against whom depending on the local mores." As Lewis (*loc. cit.*) described it, there was not much difference between these non-competing groups and the old guilds, which would make the very existence of a 'labour market' something highly doubtful, and confined to the brief period between the disorganisation of guilds and the organisation of labour unions. Everywhere, the bad sector included a large portion of the women in the labour force. In Britain, the basic distinction was between the 'aristocracy of labour', "represented by the old craft unions, and the rest of the labour force, whose unionisation started at least a generation later; control of entry is central to the craft unions." In the United States, job discrimination was used rather against women, blacks and other ethnic minorities. There were great difficulties in 'uprooting' and 'clearing' the labour market of these discriminations; even if outside pressure had abolished them at a lower level, they only moved upwards in the hierarchy. The number of workers allowed entry into better jobs depended on the state of prosperity. But Lewis (1979: 226) beheld into "some distant future", when "the duality of the

labour market is ended [...] because prosperity pulls the bottom layer up to the top [...]. Prosperity is the real friend of the women, the ethnics and the *lumpenproletariat*".

The entrepreneur 'allows himself' to be squeezed in this way, Lewis (*loc. cit.*) now proposed, either (1) because he does not realise the extent to which work habits rather than innate abilities reflect the differences in work, or (2) because he needs workers with a certain combination of skills, training and experience, who are employed in the good labour market, and whose 'creed' does not allow them to work with other craftsmen who have not come through the proper channels, or, finally, (3) because "it may be easier to follow established practice and not get into bitter disputes with the unions and his fellow employers", and because "he may persuade himself that it is best to build up a staff of long-service employees, loyal to the firm, and appreciative of his leadership."

Lewis (*ibid.*: 227) also related the successfulness of wage differentiation to economic factors. In less developed countries it would depend on whether there were economies of scale or not. If not, "a vigorous class of small businessmen will scour the cheap labour market for its best talents, and will prevent the trade unions and the large capitalists from joining together to create restricted entry systems." If so, the large firms were not pressured by the small, but by "pressure from within, to create promotion ladders, training systems, pension schemes, and above all "orderly" entry". Other elements were pressure from civil service unions raising government pay, and pressure of governments on foreign employers, all of which would reasonably lead to the emergence of an aristocracy of labour, "which will protect itself by treaty with those large scale employers who can withstand small competition – while population pressures and migration from the countryside keeps the cheap labour reservoir full."

While Lewis admitted that the theory of distribution is the No Man's Land of economics, in view of the many obviously political factors noted above, one could perhaps be reasonably surprised to see his answer to the question: "what determines the levels of wages in this model?" In the early stages of development labour was infinitely elastic, but, apparently following a suggestion by the wage-historian Henry Phelps-Brown, in the later stages of development it was the supply of capital that was infinitely elastic, meaning that the rate of return on capital stabilised at a particular level. Thus, in a developed economy "wages in the good jobs market are determined by productivity." He seems to have been assuming a closed system in which wages could not possibly rise above productivity. Workers got their output minus other costs, including the standard rate of return to capital, Lewis explained, and their wages rose every year in proportion to productivity, except in civil service where the influence was political. In an open system there would clearly exist the possibility of wage increases rising more than productivity, and letting the outside pay through the terms of trade. There was unfortunately not a syllable of explanation relating the above hierarchically 'non-competitive groups' to 'productivity' in an open system, or even on how to compare the 'productivity' of different branches of production, something which is in principle impossible, but, he (*loc. cit.*) maintained: "This fits the facts over the last hundred years or so." Perhaps his model could be more plausibly placed in the same distant future when that bad jobs market has disappeared. In the bad jobs market, by contrast, productivity "has no meaning [...] because of the dominance of service outputs", and "the minimum is determined by minimum wage laws, by trade unions or by the subsistence level."

If rising real wages halted the rate of profit from growing as fast as it would, it did not necessarily stop expansion or even the acceleration of growth, so long as productivity was rising faster than wages. In this instance, Lewis (1958: 22) saw a difference between countries and regions, which he relates, it seems and only in passing, to the country being a closed system so far as the mobility of labour was concerned: "There may have been cases, in the real world, where the capitalist sector of a country ceased to expand because of an exogenous

rise in wages, but one cannot think of many such cases. On the other hand, this is happening all the time in the expansion of towns or regions within a country, where the expansion of employment in one place, relatively to the rest of the economy, is brought to an end because developments elsewhere raise wages and drain away labour.” Emmanuel, too, found no cases where an increase in wages had entailed a decreased development, and he also related it to the lack of international labour mobility, but as we shall see, less classical *and* less neoclassical, he also saw an inherent tendency towards stagnation and underemployment of the productive factors, which the exogenous increase in wages, by contrast, helped to alleviate.

Bhagwati’s (1982: 23) suspicion is in all probability basically correct that implicit in Lewis’s closed economy model was the classical notion of the stationary state, “with increasing real cost of labor replacing the increasing resort to infertile land as the villain of the piece.” Thus, Lewis wrote (1954: 434f.): “We conclude, therefore, that the expansion of the capitalist sector may be stopped because the price of subsistence goods rises, or because the price is not falling as fast as subsistence productivity per head is rising, or because capitalist workers raise their standard of what they need for subsistence. Any of these processes would raise wages relatively to the surplus. If none of these processes is enough to stop capital accumulation, the capitalist sector will continue to expand until there is no surplus labour left. [...] When the labour surplus disappears our model of the closed economy no longer holds. Wages are no longer tied to a subsistence level.” What did determine them Lewis seems never to have really decided upon, or if he turned in favour of productivity his decision was not decisive. In his first presentation he gave the alternatives of marginal productivity and Smith’s answer that they depended upon the degree of monopoly.

In spite of Lewis’s daring pronouncements based on his closed model, his original article pointed out that in the real world “countries which achieve labour scarcity continue to be surrounded by others which have abundant labour.” He thus set out to study such a country “as part of the expanding capitalist sector of the world economy as a whole, and to enquire how the distribution of income inside the country and its rate of capital accumulation, are affected by the fact that there is abundant labour available elsewhere at subsistence wage” (*ibid.*: 435). Bhagwati (1982: 24f.) noted that, “for the simple reason that the unlimited-supply-of labor at a constant real wage was such a beautifully neat assumption for growth-theoretic analysis”, his open economy model, explaining the terms of trade between poor and rich countries and tucked away at the end of Lewis’s classic paper, “somehow got lost soon after.” If was not wholly lost, however, and Lewis himself returned to it both in his Wicksell (1969) and Janeway (1978b) lectures, his major historical work on *Growth and Fluctuations, 1870-1913* (1978a), as well as in his last writings on racism and economic development. It was with this model of an open economy that he advanced a theory of unequal exchange in all but name, and where, furthermore, he added inspiration to other such theories, notably the principal one of Emmanuel (1962, 1969, 1972), but also in different ways of Andersson (1976) or Somaini (1971). Its lack of influence in the dominant paradigm of development economics is probably due also to the liaison with these desecrating theories, which everyone knows are so suspicious that they have to be denounced – or by some detractors of orthodoxy praised or perhaps ‘elaborated’ – without study.

### Lewis’s ‘open’ model as unequal exchange and historiography

Whereas Lewis’s original model had been, according to Tignor (2004: 707), “an optimistic blueprint”, he more and more came to emphasise the open economic version of his model, because it offered “a powerful explanation of why economic change had been so sluggish in less developed countries.” The accumulating evidence of the 1960s and 1970s made him

increasingly convinced that in relatively open economies, “the factoral terms of trade doomed the third world to poverty and economic marginality.” Below, the basic theoretical elements of this open model shall be spelt out, which was unfortunately never worked into a coherent body with the dynamics of his closed one. Figueroa (2004) has pointed out a divergence between Lewis himself and the ‘Lewis model’, *e.g.*, as extended by Ranis & Fei 1961 – a divergence similar to the difference between Keynes and the Keynesian model, or Innis and the staple theories of growth or underdevelopment. As we shall see, instead of trying to dynamise his open model in mathematics, Lewis went directly to the perhaps more profitable field of historical interpretation.

Lewis seems again to have based his model on the case of the British industrial revolution, where it had taken almost a century for the ‘unlimited supply of labour’ to be used up, before wages began to rise around mid-19<sup>th</sup> century. Thus, he (1954: 436) reminded: “When capital accumulation catches up with the labour supply, wages begin to rise above the subsistence level, and the capitalist surplus is adversely affected.” However, as in the British case, if there was still surplus labour in other countries, capitalists could avoid this either “by encouraging immigration or by exporting their capital to countries where there is still abundant labour at a subsistence wage.” Kindleberger (1967) suggested in response to this, and Lewis (1972: 94) concurred, that dynamic capitalists could also react by speeding up their labour-saving innovations.

The possible effects of mass immigration of unskilled workers were quite extensive, and this was recognised particularly by the well-paid workers: “If there were free immigration from India and China to the U.S.A., the wage level of the U.S.A. would certainly be pulled down towards the Indian and Chinese levels” (Lewis 1954: 436). If thus competitive the wage-level of the United States would establish itself at the Asian subsistence level plus a ‘cliff’ for higher costs of living and the cost of migration:

This is one of the reasons why, in every country where the wage level is relatively high, the trade unions are bitterly hostile to immigration, except to people in special categories, and take steps to have it restricted. The result is that the real wages are higher than they would otherwise be, while profits, capital resources, and total output are smaller than they would otherwise be. (*Ibid.*: 436f.)

The argument on trade unions is self-evident (cf. Bauer in Chapter 2) and, as we shall see from Lewis’s later work, historically well-founded. The implications for capital are more debateable, however, indicating that profits, etc., are therefore lower in high-wage countries, motivating an export of capital to low wage areas: “The export of capital is therefore a much easier way out for the capitalists, since trade unions are quick to restrict immigration, but much slower in bringing the export of capital under control” (*ibid.*: 437). This would in turn reduce the creation of fixed capital at home, as well as the demand for labour, and was all in line with the predictions of classical economists and Marx. There was still the risk that the exported capital would increase the standard of living in the capital-exporting country.

According to the logic of his model, there would seem to be a tendency towards capital export, but in face of the fact that nothing like an net-exodus of capital from high to low-wage countries ever took place – and in his favoured historical case had gone from high to even-higher wage countries –, Lewis (1972: 94) perhaps did best in adopting an agnostic stance: “the behaviour of capitalists as profit margins diminish relatively to wages cannot be predicted. [...] We are still in the dark as to why entrepreneurs act more creatively in some countries than others, or at one period rather than another in the history of the same country.” However, although Lewis’s analysis of the incentives to invest clearly represents a regression as compared with Nurkse (1952, 1953), he (1954: 438) did suggest reasons why the general tendency was not in fact general. Capital exports had gone to the Americas and Australia because the most productive investments “are those which are made to open up rich, easily

accessible resources, such as fertile soil, ores, coal or oil”, whereas in India and China “the known resources were already being used.” Here, in spite of Bhagwati above, Lewis again has recourse to the using up of natural resources, following which profits would decline and capital be exported, precisely as in the ABC of classical economics. Nevertheless, contrary to what might be suspected from his model, Lewis (*ibid.*: 438f.) went even further, admitting that the productivity (profitability?) of one investment depends upon other investments having been made before: “Hence it may be more profitable to invest capital in countries which already have a lot of capital than to invest it in a new country. If this were always so [...] the gap between wages in the surplus (labour) and non-surplus countries would not diminish but would widen. In practice, [...] the gap does widen, and we cannot at all exclude the possibility that there is a natural tendency for capital to flow towards the capitalized, and to shun the undercapitalized.” Unfortunately, nothing more is said on this possibility, and Lewis instead reports that all the major economists in every country and every century had affirmed the tendency of the rate of profit to fall, although they had not often given the same explanation. This was true, he agreed, for individual lines of production, where the possibilities of expansion were soon exhausted, so the reason why capital was exported was not an inevitable tendency of the rate of profit to fall, simply that foreign countries had differently utilised resources that left different opportunities for investment. Thus, what would seem the supreme paradox according to the logic of his model, “even if there is still surplus labour at home, available at subsistence wages, investment opportunities abroad may be more profitable. Many capitalists residing in surplus labour countries invest their capital in England or in the United States” (*ibid.*: 440).

As Hunt (1989: 94) remarks, quite how the reader is supposed to relate this point to the prior elaboration of economic development in a closed economy is not spelt out: “The implication is that capitalist exports from some underdeveloped countries might slow down the process of capitalist growth in these countries if not offset by equal or greater capital imports. However, this point is not explicitly stated and there is no discussion of it.” Findlay (1982: 10) notes that Lewis never did construct a model including both the dynamics of his closed model and the international aspects of his open, and that the contradictory conclusions drawn from them were precisely due to the fact that the first was closed but dynamic whereas the second was open but static.<sup>39</sup> Contrary to Findlay, however, Lewis (1978a) himself preferred very simple illuminative ‘models’, along with interpretations of actual historical transformations, which he doubted that any theoretical model could capture. This said of the dynamics on the international stage, Lewis set out some comparative static models to explain the terms of trade, which, together with the historical elaboration of one of them, is his primary contribution to unequal exchange theory.

Assuming two countries that traded but did not compete with each other, they could either produce one good each, or each country produced two or more goods, one of which was common to both and produced in the subsistence sector. In the first case, wages were not determined in relation to each other and relative prices were determined solely by supply and demand. If a capitalist sector developed in the wheat producing country, it may at first get unlimited labour at an average wage in wheat related to average subsistence wheat production, but in time this labour would be eliminated and wages start to rise. If the advanced techniques in wheat production were applicable to peanuts which were produced in the other country, capitalists would export capital there because there labour was still available at a subsistence wage level in terms of peanuts. When initially capital was invested

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<sup>39</sup> Findlay (1973, II, 1980) and others (Hornby 1968, Inada 1971) had thus set out to construct ‘dynamic models of open dual economies’. Findlay 1981 analyses Lewis and others on the terms of trade. Those who find such model building amusing, all of which seems quite unconcerned with empirical relevance, although giving policy recommendations is seldom shunned, should also consult Darity 1990.

in wheat, the price of peanuts would rise relatively, so both capitalist and subsistence wheat workers would be worse off in terms of peanuts, although they earned the same amount in terms of wheat, and vice versa for peanuts workers. When capital was invested in peanuts production, the terms of trade would again be reversed. Thus, as noted before, if applied to things which workers import, capital exports may benefit them (Lewis 1954: 440f.). In the second case, “the result is the same, except that the terms of trade are now determinate” (*ibid.*: 441).

This second case is clearly the more interesting and it was also the one given in his Wicksell lectures (Lewis 1969: 17-22), brought in to answer the following question: “Why does a man growing cocoa earn one tenth of the wage of a man making steel ingots?”

I was taught that the answer depended on the relative marginal utilities of cocoa and steel, but this answer has never made any sense to me. My alternative answer can be put in a nutshell. Each of these men has the alternative of growing food. Their relative incomes are therefore determined by their relative productivities in growing food; and the relative prices of steel and cocoa are determined by these relative incomes and by productivities in steel and cocoa. Demand is important in the short run, but the long term determinants are the conditions of supply. (*Ibid.*: 17.)

According to the original (1954: 441) model, “both countries produce food, but do not trade in it”, the temperate country also produces steel whereas the tropical country also produces rubber (1954) or coffee (1969). To arrive at his model in 1969, he made the simplifying assumption that all kinds of food are homogenous, and “can all be translated into units of equivalent nutritional values which will always exchange at the same price, because”, quite the contrary, “food can be traded between all countries” (Lewis 1969: 17). This was apparently introduced to make food and all the other goods internationally comparable, but it seems to obliterate a fundamental criterion for his model of a non-competitive subsistence sector. Furthermore, all manufactures are also homogenous (=steel), as are all tropical commercial products (=coffee) – although no unit is given for either –, and output per head is the same in all temperate and tropical countries respectively. Finally, there are no transport costs (*ibid.*: 17f.).

If in the tropical country unlimited supplies of labour can be released from subsistence food production, wages “will equal average (not marginal) product in food”, and in the temperate country, too, “the wage cannot fall below productivity in the food industry” (Lewis 1954: 441). Thus put, the option of choosing to work in the subsistence sector was clearly crucial for real wage determination or the standard of living – money wages, or indeed money, never entered the picture in Lewis’s model – just as it was that food can function as some sort of real wage baseline. If food productivity in the temperate country was three times higher than in the tropical, so would wages be, but any change in productivity in the other, traded, sector, would be lost in the terms of trade to the consumers of the other country.

Lewis (1954, 1969) assumed that output per head and standard unit of time (one day’s labour), was as follows:

	Steel	Food	Coffee
Temperate country	3	3	–
Tropical country	–	1	1

Since food is globally homogenous both commodity and factoral terms of trade are given: the commodity terms are 1 steel = 1 food = 1 coffee, while the factoral terms, determined by relative productivities in food, are 1 temperate wage = 3 tropical wages.

Now, if productivity tripled in coffee this would be excellent for temperate workers, *i.e.*, consumers, since then 1 steel = 3 coffee, whereas it would do tropical workers, in either line

of production, “no good whatsoever” (unless they purchase more coffee than steel) since their wages would continue to be determined by food productivity. If, on the other hand, tropical subsistence, or food productivity were to triple, then wages would rise correspondingly in both food and coffee production, and the terms of trade ameliorate accordingly, so that 1 coffee = 3 steel. Thus, temperate workers were better off if productivity increased in what they buy, and worse off if it increased in the temperate subsistence sector. Tropical workers “are benefited only if productivity increases in their subsistence sector; all other increases in productivity are lost in the terms of trade” (Lewis 1954: 441f.).

This gave Lewis the solution to his puzzle “why tropical produce is so cheap”, even in cases such as the sugar industry, where productivity was very high by any biological standard, and had been advancing by leaps and bounds, trebling over the 75 years preceding 1954, outdoing anything comparable in the wheat industry.

Nevertheless workers in the sugar industry continue to walk barefooted and to live in shacks, while workers in wheat enjoy among the highest living standards in the world. The reason is that wages in the sugar industry are related to the fact that the subsistence sectors of tropical economies are able to release however many workers the sugar industry may want, at wages which are low, because tropical food production per head is low. However vastly productive the sugar industry may become, the benefit accrues chiefly to industrial purchasers in the form of lower prices for sugar. (Lewis 1954: 442.)

Emmanuel was the first serious commentator on Lewis’s explanation of the terms of trade. As we shall see, in Emmanuel’s own explanation of the terms of trade and of wage differentials, which does not presume the existence of a subsistence sector, wages are ‘delinked’ even more completely from productivity; while they might once have been so connected, the established standards of living (or ‘claims’ on the total societal product) were now rather the self-reinforcing expressions of societal mores, historical circumstance, and consumer habits. Not improbably, he had Lewis’s above passage, which he had quoted elsewhere, in mind when writing:

I do not suppose that the American worker would lie down and die, or cease to beget children, if he were obliged one day to live in public housing or even a shack. The trouble is that in the United States there is neither enough public housing nor enough shacks to shelter everybody. The American workers are thus doomed either to live in elegant and comfortable small houses or else sleep under bridges. (Emmanuel 1972a: 117f.)

In parenthesis, Lewis (1954: 442) noted another assumption to explain why he spoke only of wages and workers: “The capitalists who invest in sugar do not come into the argument because their earnings are determined not by productivity in sugar but by the general rate of profit on capital”.<sup>40</sup> As underlined by Emmanuel (1972a: 89) he assumed a uniform rate of profit for both countries – a crucial condition for both of their theses:

It is this last phrase that is the most revolutionary. Lewis does not seem to realise it, though, since he puts it in parenthesis. This is a pity, for it would be by taking this step – recognizing the equalization of profits on the international plane – that Lewis’s thesis would become a coherent one. If, indeed, wages are stuck at a very low level, for reasons peculiar to themselves, *somebody* has to get the

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<sup>40</sup> This, he (*loc. cit.*) explained, “is why our leaving out of this and subsequent analysis of the effects of changing productivity upon wages and the terms of trade simplifies the analysis without significantly affecting its results.” According to Darity (1990: 822, n. 6) Lewis “adopts a uniform profit rate condition to characterize the equilibrium terms of trade. The international profit rate simply equalizes at zero since he assumes the perfectly competitive zero profit condition. His qualitative results would not alter if he assumed positive profit rates as long as, once again, they are uniform across all sectors.”

benefit of the difference. This somebody can only be the capitalist or the consumer. If it is the capitalist, there may perhaps be exploitation or bad distribution within the nation, but there is no unequal exchange on the international plane. If it is the (foreign) consumer, we have plundering of some nations by others.

If the capitalist cannot benefit by it (at least not in the long run), owing to competition of capital and the equalization of profits, only the consumer is left, and for him to benefit it is necessary that prices fall.

Given this reservation, there is nothing to be said against Lewis's thesis, except that it is too restrictive to serve as a general theory. It is limited to the case where a low-yield self-subsistence sector is present. This factor, though very often an attendant circumstance, is not the only one that brings about differentiation in wages between countries.

Indeed, Lewis was all but clear on either of these points, *i.e.*, on the equalisation of profits and on the possibility of raising wages above the level of productivity, since he had previously concluded that the effect of trade unions hindering low wage immigrants "is that the real wages are higher than they would otherwise be, while profits, capital resources, and total output are smaller than they would otherwise be" (Lewis 1954: 436f.), not specifying if they would be lowered only for the branch affected by the wage rise, or if this lowering would be diluted, via price rises and international competition, in the general rate of profit.

When writing in his 'further notes' on the higher 'second stage' of capitalist development, reached when labour was no longer unlimited, there was a similar ambiguity. At this 'neoclassical' stage "the ration of profits to national income becomes relatively stable", at a point which had to be determined according to the classical model. He concluded that "profit margins will be lowest in countries which reach their second stage earliest, and will be highest in countries where the second stage is longest delayed", just as "countries which begin to develop latest will stabilise with higher savings ratios and higher rates of growth than those which reach their second stage earliest" (Lewis 1958: 27). This general rule would be modified, however, by several factors: the effect of innovations and the technology used in the capitalist sector varied between countries; subsistence wages, their growth rates, and the margin between subsistence and the actual wage varied between countries. Finally, "the international migration of capital tends to prevent differences in the rate of profit from being as wide as they would otherwise be" (*ibid.*: 29). So we have a general rule that profits would be higher in late developers – every country was assumed to become developed –, particularly reinforced in regions with low agricultural productivity such as Central Africa, but with a counteracting tendency towards international equalisation. It never occurred to Lewis that international equalisation might change the rules of the game, even to the point where 'late' developers would not develop at all, or perhaps at a consistently lower rate than 'early' ones.

Apart from limiting itself to the case where there was a subsistence sector, Emmanuel (1972a) noted that, just as the Prebisch-Singer proposition, Lewis's explanation of the falling terms of trade depended on an increase in productivity in the export sector. These points were taken up by Andersson (1972b) in a critique of Lewis's (1969) Wicksell lectures. Lewis had also tried to test the validity of his model empirically by studying the price of wheat, tropical goods and manufactures in the period from 1871 to 1965, believing his thesis to be fairly well confirmed. Utilising some of the data provided by Lewis on productivities in the various lines of production, making the assumption *cum* observation of identical productivities in both tropical agriculture *and* all other crops, Andersson (1972b: 52) concluded by contrast that they did not, or at least that Lewis had not sufficiently explained the 'paradox' of the falling terms of trade for underdeveloped countries.<sup>41</sup>

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<sup>41</sup> To illustrate and demonstrate wither the terms of trade would go according to Lewis's model, Andersson put it in four equations, showing how wages,  $w$ , in temperate and tropical countries respectively, depend on the price,

Andersson's case rests on pointing out that the ratio between the price of 'cocoa' and wheat had not fallen. However, the price of 'wheat' with which he compares is a global compound which cannot be used to estimate productivity in tropical agriculture. Lewis's argument is perhaps confused by the attempt to base calculations on a common 'food' product – a problem he did not have in his 1954 article where it was not traded in –, and even more so since he chose wheat, whose price, as he (1969: 20) noted, "probably depends more than anything else on changes in American output".<sup>42</sup> There can be no doubt, however, that in Lewis's mind the difference in productivity between tropical export crops and tropical food was somehow significant and crucial. Indeed, it was his major point all along:

The main reason why tropical *commercial* produce is so cheap, in terms of the standard of living it affords, is the inefficiency of tropical *food* production per man. Practically all the benefit of increasing efficiency in export industries goes to the foreign consumer; whereas raising efficiency in subsistence food production would automatically make commercial produce dearer. (Lewis 1954: 449.)

The unfavourable terms of trade which the tropical countries were undergoing at the time of his Wicksell lectures, depended fundamentally on the rapid strides in American agricultural productivity. The one thing the tropical countries should *not* do to counter it, he (1969: 25) repeated, was to increase productivity in their commercial crops, which could only drive down prices to the same extent: "This is an important conclusion. For the last eighty years the tropical countries have put practically all their agricultural research and extension funds and effort into trying to raise the productivity of export crops like cocoa, tea, or rubber, and virtually no effort into food productivity. From their point of view, this effort was wholly misdirected." (A more recent evaluation by Deaton & Laroque [2003: 305f.] came to the conclusion that Lewis's account was consistent with the world trend in terms of trade for primary products, although the evidence was not hard enough to convince a serious sceptic.)

Furthermore, as his historical work of the 1970s made perfectly clear, the relevant levels of agricultural productivity, determining the factoral terms of trade, were not the level happening to exist in just any local country, but, due to the massive waves of migration in the 19<sup>th</sup> century, represented, on the one hand, those of India and China, and, on the other, those of

$p$ , and productivity,  $q$ , of wheat; and how in turn the ratio of wages and productivities determine the price of steel and cocoa:

$$(1) w_{temp} = p_{wheat} q_{wheat, temp} \quad (3) p_{steel, temp} = w_{temp}/q_{steel}$$

$$(2) w_{trop} = p_{wheat} q_{wheat, trop} \quad (4) p_{cocoa} = w_{trop}/q_{cocoa}$$

The terms of trade for cocoa will thus deteriorate if the agricultural productivity increases more in the steel than in the cocoa producing country, and/or if productivity in cocoa increases more than in steel production, according to:

$$(5) p_{steel}/p_{cocoa} = (q_{wheat, temp}/q_{wheat, trop}) (q_{cocoa}/q_{steel})$$

Taking the data from Lewis (1969: 20) and making what he claims to be the same assumption of stagnant tropical agriculture *and* cocoa production, Andersson (1972b: 52) constructed the following table:

	1890	1929	1957
$q_{wheat, temp}$	1	1.34	3.56
$q_{wheat, trop}^1$	1	1	
$q_{steel}$	1	2.46	4.60
$q_{cocoa}$	1	1	1
$p_{steel}/p_{cocoa}$	1	0.55	0.77

According to these calculations the terms of trade for tropical products, *i.e.*, the relative prices of 'cocoa' to 'steel', should have gone up from 1890 to 1929, but according to Lewis's own figures had not. Lewis (1969: 21f.) had of course pointed out that this would be the result *if* one looked only at the terms of trade between steel and wheat, which is in effect what one does if productivity in tropical agriculture and 'cocoa' is equated.

<sup>42</sup> Cf. (Lewis 1969: 21): "What matters in our equations is not the world trade price, but the price received by the producer".

Europe and 'neo-European' regions of recent settlement. The way these waves were directed illustrates rather well the 'institutional' character of wage differences. Lewis held on to a belief in at least the potentiality of a common labour market, and 'factoral terms of trade' in both his and Emmanuel's understanding seems to have related to such a hypothetical state. The two waves of migration corresponded well to Lewis's favoured division into 'temperate' and 'tropical' agriculture, but even on his own account there were clearly other, more political factors involved than a mere 'unlimited supply of labour' seeking to eke out a livelihood.

Thus, the interconnected protectionist, welfare (except, perhaps, in the U.S.), and anti-immigration policies of the temperate countries, provide further argument for the importance of wage levels. Late 19<sup>th</sup> century world migration was of two kinds, Lewis (1978a) explained: (1) a large emigration from Europe to 'new countries of temperate settlement', following the medium long wave economic fluctuations (named after 'Kuznets'), and leading to rapid urbanisation of these new countries; (2) an equally large migration of Indians and Chinese to tropical countries, although the proportion returning home was higher not least because of the horrible conditions to which Asian (particularly Chinese) migrant labour was subjected. Although considering the study of divergent economic development as much a task for the political historian (*ibid.*: 167), Lewis nevertheless interpreted differences in the light of respective agricultural productivity levels, which established a high or low equilibrium wage level, leading further to deteriorating factoral terms of trade and low development:

These two streams moved on very different terms. The Asians came from countries with low agricultural productivity, and were willing to work for a shilling a day or less. The Europeans expected wages in excess of those earned in Europe, where productivity was several times higher than in Asia. The prices of tropical crops and of the temperate crops reflected these differences in the factoral terms of trade. So the temperate settlements were rich, with large domestic markets for industrialisation, whereas the factoral terms of trade of the tropical countries were such that the trade option could support only low levels of development. (Lewis 1978a: 158.)

Thus, Lewis (1978a: 181-8) recounted, between 1871 and 1915 some 36 million persons emigrated from Europe, two thirds of which moved to the United States, and most of the remaining 12.6 million to Canada, Australia, Argentina and Brazil, the majority, however, moving on to other Latin American countries, the United States, or New Zealand. Of the almost 16 million leaving India between 1871 and 1915 almost 12 million returned. Including Chinese emigration, concentrating on Southern Asia, Asian emigration must have exceeded European. Among the 300 million Indians and 400 million Chinese, there was thus 'an unlimited supply of labour' willing to work at wages far below those acceptable to Europeans (although higher than in their countries of origin), and willing to enter 'contracts' or 'indentures' binding them for periods of several years on some plantation thousands of miles away in a foreign country whose language they did not understand. The plantation system was spread from Latin America to Asia in the 19<sup>th</sup> century, starting with British cultivation of coffee in Ceylon in the 1820s, and spreading rapidly especially with the opening of the Suez Canal in 1869. In the 1880s, the wage of a plantation worker was a shilling a day or less, whereas that of a 'navvy', an unskilled construction worker, in New South Wales was nine shillings a day.

The evolution was reflected in the commodity terms of trade, where, with the exception of sugar, all "commodities whose price was lower in 1913 than in 1883 were commodities produced almost wholly in the tropics. All the commodities whose prices rose over this thirty-year period were commodities in which the temperate countries produced a substantial part of total supplies" (*ibid.*: 189). Lewis interpreted this as the result of market forces working towards an equilibrium wage level (the main cost differential), set by the tropical standard of living of 700 lb of grain per acre, in contrast to the British level of 1600 lb. The evolution of

prices was dependent on the divergence of wages, not the other way around, offering highly divergent prospects:

Given this difference in the factorial terms of trade, the opportunity which international trade presented to the temperate settlements was very different from the opportunity presented to the tropics. The temperate settlements were offered high income per head. From this would come immediately a large demand for manufactures, opportunities for import substitution and rapid urbanisation. Domestic saving per head would be large. Money would be available to spend on schools, at all levels, and soon these countries would have a substantial managerial and administrative élite of their own. They would thus create their own power centres, with money, education and managerial capacity, independent of and sometimes hostile to the imperial power – so that Australia, New Zealand and Canada had ceased to be colonies in any meaningful sense long before they acquired formal rights of sovereignty. The factorial terms available to them offered the opportunity for full development in every sense of the word.

The factorial terms available to the tropics, on the other hand, offered the opportunity to stay poor – at any rate until such time as the labour reservoirs of India and China might be exhausted. Nobody understood this better than the working classes in the temperate settlements themselves (and in the USA). They were always adamantly opposed to Indian or Chinese immigration into their countries because they realised that, if unchecked, it must drive wages down close to Indian and Chinese levels. (Lewis 1978a: 192.)

Obviously, no one can believe that Indians and Chinese actually preferred to move to the horrific labour conditions in tropical areas, rather than to what has been called the ‘workers paradises’ of temperate areas, had they had the choice. This is a fairly well-known, if unattractive, story of anti-immigration policy surging with the welfare-state and organised labour, both against local capital and international mobility of labour.

Economic recession and unemployment inspired protectionism, social policies and anti-Asian sentiments. Pre-World War I Australia was a pioneer in protecting itself from the flux of workers from Asia and the poorer regions of Europe, starting with Victoria State in the mid 1850s, followed by conflicts between Australian workers and Asian low wage immigrants rose. The first restrictions on immigration appeared in the 1880s, and in 1902, on the instigation of the Australian Labour Party, a European language test was established on the federal level. Restrictions were extended in the interwar years to promote British settlers and hinder non-Britons, refusing entrance on national, racial or occupational grounds. New Zealand followed suit already in the 1880s and 1890s – in the four decades from the 1880s to the 1920s, the Chinese population of Oceania actually decreased, while South Africa took measures against Indians and Chinese in 1913. The first restraints in the United States were imposed with various Chinese Exclusion Acts from the 1880s onwards, and from 1917 Chinese were simply refused entrance. In the 1920s, a system including several European countries was instigated with quotas for each country of origin of a few percent the number having immigrated until 1910 or 1890. Immigration sank drastically in every decade, with new minimums following new restrictions in the depression years. Canada followed its big American brother from the early 1900s, notably Asians in the 1920s and Southern and Eastern Europeans in the 1930s, while at the same time encouraging Britons. Tocqueville said of French Canadians that they seemed to have preserved the *ancien régime* more strictly than the French themselves. The same might be said of the nationalism of British colonists. Pioneered in the countries of British settlement, anti-immigration restrictions became generalised in the 1920s and 30s (Bairoch 1997, I: 476ff., II: 176, 483f., III: 26ff., James 2001).

Along with intercontinental ‘recruiting’ procedures, this seems more than adequate to explain the relative mobility and immobility of labour. Unfortunately, as we have noted, the same can not be said for capital. The dependency of developing country exports on developed country markets, which Lewis made a major theme in his Janeway lectures (1978b), indicates

that the 'engine of growth' is situated not in exports themselves but precisely where the power is, in a market economy meaning *purchasing* power.

Hunt (1989: 108) summarises the critique of Lewis (including the extensions by Ranis & Fei 1961, and others, as well as Rostow) from the perspective of inadequate domestic demand and inducements to invest:

The emphasis on an overriding savings constraint to development ignores the possibility that investment is constrained not by lack of savings but by lack of demand. Thus, for example, the first and major part of the Lewis model is based upon the assumption of a closed economy. Nowhere in this section does Lewis consider the possibility that inadequate demand may deter capitalist investment and slow down the rate of growth. With mass incomes held constant, much of the inducement to invest must come from within the capitalist sector itself [...]. Yet the ability of the capitalist sector to sustain this inducement will be a function of the size both of the economy as a whole and the sector itself. These issues are not raised in the Lewis model. It appears that the capitalists are assumed to have so high a motivation to engage in capital accumulation that they will do so whatever the return on investment. Later, too, when Lewis drops the assumption of a closed economy, and when he briefly notes the possibility of capital export from an underdeveloped economy, the assumption is that this will be induced not by inadequate domestic demand but by more favourable cost structures in industrially advanced countries.

The omission of the potential constraint in the inducement to invest is a tribute paid to the strictly classical and non-Keynesian approach, which could have serious implications for policy recommendations, but of course also for the possibilities of apt historical interpretation. The condition illuminated in Lewis's later historical studies that growth in the developing countries is dependent on growth in the developed would appear wholly consistent with an approach in which incentives to invest follow the stimulus of demand, but becomes something rather anomalous if it is neglected. What Lewis (1978b: 10) called "the dependence of an industrial revolution on a prior or simultaneous agricultural revolution", and the constraining "smallness of the market [...] because of low agricultural productivity" are steps in this direction, but he still felt the need for an unexplained "absence of an investment climate". The industrial revolution spread in countries, especially in Western Europe and North America, that were also revolutionising their agriculture, Lewis reminded, but failed in countries that did not, such as Central and Southern Europe, or Latin America. There is clearly a case to be made for agricultural productivity as a factor in economic growth, but which case is it?

The countries in Latin America that were industrialising in the 19<sup>th</sup> century, such as Brazil, had much lower agricultural productivity than Argentina which did not. In spite of the "liveliness of Brazilian and Mexican entrepreneurs" at the end of the 19<sup>th</sup> century, the attempts to industrialise would prove hazardous to Brazil and other Latin American countries because they were forced to compete with the already industrialised British. Argentina instead grew to be one of the ten richest countries in the world based on her agricultural exports. Lewis (1978b: 23) blamed the failure of tropical industrialisers on the heavy involvement of foreigners in their trade, who, he believed, were less induced to reinvest domestically than were nationals. Another factor, favoured by nationalist historians, was the preference for foreign goods (such complaints have indeed followed foreign imports at least from the 14<sup>th</sup> century in England). Lewis (*loc. cit.*) further noted the 20<sup>th</sup> century novelty of established brand names making it difficult to dislodge their footing in consumer markets "even with domestic products of equal cost and quality". Finally, the vested interests of landowning classes, working their way into the state apparatus, might have downplayed industrialisation as a government policy, and the outcome would depend on "the relative political strengths of the industrial and agricultural interests" (*ibid.*: 24).

The agricultural productivity of Argentina was higher than in most West European countries that did industrialise, and in that respect it resembled other temperate ‘regions of recent settlement’. But why was Argentina and almost equally agriculturally productive Latin American colleagues put to a halt, when other temperate regions of recent settlement were able to follow through with a rise in industrial productivity. “To unravel the different responses of countries experiencing apparently similar forces is a source of historical excitement”, Lewis (1978b: 25) confesses, and the contrast between Argentina and Australia was particularly instructive: “These two countries began to grow rapidly at the same time, the 1850s, and sold the same commodities – cereals, wool, and meat. In 1913 their incomes per head were among the world’s top ten. But Australia industrialized rapidly, and Argentina did not, a failure which cost her dearly after the war when the terms of trade moved against agriculture.” Some Argentinean nationalists had blamed it on British interests, but as Lewis (*ibid.*: 25) pointed out, the British had even more influence in Australia and Canada. So, here was a difference that could not be explained by agricultural productivity or foreign influence. Instead, Lewis (*loc. cit.*) had recourse to differing government policy, with a tinge of underlying social forces: “The crucial difference between the two countries was that Argentinean politics were dominated by an old, landed aristocracy. Australia had no landed aristocracy. Its politics were dominated by its urban communities, who used their power to protect industrial profits and wages.” What these politics could provide, except a policy of protection advocated by industrialists rather than the free trade advocated by landed classes was presumably what Lewis above referred to as a ‘climate for investment’, complementing agricultural productivity as a factor in economic growth.<sup>43</sup>

A “whole set of new people, ideas and institutions” had been established in Western Europe, Lewis (1978b: 11) explained, “that did not exist in Asia or Africa, or even for the most part in Latin America”: “Power in these countries – as also in Central and Southern Europe – was still concentrated in the hands of landed classes, who benefited from cheap imports and saw no reason to support the emergence of a new industrial class. There was no industrial entrepreneurship.” While pointing to social institutions, Lewis still put emphasis on the ‘protestant’ spirit, ideas and notions of the ‘entrepreneur’ as *primus movens*.<sup>44</sup> But there had been no more lack of entrepreneurial spirit in the immigrants to Argentina than there was elsewhere – if coercion was a factor Australia would surely have been in a worse position –, and none when raising the agricultural productivity for exports. So, to explain this export-biased entrepreneurial spirit, Lewis would have been helped by following his thought on social institutions through to the implications for the demand side of the equation, which he did not. Had he done so, he could have suggested that the hindrance to prolonging ‘sustained economic growth’ through the 20<sup>th</sup> century was rather that social institutions did not permit the high agricultural productivity to spread as consumer demand in a way that could induce local investments in industrial or selling enterprises on a scale comparable to their temperate colleagues. It would then appear as if the missing link is not agricultural productivity *per se*, nor even the dominance of the industrial classes in economic policy, but the increasing

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<sup>43</sup> The struggle between landed and industrial classes is also familiar from British history, where the Corn Laws is said to have held workers’ wages down in during the industrial revolution, and free trade to have been established in order to give Britain the full advantage of her head start industrialism. However, according to the stately reinterpretation by Cain & Hopkins (2002), British imperial policy was much more influenced by the landed classes than the industrialists – to British industrialists’ loss in the late 19<sup>th</sup> century, as Lewis (1978a) himself had demonstrated – so the implication of this internal balance of power is perhaps less evident than at first sight. So far as it concerns foreign trade policy, Lewis’s argumentation requires that, contrary to the beliefs of most of the economists’ profession but in line with the standing argument and documentation of Bairoch (*e.g.*, 1993), protection rather than free trade was the policy most successful for national development.

<sup>44</sup> The Janeway lectures of which this book consisted were held in honour of Schumpeter, for whom the entrepreneur also played such a role.

purchasing power of the masses which, given the right institutional setting, could *also* be stimulated by increasing agricultural productivity and economic policy.

At the other end of the pole, Lewis's models also emphasised greater productivity, while his historical presentation added other more evidently political ones induced by the working masses. Although he tended to see this as an impetus for capital exports, there were similar protectionist processes to the one studied on the labour market: "In the past, the developed countries have gone to extremes to keep out manufactures from the developing countries, for exactly the same reason that they have kept out Asian migrants. They have imported raw produce, but have placed heavy import duties or prohibitions on refined produce in order to protect their own manufacturing capacity" (Lewis 1978b: 32). He did not note that similar precautions had been taken against the United States and British Dominions, all to no avail, and thus did not really attempt to explain why they managed to get away with it and poor countries did not.

The combination of full employment and zero population growth produced structural changes in the developed countries' labour markets, which by the international recession starting in 1974, had altered their attitudes to importing manufactures from low-wage countries. "In pure models of the market economy," Lewis (1978b: 34) explained, "labor of equal competence receives equal wages in all industries or occupations."

This is not so in the real world, where there are protected jobs and low-wage jobs. Sometimes the difference is between industries; unskilled labor is paid more in, say the motor industry than in the hospital industry. Sometimes it is between occupations; some kinds of skilled workers, e.g., printers, are able to keep their wages higher than those of persons in other occupations requiring the same degree of learning ability. Sometimes the distinction is between people of different races or sexes or religions.

We call this a "dual" or "two-sector" labor market because the natural tendency of a market economy to reach an equilibrium in which equal competence receives equal wages is arrested. Employers of workers in protected jobs would no doubt prefer to be hiring at lower wages from the low-wage sector, but they are prohibited from doing so by trade unions, by the racial, religious, or sexist prejudices of some of their irreplaceable staff, by legislation, or even merely by custom.

So, are these trade unions, legislations, customs, racial etc. prejudices, included in Lewis's model with low agricultural productivity, or indeed, caused by these differing food productivities? The idea would be absurd. What we are left with, then, is only a more general category, where differentials of agricultural or even industrial productivities are only special cases, *i.e.*, it could be argued, precisely a theory where wages themselves are 'for whatever reason institutionally different' (cf. Emmanuel 1972a: 64, 1962: 22).

The difference between Lewis and Emmanuel is less in Lewis's later historical work than anywhere else. Emmanuel emphasised the institutional character of wages and that differential levels of productivity were conditioned by institutional setting both internally and externally, in particular, he emphasised the wage differential *arising from* the political and unionised organisation of the working classes and the impossibility of its equalisation. Lewis put greater emphasis on levels of agricultural productivity and on how the wage differential rooted in these was *protected* from immigration by working class politics. Both considered the main cause of the observable decline in commodity terms of trade for underdeveloped countries to be the wage differential, referring to it as the factoral terms of trade – which were at any rate not *positively* affected by raised productivity levels in the *traded* goods.

If the above interpretation of Lewis's ideas on the determination of wages as not only caused by differences in agricultural, or other, productivity, and where the factoral terms of trade determine the commodity terms of trade, is correct, then there is hardly any difference between his *implicit* generalised model and that of Emmanuel. Indeed, to the extent Lewis's

1954 and 1969 models do not incorporate other, institutional aspects of temperate-tropical trade and wage differentials, it would be Emmanuel who gave the first expression of that generalised model contained only in Lewis's historical works. On the dynamics of capital flows and inducements to invest, on the other hand, Emmanuel (1972a, 1984) was much closer to Nurkse (1953), and both had arguably more relevant things to say.

The present chapter set out by linking the origin of development economics to its Cold-War context, in which Lewis was induced to interpret the development path of Britain as the first capitalist economy to achieve 'sustained economic growth' along lines of those who lived through it. This was in contrast, *e.g.*, to the Marxist Baran (1952, 1957), who saw bleak prospects for a capitalist path to development. Once conceived, the resulting model had a life of its own as well as taking charge of Lewis's. It came in different versions, however, of which particularly the dynamics of the one 'open' to international trade remained insufficiently explored, perhaps because it would ultimately transform into the closed one. In particular, the closed model predicted capital movements to low-wage areas which did not even correspond to Lewis's own observations on the matter. This optimistic conclusion was perhaps part of the reasons for its popularity in development economics. The open model, which could cast doubts on such optimism, appears to have been neglected by most, and as noted remained relatively unexplored even by Lewis himself, although it dominated his historical works, which ultimately may have been his most important. The open model was, however, the one Emmanuel considered being closest to his own theory of unequal exchange, and this was nowhere more so than in those historical works. Explicit historical interpretation was unfortunately a field relatively neglected by Emmanuel, and the contributions of Lewis and, even more, Innis have been the greater.

### Preliminary summary on centre-periphery dichotomies and the terms of trade

Before turning to our extensive treatment of Emmanuel, it may be well to summarise some of our arguments so far. In the above Chapters 1 and 3-5, we have seen varying thoughts on centre-periphery relations by geographically peripheral scholars, who have all, rightly or wrongly, been linked to theories of unequal exchange. Some have greater internal similarities than others, and it seems that perceptions of reality have been coloured by surroundings, including this peripheral context.

Fitzhugh's defence of Southern slavery was partly founded on a paternalist perception of – first British and then Northern – commercial society as humanly and ecologically disruptive. Even if his theory of non-equivalent exchange in terms of labour values *may* be separated from this context and political motivation, such an act would remove all or most interest from it. In that event his analysis of the economic pledge or advantages of slave or command economies not only compares poorly with, *e.g.*, that of the late mercantilist Steuart, but its foundation in the raw materials-manufactures dichotomy was also misleading on its own terms, as it did not relate to the fact of much greater productivity of Northern agriculture as well as manufactures. The agriculture-manufacture dichotomy was inherited from mercantilists and protectionists, ultimately going back to the city-countryside divide. The centre-metropolis perspective lived on in the German historical school, and partly via Schmoller and Gras into the 1920s and 1930s, when it entered the ideas of scholars as diverse as Innis, Manoïlescu, and Prebisch.

Innis was the more sceptical of applying it to the new world, and already before the First World War his *maître* Veblen had indeed criticised Schmoller's use of it as the guiding principle behind economic development. Innis focused on the disruptive interactions between changes in the metropolis and hinterland respectively, especially in Canada of course, but increasingly also in the metropolises. While his perspective was basically 'critical' (satirical),

the idea that Canada's position as hinterland would lead to economic underdevelopment was wholly foreign to his understanding. Indeed, in a sense rather like Fitzhugh, Veblen, and ecologists (at least those not involved with unequal exchange), he was concerned rather with an industrial civilisation which had gone out of hand. Methodologically, the all-inclusive approach for which he strove, and the observance of ecological, geographical, technical, and basically historical detail in his staple studies, holds more prospects than either the proponents of a 'staple theory of growth' or a 'staple theory of underdevelopment/ecological unequal exchange' have so far managed to live up to. This is demonstrated more specifically in the later works, where the centrifugal or centripetal biases in waterways, etc., were similarly found in other means of communication. Furthermore, through innovations in central media, changing the rules of the game, said metropolis-hinterland disruptions became correspondingly severer, as seen, notably, in the historical enhancement of nationalism through paper and the printing press. Here, rejuvenating a problematic within the imperialist tradition, he touched on crucial problems of government which have an unnoticed analogue in contemporary concerns with geographical and chronological inequalities (poverty and ecology) – or in his own terms, problems of 'space' and 'time'.

If Innis noted crucial differences not only between Protestant and Catholic social institutions, but also temperate and tropical ecologies and goods, *e.g.*, with respect to the differences in the swing of demand, Prebisch held on the composite category of 'agricultural' goods vs. manufactures. This he may have inherited either from domestic or central European traditions – perhaps preferring to forget politically suspect predecessors such as Schmoller and Manoilescu in the postwar climate, when more orthodox economists were already out to get him for other reasons. It is also possible, though unlikely, that he simply reversed the traditional prediction that the terms of trade would worsen for industrial products until the 'stationary state' was installed. The importance of the historical context for the origination of Prebisch's ideas seems particularly relevant. Rather concerned with policy than abstract theory, his ideas began forming when the traditional Argentinean export economy ran into difficulties in the 1930s depression, when agricultural prices sank and the traditional agricultural export nations – being, apart from Argentina, the United States, and the British Dominions – could not be made to cooperate. Both of these events, the decline of prices and the inability to cooperate, became central to Prebisch's later thesis, but, as with Innis in Canada, it was as yet inconceivable that this relative disadvantage of hinterlands could result in underdevelopment, since these nations, including Argentina, constituted the cream of the wealth of the world's nations. Thus, if the centre-metropolis imagery coincided roughly with the industry-raw materials one – at least as long as Britain could still be seen as the workshop of the world of the 19<sup>th</sup> century –, Prebisch's most important later contribution transposed this Argentinean experience to Latin America as a whole, in line with the dimensions of the UN organ for which it was worked out. When 'Latin America' as a whole, was then classified among the 'underdeveloped' regions of the world, it suddenly fitted all too well with the long-standing mercantilist, etc., tradition, in which exchange of agricultural goods and raw materials for manufactures is somehow seen as detrimental. At the same time, the shift of the metropolis from Britain to the United States, and the very fact that the United States was *not* a mere industrial nation but also an exporter of food and raw materials, introduced new difficulties in selling, and thus severe balance of payments problems in Latin America – *i.e.*, yet another defining mercantilist concern.

In the ensuing debate on the terms of trade, Singer was placed alongside Prebisch, although his concerns were otherwise more in line with Truman's Point Four on how to secure investments in underdeveloped countries. His statistics indicated, contrary to a century of received wisdom, that the terms of trade for agricultural over industrial products had declined, and, although he was aware that this was not wholly so, were presented as corresponding to a

decline in the terms of trade for underdeveloped countries. The important thing was not really the commodity terms of trade in the actual statistics, but, as Singer made clear and Prebisch quoted and agreed, what they implied about the factoral terms of trade, *i.e.*, when corrected for the presumably higher productivity increase for manufactures. Singer's interpretation resorted to different elasticities of demand, whereas Prebisch also mentioned the ability of centre countries to retain wage-increases achieved during upswings even in the ensuing downswings of the business cycle. Kindleberger's more extended study revealed that the decline of the terms of trade depended not primarily on the type of good, but on the type of country – a conclusion accepted by Singer, who, however, seems not to have taken it as a refutation of his theory, but instead dubbed it the 'Kindleberger effect' to complement the 'Prebisch-Singer effect' for primary products. However, Kindleberger also showed that the two alternating explanations offered by Prebisch – the elasticities of demand and trade unions – were inconsistent and made the theory overdetermined.

Lewis offered another explanation, which did not depend on the agriculture-manufactures dichotomy, but went directly to the factoral terms of trade themselves, *i.e.*, the wage-differential. An unlimited supply of labour kept wages constantly at the level attainable in subsistence agriculture, differing greatly between tropical and temperate regions of the world. Thus, any attempt to increase productivity in the tropical export sector – coffee, sugar – was doomed only to worsen the terms of trade to the benefit of the foreign consumer, whereas, by contrast, any productivity increase in the subsistence sector would raise wages also in the export sector and thus lead better the terms of trade. This model was only the static, but open version of his more influential dynamic, but closed model based on the exemplar of the British industrial revolution and its contemporary political economic observers. The choice may appear to have been motivated on purely scientific grounds – and there was to be something of an industry of such interpretations, including Rostow's – but it fitted nicely in the Cold War efforts to suggest a capitalist road out of underdevelopment, and counter the communist one which fed on poverty and social disruption, had expanded in Eastern Europe, and had recently been victorious in China, the world's most populous nation. Truman, the Rockefellers, and numerous social scientists all agreed that the like must not be allowed to happen in the adjoining Asian countries, certainly not in India (through British 'old imperialism'), and particularly not in Latin America. Lewis's interpretation suggested an explanation, first, of the lack of increase in worker wages during the first half-century of British industrialisation, when there was still an unlimited supply of subsistence agricultural labourers, second, of the lack of increase in the tropical world, where there was an unlimited supply of Indian and Chinese labourers, at so much lower wages that they had to be kept out by force and legislation from the more wealthy temperate regions, which kept their just as voluminous migrations to themselves. This powerfully simple explanation of grand historical events was Lewis's ultimate gift to scholarship, but his economic model was still incomplete. Certain wage increases had to be explained *ad hoc*, *i.e.*, those that did not depend on agricultural productivity increase – or where there was no available subsistence sector – but simply on the same organisational powers which managed to keep low-wage workers out of competition. If the logic behind the mobility of labour and its racial and wage-mechanisms of exclusion fitted nicely into the model, the same was not true of the related international movements of capital and investments, which according to the optimistic logic of his closed model would turn to low-wage regions, but instead anomalously followed the trail of high wages. The problem, which was central to Nurkse, could possibly have been resolved by the changing dynamics of the open model, but these were never spelt out.

Already in Bauer's argument and Lewis's model, the conflicting interests between poor and rich workers were emphasised with respect to political hindrance of labour mobility, a problem opened up – but not closed again – in the Marxian tradition by Bauer. This problem

became the central bone of contention in debating the work of Emmanuel to which we shall now turn. Emmanuel's theory raised controversy particularly in Marxian, but also in neoclassical and Sraffian, and geographically wide-spread circles. His intervention in the terms of trade debate was to confront the problem of underdeveloped nations *per se* suffering from worsened terms of trade, by following up Lewis's turn to the factorial terms of trade as determining the commodity terms, *i.e.*, that wages determined prices and not the other way around. Contrary to Lewis, he also had an elaborate theory to explain why investments were stimulated by an exogenous rise in wages. Much as in Keynes's theory the price to pay for a market economy was a fundamental underemployment of productive factors, but the escape from it could only be found in an economy which was planned to a much higher degree than either Lewis or Keynes would have permitted. On the other hand, whereas Fitzhugh, Prebisch, Nurkse (1959), and the dependency theorists all resorted to the dichotomy of raw materials vs. manufactures, a major point of Emmanuel's argument was, in line with Lewis and Kindleberger, precisely that the causal link from raw materials to underdevelopment was mythical, notably for reasons which were readily observable in Innis's Canada or Prebisch's Argentina. The basic difference explaining the divergent developments of the British Dominions/United States and Latin America, on which he confronted dependency theorists, were instead, as in Innis (or later Brenner 1976, 1982), institutional and related to ingrained habits of consumption inherited from the mother countries. In the next three chapters, after contrasting the formative experience of Emmanuel with that of French Marxism, I shall try to make the details in this theory clearer, first in its Marxist, then in its Sraffian version, and finally turning to one that is more specifically Emmanuel's own. Unfortunately, not much of the unlimited supply of commentary will be reviewed (cf. note 1 and Emmanuel n.d.). As will be seen, the central place of institutionally established levels of wages and consumption in his theory, and the implications this has for international solidarity, overconsumption and 'overdevelopment', provides clear links to themes pursued in the environmental movement, and in theories of ecological unequal exchange to be taken up subsequently.

# Chapter 6. Setting the stage for Arghiri Emmanuel

In previous chapters we have often come across references to Arghiri Emmanuel. In fact, he has contributed to the debate on mercantilism, commented (often caustically) on predecessors in the Marxist or dependency traditions, and even participated in contemporary Central and Eastern European debates, as well as on Prebisch, Singer, Lewis and the terms of trade debate. It is fair to say that without his work and the debates aroused by it, unequal exchange neither would nor could have become the organising principle of, *e.g.*, the present thesis. Just as Keynes revived many mercantilist, underconsumptionist, and Malthusian concerns, by placing them in new theoretical light, and Sraffa similarly retrieved many Ricardian and Marxian themes relating to the institutional and class aspects of price determination, Emmanuel placed the question of unequal exchange on the agenda. In the process he placed many mercantilist and Marxist arguments on what constituted beneficial trade and non-equivalent exchange in his line of descent, and gave subsequent interpreters a rejuvenated conceptual framework in which to place their own ideas. In this and the following two chapters we shall engage ourselves more particularly with Emmanuel's argument, so it may be well to start by giving some indication of what is to come (cf. also note 1).

Emmanuel's theory of unequal exchange, which may have been inspired by his experiences in the Congo, stated that the low and declining terms of trade for underdeveloped countries, were the consequence of the high and rising wages in the developed countries, and as such, like all equilibrium prices, a surface reflection of an underlying social conflict, this time between the majorities of populations, especially developed and underdeveloped ones. French Marxist economics largely defined itself in contradistinction to neoclassical economics, and this was so also for Emmanuel's theory, reversing the traditional assumptions of the so called Heckscher-Ohlin theory. This largely explains why the fundamental differences between Emmanuel and the other Marxists did not make themselves clearly felt at once. As soon as they did, open dispute burst upon the French scene, conducted in Marxian language, and continuing without much intellectual change among Anglo-Saxon Marxists. Ironically, the great hostility of Marxists concerning the unorthodox disregard of Marxian labour 'values', was complemented by neoclassical critics who focussed precisely on the theory's alleged basis in such labour values. The popularity of Samir Amin, who was a prominent participant in French debates, may largely be explained not only by attempting to place unequal exchange in a perspective where productivity differences matter more, but also by the theoretical vagueness on this point, and by his drawing the politically correct conclusion. In line both with the 'state capitalist' interpretation, popular in France at the time, but more so the general dependency stance, this meant that it is the 'monopolies' who were to blame for unequal exchange, not, as in Emmanuel's theory, the nationally enclosed working classes and labour unions of well-off countries.

Along lines of the criticism by Bettelheim (1969a-d, 1970), Palloix (1969a-b, 1970a-b, 1971, 1972), and Amin (1970, 1973, 1974, 1977), both the Marxist focus on a net 'transfer' of labour values, and the attempt to accommodate unequal exchange with a monopoly and state protectionist interpretation, characterised both Jan Otto Andersson's (1972a-d) and Oscar Braun's (1972, 1977) similar approaches. Thus, in spite of reformulation in Sraffian equations, the perspective was still that of comparing 'values' with 'prices of production'. This perspective was retained in Andersson's (1976) later reformulation which significantly introduced a third common sector, basically in order to compare productivities and thereby values. This modification turned it more into an adaptation of Lewis's model, in which, as we

have seen, wages were ultimately dependent on agricultural productivity. Indeed, abandoning wages as the independent variable was an important ambition all along, a common theme in every single modification of Emmanuel's theory, and this unanimity curiously corresponds to an abhorrence of his conclusions on international worker antagonism. So long as the productivity differential is higher than the wage differential, 'value' will be transferred from the rich to the poor – often referred to as 'Bettelheim's paradox' – and wealthy workers are safe from accusation. No mention was made of the social antagonism evidenced in restrictions on migration, democratically enforced in the interest of these working classes. Even in Andersson's recent contribution to ecological unequal exchange (cf. Chapter 10), based this time on consumption centred so called 'ecological footprints', rather than production centred (Marxian-Morishiman) 'labour values', such restrictions are absent from analysis.

Whatever the metric, Andersson continuously emphasised an unchanging standard of value, the net transfer of which constituted the non-equivalent exchange, but without establishing any obvious connection between his ecological theories and his more explanatory economic ones. Some conclusions of Emmanuel's theory of unequal exchange, where increases in income and consumption play crucial roles, have interesting parallels with contemporary ecological critics of Western overconsumption, although without any concern with overpopulation. His road from Marxism to ecology was taken in a rather different fashion than by Andersson, however, and, by contrast, Emmanuel's explanatory socio-political approach to unequal exchange and the terms of trade is the same whether it is then transcribed into labour values or some ecological unit. The prospects with respect to ecology will be broached in Chapter 11.

The many misunderstandings and fruitless debates occasioned by the labour value formulation, had encouraged Emmanuel already in 1970 to reformulate his particular theory in more adequate Sraffian language (Chapter 7). This was a rather uncommon route in a France where Marxist debate was significantly constructed around their monopolistic opposition to neoclassical economics. Discussion and criticism in more Sraffian language was continued rather by scholars who were not French (*e.g.*, Van de Klundert 1971, 1975, Braun 1972, 1977, Saigal 1973, Andersson 1976), or who had at least got their economic education outside France (Delarue 1973, 1975a-b). It also implied a transition of the centre of economic debate to the British scene (Emmanuel 1975a, 1979a, Evans 1980, 1984, Mainwaring 1980, 1991), although the conventional approach was still traditionally Marxist on Bettelheim's or other labour value lines (*e.g.*, Pilling 1973, Kidron 1974, Roemer 1983). Even within the Sraffian camp, Emmanuel's theories were again commonly accepted and understood only to the extent his assumptions coincided with those already established within that school (or its Marxist/Morishiman version), whether it concerned the adoption of nominal as opposed to real wages as independent variables or some more profound characteristic in a dynamic and monetised market economy which is not well captured in the Sraffian approach. Indeed, the reasons for Emmanuel's emphasis on the *increase* in wages as the central mechanism both for unequal exchange and as incentive to investments and development, involved a much more fundamental questioning of the assumptions of political economy than his specific theory of unequal exchange (Chapter 8).

Probably inspired by the different functioning of planned and market economies, by Marx, and by the debate between Heckscher (1931, 1994) and Keynes (1973 [orig. 1936]) on mercantilism, as well as the post-Keynesians, this meant abandoning the equality of the value of output and the purchasing power of incomes facing it. It is in placing the theory of unequal exchange in this context that Emmanuel's theory, whatever its intrinsic value, comes into its own, as a condition for and consequence of the chronic postwar rise in wages, which itself provided a crucial incentive for investment overtrading. In fact, developments relating to the other such fundamental incentive, an institutionalised depreciation of currencies, which were definitely made inconvertible in the early 1970s, implied that the nominal wage-increases

behind unequal exchange could be cancelled out *ex post* in real terms, and consequently did not necessarily entail a lowering of the rate of profit (Chapter 8).

His political economy was conceived as a crucial advancement in line with the unfinished vision in Marx's many projected books, particularly those on foreign trade, on the one hand, and the world-economy and crises on the other, eventually debouching into a globally planned socialism. Emmanuel consistently referred to the unfinished character of Marx's work, including *Capital* itself, but particularly his many unwritten books and the great gaps they had left in Marxist theory (e.g., on landed property: Emmanuel 1972a: 219; on wage labour, 1975b: 135; on the state, 1979b: 131; on international trade, 1972a: 42, 90; on world market and crises, 1984: 1).<sup>45</sup> It seems that Emmanuel's work was, with equal persistence, engaged precisely with those areas which Marx had left in their least completed form, with Emmanuel's two major works (1969a, 1974a) filling out, or aiming to do so, the last two of Marx's tomes. But, of course, significant events taking place after Marx had written made it not quite as simple as all that. The historically aberrant case, from a Marxist perspective, was not *underdevelopment*, but precisely the latter century *overdevelopment*, to which Emmanuel devoted his major attention. In spite, or perhaps because, of all the attention and controversy allotted to Emmanuel's work, his basic vision has, thus, for the most part remained unperceived. This is significantly because of a persistent refusal to consider his work as a whole, in which context his theory of unequal exchange has a specific theoretical and historical role to play. In doing so, I have been forced to pass other contributions to the post-Emmanuelian unequal exchange debate by, or treat them with less richness and perhaps deference than they would warrant as subjects in their own right.

## Early life in Greece and the Belgian Congo

Arghiri Emmanuel, or Αργυρης Εμμανουηλ, (1911–2001) was born in Patras, Greece, the son of Charalambos Emmanuel and Katina (born Menounou).<sup>46</sup> At 16 he went to Athens to study at the High School of Economics and Commerce until 1932, from which period, according to a typescript bibliography by his own hand (Emmanuel n.d.) his earliest published article, on 'The Great King' (1928), is dated. From there went on to the Faculty of Law (where economics is still taught) for another two years. He went on to work in commerce in Athens until 1937. An interest in Marxist theory is evidenced in an article on 'psychoanalysis as a global theory and dialectical materialism' from the same year, and yet another on gold as an 'unwelcome immigrant' (Emmanuel 1937; cf. also Communist Working Group 1986) links to a long-standing concern with gold over the years over the special economic role of the money commodity (e.g., Emmanuel 1965a, 1965b, 1974a, 1984, 1988). While his later works

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<sup>45</sup> The publication of Marx's books in the 1850s, itself a consequence of the Bolshevik revolution, was another event which may well have been formative for Emmanuel. In the late 1850s, Marx had set out on a large-scale writing project, and the dialectical categories of Hegel and 'communist man', following the growth of the crisis-prone world market, as the aim of history reappeared. The earliest versions contained six books covering respectively capital, landed property, wage labour, the state, foreign or international trade, and the world market (Marx: 1977a [orig. 1857]: 388, 1977b [orig. 1858], 1977c), but the most elaborated plan is the five books in *Grundrisse* (Marx 1973: 108; first published in 1939-41), where the first was on "the general, abstract determinants which obtain in more or less all forms of society", the second condensed much of the foregoing into the "categories which make up the inner structure of bourgeois society and on which the fundamental classes rest", i.e., capital, wage labour, landed property and their interrelation, town and country, circulation and private credit. This was about as far as Marx ever got in practice. The remaining three were the same as before: the third treating the "[c]oncentration of bourgeois society in the form of the state", along with the 'unproductive' classes, taxes, state debt and public credit, to which was added, population, colonies, and emigration"; the fourth, being on the "international relation of production", international division of labour and exchange, exports and imports, exchange rates"; finally, the fifth was to be on the "world market and crises".

<sup>46</sup> For biographical material, see Jedlicki 2001, Terreri 2002, Emmanuel n.d., 1972a, 1984.

clearly identify him as a Marxist or communist of sorts, albeit an unusually independent species, it is still uncertain when and under which circumstances he began considering himself as such. To my knowledge, no record of membership in a communist party has been mentioned, but his later works identified him as a 'paleo-Marxist', both in the historical materialist sense and as a supporter of centralised economic planning, even on a global scale.

Communism's poor standing in Greece was related to the social imperialist reform program already implemented by Venizelos, and to Comintern's directive, for a "united and independent Macedonia and Thrace", which offended nationalist sentiments at a time when 700,000 Greek refugees had already settled in Greek Macedonia and constituted 95% of its population. Traditionally, when striving to better their positions, Greeks were more interested in climbing the social ladder as artisans and shopkeepers, or, as Stavrianos (1958: 478) argues, when economic circumstances forced them to leave their ancestral village, they sought their fortune in glamorous America rather than a nearby city, and they remained conspicuously unimpressed by communist appeals to "join the struggle against the capitalist yoke". *Xenitia*, or sojourning in foreign parts, has long been a fundamental part of Greek historical experience, and emigration has traditionally acted as a safety valve for poor economic conditions at home. From the 1890s, large-scale emigration to the United States began, initially predominantly from the Peloponnese, comprising as many as a quarter of all Greek males between 15 and 40 years old in the period between 1900 and 1915. In the 1920s, 1930s and 1940s, however, this flow was severely restricted by US anti-immigration laws, and was then obliged to take other courses (Clogg 2002: 110f., n. 35). Emmanuel, for his part, went to the Belgian Congo to work in commerce, perhaps in what may have been the family textile trade (cf. below).

Under these years of General Metaxas's dictatorship (1936–1941), the communists became the chosen object of persecution and almost disintegrated (Vlavianos 1992: 8-11), and if Emmanuel already by this time had communist leanings, this would certainly have added impetus to leaving the country. At the same time, persecution forced communists to practice covert action already before war broke out, giving them a head start over the socialists. They seem to have been rather lucky to have come out in a favourable light as opponents to the German invaders, and their status and membership enhanced greatly during the war. Following the German occupation of Greece in May 1941, King George II, accompanied by Metaxists (M. himself had died suddenly), fled to Egypt where they set up a government-in-exile, which became recognised by the Allies. In order to gain the support, or at least toleration, of the Greek people, the quisling government set up by the conquerors continued the vigorous anti-communist and anti-Slavist propaganda campaign, but this association with the invaders resulted in 'anti-communism' becoming a more repugnant expression than 'communism' for many non-communist nationalists. By the end of the war, the communist party (KKE) membership was nearly 300,000, and the National Liberation Front (EAM) some two million, almost 30 percent of the population.

In 1942, Emmanuel volunteered for the Greek Liberation Forces in the Middle East, and was active in the April 1944 left-wing uprising of the Middle Eastern forces against the government-in-exile in Cairo. Many complexities and uncertainties over strategy and over attitudes towards 'bourgeois parliamentarism' were built into most Marxist movements (cf. Close 1996). In fact, the uprising was not supported by EAM (nor by Stalin), to whom it came rather inconveniently. It appears to have been directed more immediately against the return of the monarch, so that participation does not in itself suggest if Emmanuel already had communist or Marxist leanings, perhaps came to do so in the process, or perhaps merely shared republican (on the mutiny, see Vlavianos 1992: 37ff., Fleischer 1986: 423-47; Emmanuel himself [cf. n.d.: p. 12] has written, with respect to the Middle-East upheaval, on the 'ambiguities and contradictions of socio-political movements in the context of inter-state wars'). When it was put down by British troops he was sentenced to death by a Greek court-

martial in Alexandria, but by the end of 1945 he was granted amnesty and by March 1946 again on free foot, after which he went back to the Congo. In this he was not alone, and Jewsiewicki (1979: 564) notes for the Belgian Congo how the Second World War and the ensuing political events (*e.g.*, the Civil War in Greece) entailed a growth in the number of colonists of foreign origin, particularly Greek.

Emmanuel's experiences in the Congo often served as illustrative examples in his later writings – it could be seen as a sort of microcosm of the capitalist world according to Emmanuel. Interestingly, Jewsiewicki (*pers. comm.*) notes that non-Belgian settlers, especially Portuguese but also Greeks, were generally perceived as not entirely 'white', which may explain a relative observance on Emmanuel's behalf (*cf.* the debate in *Le Stanleyvillois* 1948-49 on Belgian and foreign colonists, *e.g.*, Emmanuel 1948). It would certainly have been difficult not to notice the extreme wage differential between Africans and Europeans, as well as the oddly racial worker 'solidarity'. Coinciding with the depression in Europe, Africans had begun their entrance into the higher skill employments of the Belgian multinational Union Minière in Katanga (increasing the ratio of African to white workers from 9:1 to 18:1), but this had not resulted in a rise in African wages, stable at an annual \$US 64.8, but in a stagnation at about \$US 3000 in the thitherto rapidly increasing European wages (Higginson 1988: 207).

Emmanuel wrote several articles for *Le Stanleyvillois*, two from 1954 of which concern economic questions, and each of which hints at the themes of his two major works, *L'Échange inégal* (1969a, 1972a) and *Le Profit et les crises* (1974a, 1984). Thus, the second of them (Emmanuel 1954b) argued, in premonition of the latter book, that a capitalist economy had certain inhibitory characteristics to investments in the downward phase of the business cycle (which were not there in a planned economy), precisely when they would be needed. The first article (Emmanuel 1954a) also mentioned the 'free' and 'directed' economies, but only to put the question of their respective merits aside, and to consider if within the system, whether good or bad, the rules of the game had been observed. Thus, formed by functionaries, the 'buyers' unions' or consumer organisations (*groupements d'achat*) with which the article disputed, had not raised the issue of a change of the system, but had instead merely been campaigning, for more than a year – with conferences, speeches, and appeals to the Chambres des Commerce – that the percentage of commercial gains burdening consumption goods in the Congo was too elevated. Emmanuel thus restrained his argument to argue against this idea, apparently related to be that often raised by leftists and liberals against monopolistic or other 'superprofits', but presumably implicating also such non-monopolistic traders and middle-men such as the Greeks.

Here, without claiming to have studied the phenomenon in particular, "being in trade", Emmanuel nevertheless happened to have come across certain information on specific articles to decide whether the percentage pertaining to middle men and retailers was more elevated in the Congo than in Europe. The articles mentioned were some kind of textile or 'regulation blanket' (*couverture dite réglementaire*), black and Muscat grapes, and simply fish to be had at the restaurant. It is clear then, that Emmanuel had personal experience of trade in textiles. On inquiry, Jewsiewicki (*pers. comm.*) guesses that at least his family was in trade, and informs that almost all Greeks were because there was just about no other way for Southern European whites to make their living. In all probability, then, Emmanuel took part in what he (1972a: 375, *cf.* 1970c: 86, 1977: 136) would himself describe as the spread of the textile industry to the African colonies, by that group of "outsiders, well-to-do settlers, individual capitalists, who had no ties with the big financial capital – Jews from Rhodes and Greeks in the former Belgian Congo, Pakistanis in Uganda, Kenya, and Tanzania". Coloured by this experience in small-scale industry and family business, he knew how they utilised the loopholes of the capitalist system and the temporary weaknesses in a 'monopoly'-capitalism, which was "neither so ubiquitous nor so monopolistic as is commonly believed". This

experience seems to have proofed him against what has turned out to be the 20<sup>th</sup> century's most dominant Marxist schools, 'monopoly capitalism' in all its guises, which was even to absorb the many 'elaborations' of his own theory of unequal exchange. Even more ironic, it could be argued that a crucial assumption of his theory – that of the international equalisation of the rate of profit – sprang directly from the observations on which he built his case against the proponents of superprofits.

It was thus with said textile, of which the Congos absorbed several hundred thousand a year, that he had the closest knowledge. It was exported from Antwerp at 35 francs f.o.b. (free on board), and imported to Stanleyville, burdened first by maritime packing, shipper commission, three months of bank-funding, maritime and fluvial freight, clearance to Congo, profits of the importer, insurance premium, then lying in a warehouse at the wholesaler, while awaiting reselling to the retailer, who put it on a trailer and transported it to the interior at the other end of the province, adding his costs and profits, and distributing it in his canteens, where, finally, at the furthest end of nowhere in the African bush, it cost 75 francs. Now, to his great surprise, in Brussels, two steps from the production site, he had stumbled over the same good at 89 francs.

Apart from being the first recorded observation by Emmanuel on international prices, the admitted surprise (indicating novelty) that remuneration in distribution was apparently higher in Belgium than in the Congo – certainly not the opposite as in the favourite Marxist opinion – may well have incited the more qualified assumption in his theory of unequal exchange of international equalisation of the rate of profit, as well as an international difference in money wages for the same distributional service. It seems likely, then, that his theory profited from his experience in a 'multinational corporation', so to speak, or at least a 'multinational family business', which in certain circles could certainly be construed as the wrong 'MNC'.

Furthermore, it would seem unquestionable that Emmanuel drew from his Congolese experience when deciding on the limited applicability of Marx's price of production schemas and on the proper premises for his theory of unequal exchange. In the national sphere there was in Marx's schemas equalisation both of the rate of profit and the wage rate. The hostility noted by Bauer (Chapter 2) between Czechs and Germans within the Habsburg empire was only abolished through the worker mobility from the one to the other, which made the well-off Germans realise the necessity to include the Czech in their negotiations. In the Congo, the wage-differential was of another order of magnitude and it was evident that African wages were never going to achieve white levels, and that therefore hostility was all the fiercer. If an apartheid state was not constructed, domestic homogenisation would merely mean making the wage-differential follow international political borders rather than intra-national.

Turning to the international environment, Emmanuel admitted that the mobility of capital faced greater difficulties, and its 'viscosity' increased because of monopolistic barriers and a certain risk coefficient. Nevertheless, in the long run the equalisation would ultimately take place, not least because of capitalists such as the Greeks in the Congo. Apparently, even in his first publication on unequal exchange he had already been confronted with several objections on this point, and tried to explain himself in a very long footnote (Emmanuel 1962: 18). He did not mean to say that a difference of 1 or 2 percent in the rate of profit between Europe and the Congo would suffice to start stirring capitals towards the latter. But there was a limit to this differentiation beyond which capitals would start so moving (excepting abnormal situations, political troubles, etc.). Thus, long-term differences in average rates of profit of one to three or one to five in different world regions were inconceivable, and experience also showed that there was nothing of the kind. Furthermore, the 'viscosity' of capital played a minor part only with regard to fixed capital, which he again demonstrated with examples from the former Belgian Congo (*ibid.*: 19), while he had also noted how the transfer of capital was carried out *within* the great monopolistic and financing groups, such as the Société de

Belgique transferring its capital from one branch to another and from the metropolis to the Union Minière in pushing it from extraction of uranium to copper and then restraining it to cobalt. “In general”, he concluded, “I have the impression that one exaggerates somewhat the importance of the ‘viscosity’ of capital, just as one does the importance of monopolies, at least the specific influence of the latter factor on the transfer of capital” (*loc. cit.*, trans. J.B.).

By contrast, examining the possibilities for an international equalisation of wage rates, it was only too evident that there was nothing like it to be found, and that frontiers constituted “absolute discontinuity thresholds”, with \$3 *per hour* in the United States compared with 25 cents *per day*. Such wages, some 30, 40, or 50 times more elevated in the one over the other, was no longer a question of percentages, but of orders of magnitude (*loc. cit.*).

There were no obvious reasons for European settlers or workers to rejoice in African protests, which if successful would show up in higher local prices and costs of services, and in fact they did not. Neither could they have been approved by the multinationals or any other capitalists, but if forced to choose between wage-bargaining with European or African workers, and as long as nationalisations could be avoided, the latter would naturally seem the preferred choice. This would seem helpful when trying to understand the greater support of international finance and multinationals gave, in Emmanuel’s opinion and at least initially, to the independency movement of Lumumba, over the secessionist aspirations of Tshombe. Conflicting interests such as these figure prominently in Emmanuel’s writings, but his degree of involvement at the time is clouded. Judging from one of the articles he also lived in Stanleyville, which became a stronghold for Patrice Lumumba in the late 1950s, and presumably was not an unusual residing place for Greeks in trade. According to one source (Terrerri 2002), Emmanuel was even working with the independence movement guided by Lumumba, and in itself this would not be surprising in view of his previous experience from the resistance, but, again, this would constitute no evidence of Marxism. In 1955, Lumumba became regional president of a Congolese trade union and joined the Belgian Liberal Party – hardly to be suspected of Marxist revolutionary motives. He was arrested in 1957 on charges of embezzlement followed by a year in prison, after which, on his release, he founded the Mouvement National Congolais (MNC) in October 1958. By then, Emmanuel had already left for France, however, perhaps incited by mounting insecurities, visible in the arrest and subsequent humiliation and execution of Lumumba (cf. Witte 2002).

From 1957 to 1960, Emmanuel studied art history at L’École du Louvre, and it was only in 1961, at the age of fifty, that he entered the École Pratique des Hautes Études to study socialist planning under Charles Bettelheim (two years his junior), receiving a doctorate in sociology from the Sorbonne in 1968 (Jedlicki 2001: 951). His thesis appeared the following year in the form of his contested book, *L’échange inégal*. His academic career also began that year when he was appointed Associate Professor at University of Paris I. He then headed the Economics Department, UER of Geography and Social Sciences, at the University of Paris VII and from 1972 the International Economic Relations Department at the Institute of Economics and Social Development Studies (IEDES), again at University of Paris I, until his retirement in 1980. While this coincided with an ‘epilogue’ to unequal exchange (Emmanuel 1980), he continued publishing at least until 1988, and died at the age of 90 on 14 December 2001.

## The French connection

Emmanuel’s years in Greece and the Belgian Congo were presumably formative for his intellectual stance, even before his arrival in France, where the contrasting paradigms of his and traditional French Marxism on the question of international worker solidarity eventually broke into open conflict. The *rendezvous* with French Marxism/communism had implications in several problematic fields. Trying to adjust to being in government by non-revolutionary

means underlined the question for French communists, and pioneered in the work of Bettelheim (1946), of just how much economic planning was necessary to avoid the problems of underemployment and depression, and how to differentiate themselves from Keynesianism or other state-centralists. Thus, a central defining characteristic for French communists already in domestic disputes, was their focus on the manipulations of the French state by self-centred ‘monopolists’. At the same time, with the help of Paul Baran (Bettelheim 1965: 88), the ‘monopoly capitalist’ interpretation established itself as the central Marxist understanding of international and American dominated capitalism, underlined in France by the difficulties to comprehend the French conflicts in contemporary Asia and Algeria, where it came to serve in a similar way. If Emmanuel shared the concern with distinguishing the Marxist approach from the Keynesian and over the necessary level of planning, he had no inclination towards the monopoly tradition. Being without the moral comforts thus provided, and not personally involved with the policy problems of the PCF, instead put the problem of international worker solidarity in the forefront, on which new light could be cast from the terms of trade debate. The theory of unequal exchange was presented already in 1962, and from the beginning it was accompanied by his director Bettelheim’s commentaries – perhaps the most stimulating that he was to make. While Emmanuel’s concerns coincided partly with those of his tutor, as well as with those of French Marxism in general, he also presented certain views, which were to prove too much for French communists or Marxists, and simply could not be endorsed – not at any intellectual effort, it seems.

The introduction of Marxism in France before the First World War occurred at a time when its exponents lacked an adequate training in economics. Renewed interest in Marx as the philosopher of alienation after the Second World War awakened interest in other aspects such as his economics, even if this commonly remained strictly secondary and had to be taken on trust. Sartre simply assured that the argument of *Capital* and the labour theory of value were ‘obviously true’ and thus needed no commentary. Althusser (*e.g.*, 1965) asserted the scientific necessity of the theory of surplus value by ontological demonstration. Henri Lefebvre argued that the theory of fetishism made Marx more objective than the classical economists as both science and critique, but according to Judt (1986: 182f.), what appealed was again rather the sheer audacity of the conclusions than the credibility of the technical devices to obtain them: “It comes as no surprise, then, to find that some of the most powerful minds in France saw no reason [...] to dissent from Thorez’s [leader of the PCF] claim in 1955 that the French working-class was undergoing absolute pauperization”. For both workers and intellectuals such as Sartre and Merleau-Ponty, launching *Les Temps Modernes*, France’s largest party, the PCF, was not only the leading force of the Resistance, but above all the party of the working class, with five million voters by 1945. Soviet Communism was raised in the eyes of partisans not only by its victory over National Socialism, but also because it was the workers’ ally in the domestic conflict with capitalism. In the Cold War context, many of those who hated capitalism were willing to ignore and forgive Soviet evils, believing that anti-communism was rather a way to avoid talking about capitalism, or even suggesting that evils were images concocted by the other side. Lichtheim (1966: 136) suggests that the successful implantation of Marxism in intellectual circles during and after the 1930s, “came too late from the standpoint of economic theory”, meaning that from 1870 to 1930, Marxian theory could furnish a critical counterpoint to the liberal defence of the capitalist system, which had been hurriedly abandoned with the economic crisis of the 1930s. While the defenders of capitalism, with the Keynesian revolution, turned instead to salvaging its practice, Marxism struggled to retain its office as critical counterpoint also during the 1960s and 1970s (Pouch 2001).

Debate among French socialists and communists “remained suspended between planners who were not Marxists, and catastrophists who contented themselves with predicting the imminent collapse of the hated system” (Lichtheim 1966: 140). It had taken until after the

Second World War for French Marxists to begin addressing the problem of planning, *i.e.*, Bettelheim (1946), who demonstrated an insistence that the choice for France lay between socialist planning, and planning in the interest of the ‘monopolies’. Lichtheim (1966: 140, n. 21) notes: “The more usual line of retreat for Marxist writers was to produce sociological studies of imperialism or fascism, in which the responsibility for these phenomena was mechanically attributed to the machinations of the capitalists and their political henchmen.”

If Marxist economists initially lacked institutional support at the universities, they had the all the more in the PCF, which had a special place in the field of economics from the early 1950s, producing its own journals, economists and books. This determined the character of the economic debate, which focused on the one hand on legitimising Marxism as a science, and on the other (*e.g.*, Claude 1956) on criticising the industrialisation policies of successive governments as national treason led by ‘monopolies’. There was nevertheless a budding centre of discussion both around Christian humanists with a penchant for corporatism. At the economics department of the Faculties of Law under Henri Bartoli at Grenoble and under Henri Denis in Paris, Marx was reintroduced to a prominent place in course of the history of political economy. Denis argued against his humanist colleagues that Marx’s critique was true economic science and analysis, as opposed to Catholic moral criticism (Pouch 2001: 43ff.). A more Trotskyite version could be found at the sociology department under Bettelheim. At least in the 1960s flourishing in theory, and in the 1970s in publications, journals and doctoral theses, it all fell apart in the course of the 1980s and 1990s (*ibid.*). Thus, Emmanuel studied under Bettelheim and benefited from Denis, whereas Samir Amin found a place under the wings of Maurice Byé and Perroux, and Christian Palloix under Bartoli.

The French debate<sup>47</sup> was kept almost wholly outside the economics department, thereby having to rely on the channels provided by various political fractions. Apart from personal communication and symposia at C.E.R.M. (Centre d’Études et de Recherches Marxistes), the principal media were the series “Débat sur l’imperialisme” in the journal *Politique aujourd’hui* (Bettelheim 1969d, Emmanuel 1970a, Denis 1970a, cf. also 1970b, Granou 1970, and Dhoquois 1970), the journal *L’Homme et la société* (*e.g.*, Amin 1970, Palloix 1969b, 1970, and esp. 1970b, Emmanuel 1970d), and various books, notably in the series on ‘économie et socialisme’, edited by Bettelheim for Maspero. François H. Maspero’s political engagement and friendly bonds with Castro are known, he himself reviewed Emmanuel (1969a) soon after its appearance, and his editions constituted the “principal channel” (Pouch 2001: 58) in which the problem of imperialism, unequal exchange, and underdevelopment was disseminated from 1960 to the mid-1970s.<sup>48</sup> Amin added his article to his 1957 thesis to make his best-known work, *L’accumulation à l’échelle mondiale* (1970). By 1973 he declared himself to have successfully ended the debate, but continued his extensive writings, helped introduce the Argentinean Oscar Braun’s theory, and collaborated with Frank.<sup>49</sup> Palloix’s book on ‘problems of growth in the open economy’ was inspiring to both Samir Amin and Jan Otto Andersson, and he later permitted an averse Frank (1975) to handle (1978) the concept of unequal exchange as well as dispose of Emmanuel. By attributing unequal exchange to

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<sup>47</sup> The debate and response is too extensive to be comprehensively treated here. Contributions elsewhere in French include Latouche 1966, 1968, Suret-Canale 1970, Lahire 1970, Emmanuel 1971, Busch 1973, Chatelain 1973, Florian 1973. The most comprehensive bibliography to date is Emmanuel n.d., 19-30 (cf. also note 1).

<sup>48</sup> The series had previously published books by Bettelheim himself, but also translations of Baran 1957 (No. 7), Baran & Sweezy 1966 (No. 11), followed by Emmanuel 1969a (No. 12), 1974a No. 22, and the important collection of articles by Emmanuel *et al.* 1975 (No. 26). Palloix 1969 was not published in the actual *Économie et socialisme* series, but by the same editor and was compensated by the rapid succession of Palloix 1971 (Nos. 16-17), 1973 (No.19), 1975a (No. 23), & 1975b (Nos. 24-5).

<sup>49</sup> Amin was an exception in not being published by *Maspero*: Amin 1970a by *Anthropos*, which also published Amin & Saigal 1973, Amin & Frank 1978, and the French translation of Braun 1977, to which Amin wrote the preface (Amoa & Braun 1974). Amin 1973 appeared at his other principal publisher, *Éditions de Minuit*.

‘monopolies’, multinational corporations, and protectionist machinations, rather than to wage levels, which were further made dependent on ‘productivity’, they strengthened the harmonisation of unequal exchange with, on the one hand, politically acceptable ‘monopoly capitalist’ interpretations in line with Baran and the dependency tradition, and on the other, the conventional understanding of non-equivalent exchange as a transfer of value which remained the sense in which it was seen in more or less every alternative.

Bettelheim’s writings of the early 1960s showed a clear and admitted influence from Baran (1952, 1957; he also referred to Amin’s thesis from 1957). Although the dependency ‘school’ is usually said to have originated with Frank in the later half of that decade, Bettelheim wrote extensively of political and economic *dépendence* and the transfer of the Baranian economic surplus from dependent or exploited countries, not, incidentally, to the imperialist *countries*, but to the “monopoly capitalists” of these dominant countries. In a lecture on the ‘problems of underdevelopment’ at the University of Belgrade in October 1961, he spoke of such dependence and the financial exploitation, but also added a section on the strictly *commercial* exploitation suffered by those unfortunate countries. By financial exploitation he meant higher profits on capital investments, interests and royalties. Part of it showed up through the repatriation of profits in the balance of payments, while part of it was reinvested, thereby augmenting the country’s foreign debts, and obliged the underdeveloped countries to export more than they imported. Though the difference between foreign and domestic exploitation was not evident, since most of the foreign profits were apparently reinvested within the country, this was in Bettelheim’s view the most obvious and manifest form of exploitation. However, it was “not the only one, and not even the quantitatively and qualitatively most important one” (1961: 36f.).

Clearly diverging from the Baranian tradition and connecting rather with the Central or East European debates (cf. Bettelheim 1967), this was instead the commercial form of exploitation, resulting from a “non-equivalent exchange”. Through numerous and complex mechanisms, “the products sold by the industrial to the exploited countries are actually very commonly sold above their value” (*idem* 1961: 36). The position of monopolies was much stronger in underdeveloped countries than in industrial, assuring them a selling price and profit above the average. At the same time, their monopsonist position as dominant buyers on local markets allowed such countries to buy at prices below values (cf. Andersson 1972b: 98). He estimated that in the 1950s the losses suffered by underdeveloped countries in this way amounted at least to 10% of the annual value of exports and imports, or \$US 6 billion. Furthermore, he continued, hooking on to the Singer-Prebisch debate, imperialist measures made the level of income arising from exports in these countries rise very slowly, so that when productivity increased, export incomes might even decrease. Falling terms of trade by 10% in the years 1954 to 1960 had meant a loss of another \$US 3 billion as compared to 1954. Since Bettelheim paid no attention to the effects of the Korean War in previously ameliorating the terms of trade, he (1961: 39) could thus present a picture of a drastic yet continuous change to the disadvantage of the underdeveloped countries: “When considering these facts, one realises how misleading the term ‘underdeveloped’ is. In reality, one should not only speak of countries being exploited by imperialism, but stifled by it.”

To the politically and economically dependent situation of these countries, and the financial and commercial exploitation of them, was thus added the ‘blocking’ of the development of the productive forces. Apart from the above ‘spontaneous’ factors, there was also systematic action to suppress the development of productive forces. However, there were ‘internal’ factors as well, which nonetheless also reflected the dependent and exploited position of underdeveloped countries. Growth rates were lagging because not enough surplus was produced for investments but was consumed by growing populations. Unemployment, low productivity of labour, and inefficiency all contributed while low wages and purchasing

power put a check on incentives for private investors to invest either in labour saving mechanisation or in expanding production. This pattern was reinforced by social and cultural factors peculiar to the still dominating 'precapitalist' stage: patterns of elite consumption reinforced by the imperialist powers, routine and respect for traditions, contempt of manual labour, lack of belief in the future, of a sense of responsibility, of technical knowledge, etc., all of which were dependent also on the foregoing colonialism and enforced feudal organisation. The perspective is clearly the same as Baran's, and but for the word 'precapitalist' also of Frank (Bettelheim 1961: 40-3). Resolving the situation required first of all political independence, then the dispossessing of classes and political groupings connected with imperialism, nationalisation of large-scale enterprises, and finally a democratic, national and socialist revolution on the model of the Cuban revolution (*ibid.*: 43f.). In the next few years, Bettelheim was to function as economic adviser to the Cuban government, extensively engaged in a debate involving Ernest Mandel and Ernesto 'Che' Guevara (in press). While differing on many points, all participants in that debate agreed on the 'monopoly capitalist' view of the world.

'Monopoly capitalism' has indeed been something of a standard Marxist interpretation of the 20<sup>th</sup> century, not only in France, but even more specifically so in evaluating the international economy. The reasons may be manifold, but there is an obvious political one in the necessity of depicting unproductive capitalists in general and the monopolistic state capitalism in particular as the common enemy of all working people, wherever they may find themselves. By contrast, Emmanuel with his Congolese experience was quite unconcerned with monopoly. He nevertheless shared a problem with his tutor Bettelheim in the importance of distinguishing the market economy, whether mixed or not, from a planned economy. This showed up, first, in an effort to clarify the differences between Keynesian and Marxist understandings of the internal dynamics of capitalism, on the line of his second Congolese article (1954b) and later book on profit and crises (1974, 1984); secondly, in various debates ultimately implying the necessity of central planning of the global economy (*e.g.*, 1975a): in demonstrations of the possibility (not necessity) of 'suboptimal' international specialisation under market conditions, a side-issue in his book on unequal exchange (1972a), but which became the main point in his (1978b, 1978c) debate with Paul Samuelson; in discussions of the imperfections of international coordination among the planned socialist economies, which would inevitably result in reinstalling market relations (1966b-c); in his arguments as to the relative progressiveness of multinationals (in terms of planning, efficiency, and technological transfers to the underdeveloped countries) (1976b, 1977a, 1982); and in the necessity (in terms of the market economy itself) of controlling the international financial market (1988).

In the international sphere, the most immediate problem for French communism after the war was of course the problems raised by decolonisation, first in Indo-China but notably in Algeria, and how to relate to colonists, who in Algeria, as was pointed out at the time, consisted to 80% of workers that were still somehow privileged. The problem was similar to that in the Belgian Congo, although settlers were more numerous and influential (*e.g.*, in the army), ultimately enforcing the end of the Fourth Republic and threatening the Fifth. Much more could be said on the French relation to empire and colonialism than will be possible here, but at the time it was not self-evident that an internationalist stance necessarily implied support of independence, which would, some argued, expose Algeria to the monopolistic imperialism of the United States, rather than the more benevolent, paternalist (and messianic) one of France (Sorum 1977, Wall 1983: 181-201). It has been observed that whereas the British were shocked that subordinate peoples could even think of becoming English, the French were shocked at the revelation that some might actually *not* want to become French (cf. Malm 2003: 152ff.). One of the uglier responses to this revelation was perhaps that of Raymond Cartier – commented upon by Emmanuel (1972a: 182ff.) along with the Algerian

question – who in the early 1960s appealed to the ‘little people’ of town and country, with his proposal for abandoning the ungrateful to their own misery (cf. the ‘life-boat ethics’ of Hardin 1974).

One of the more problematic areas to Marxists and the socialist movement in general concerns international worker solidarity. Based on his newly found historical materialism, Marx had proclaimed in the *Communist Manifesto*:

The working men have no country. [...] National differences and antagonisms between peoples are daily more and more vanishing owing to the development of the bourgeoisie, to freedom of commerce, to the world market, to uniformity in the mode of production and in the conditions of life corresponding thereto. (Marx & Engels 1977 [orig. 1848]: 235.)

Before the First World War, Hilferding, based on his own theory of finance capital, could argue in line with this statement that the close links between the state and capital revealed the class character of the former and lead the proletariat to oppose the state and the imperialist conflicts between the great powers. Just before the war, in line with Hobson, Kautsky had a vision of an ‘ultra-imperialism’, in which all the great powers would agree to exploit the world jointly, rather than fighting over its division. The tremendous inaccuracy of these predictions of proletarian internationalism, which had become an axiom to the Second International, became painfully evident with the outbreak of war, when Bukharin (1972 [1917]: 161) observed: “The first period of the war has brought about, not a crisis of capitalism [...] but a collapse of the ‘Socialist’ International.” The explanation proposed by him concerned the partial identification of certain workers with their particular enterprise, which in the current ‘monopolistic’ phase of capitalism had come closer to ‘state capitalist trusts’. In a contemporary pamphlet arguing more directly than Bukharin against Kautsky, Lenin (1950: 540) was even more insistent than Bukharin that it was only a section of the workers who had anything to gain, explaining that “the economic possibility of such bribery, whatever its form may be, requires high monopolistic profits”. Yet at the same time, Brewer (1990: 127) maintains, he referred to Engels’s *pre-monopoly* description of the reactionary politics of the English working-class turned ‘labour aristocracy’.

In fact, Lenin did provide an answer which he found satisfactory at the time. In a slightly later article he (1964: 105) wondered over the connection between ‘imperialism and the split in socialism’: “Is there any connection between imperialism and the monstrous and disgusting victory opportunism (in the form of social-chauvinism) has gained over the labour movement in Europe? This is the fundamental question of modern socialism.” The question was answered as before that through their monopolistic and imperialist profits, capitalists could *for a brief while* ‘bribe’ sections of the proletariat and workers organised in trade unions. The observations of Engels and Marx throughout the course of decades from 1858 to 1892, were explained by England’s unique industrial and colonial monopoly position, and its duration was possible only because England was alone. In this way, Lenin could persuade himself and others that revolution was just round the corner. As the years passed and Western workers abstained from helping either by revolution or significant protests, he (1965: 500f.) concluded, in what turned out to be his last document, that the Western countries were not consummating their progress towards socialism as he had formerly expected, through the gradual maturation of domestic socialism, “but through the exploitation of some countries by others”. The victory of socialism was nevertheless assured by the great masses of the East being drawn into the revolutionary movement, and it was by relying on them and their eventually becoming civilised, that the Soviet Union would survive and socialism triumph.

Yet, while Lenin found it the ‘most important question of modern socialism’, neither he nor Bukharin (and Engels himself was of no help either) treated the subject in sufficient detail to resolve the question and the inconsistencies of their replies (Brewer 1990: 127). After the

Bolshevik revolution, they were mostly too occupied to work out elaborate theories. The positions taken by Lenin and, after his death by the Communist International, nevertheless had a profound impact on Marxist thinking. By 1928, the International had reversed the traditional Marxist position on colonial territories, arguing instead that capital export and imperialism hindered development rather than accelerated it, a position taken up by the Peruvian Mariátegui the same year, and later by Baran, Bettelheim, and *dependistas* (Kay 1989).<sup>50</sup> If in the traditional Marxist view the revolution would come in the most developed countries, their place had now been taken by the less developed. So far as the international solidarity was concerned, however, most were still content to blame it all on monopolistic ‘super-exploitation’ being used to ‘bribe’ the working classes.

Thus in 1948, a century after the manifesto, Jean-Paul Sartre (1948: 11, 55-65; cf. 1957: 690ff.) described the poetry of black writers as “the sole great revolutionary poetry” in the contemporary world, seeing the oppressed peoples of the Third World as the vanguard of world revolution. However, this vision had mainly lain dormant, Sorum (1977: 171f.) explains, until the Algerian revolution “demonstrated both the dynamism of the overseas peoples and the immobility of the French proletariat”, as well as the ‘spinelessness’ of the communist party. In spring 1960, while the Chinese began their attack on Soviet moderation, Sartre and de Beauvoir travelled to Castro’s Cuba (as did Bettelheim, Baran, Sweezy and many others); they and their followers grouped around *Les Temps Modernes*, were by now “ready to abandon the traditional Marxist view that the important acts of revolution would be done by the proletariat in the developed countries” (*loc. cit.*; cf. Wall 1983: 189). In October 1960, Péju charged that western socialists had neglected the Third World, egotistically wanting “to construct a luxury socialism on the fruits of imperial rapine”; as a result, Sorum (1977: 172) reports, “they had lost their way, and the revolutionary actors in history were no longer the Western proletarians, but the combatants of the Third World. Traditional Marxists, however, such as the French Communists, continued to believe that the political and social consciousness of the peasantry could not be trusted.” In 1961, Franz Fanon’s *Les Damnés de la terre* argued in response that the more acutely experienced capitalist exploitation and oppression in the Third World made the revolutionary will of their rural masses more fervent and less susceptible to ‘corruption’ than that of Western proletariats. Sartre’s preface echoed these views, declaring that Europe was in its death throes and that the peasants of the Third World had become the subjects of history. The Algerian war could therefore almost be seen as a blessing in disguise, offering the opportunity for the French Left of revitalising the revolutionary spirit and joining with the Third World rebels, in Péju’s words, “to make contact again with the evolution of the world” (in Sorum *loc. cit.*; cf. Bell 2000 [orig. 1960]: 403).

Critics argued that Sartre and his affiliates were only transferring the 19<sup>th</sup>-century Marxist scheme from Europe, where it had proved inapplicable, to the world situation where it romanticised and distorted reality in suggesting that socialism was the common destiny of France and Algeria, thus neglecting current realities such as the importance of Islam: “In the ascetic universe of the intellectual of the far Left, a mythical Third World replaced the myth of the proletariat” (Crouzet 1962–63: 54). “The critics charged”, Sorum (1977: 172f.) reports, “that the neo-Leninist intellectuals had missed the opportunity provided by decolonization to revise a vision of the world based exclusively on Western and outdated models.” Sartre (1963: 90, cf. 31) responded with his view of history as a ‘totalisation in process’, in line with Hegel and the young Marx, the world ultimately tending toward unity.

It is easy to agree that French ideologies underestimated the diversity of the world, and that, from this visionary point of view, *e.g.*, Claude Lévi-Strauss is the more interesting and

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<sup>50</sup> Warren (1980) argued that this turn came already with Lenin’s *Imperialism*, but Brewer (1990: 133f.) feels that he is on firmer ground in locating the shift in the positions taken in the 1920s.

original. Whatever the truth about outdated 'visions', Emmanuel, returning to his economic studies the same year Fanon's book appeared, instead of either discarding 'Western' models or trying by mere philosophical conjurations to 'go beyond' them, simply updated them. However, the role ascribed to Western proletarians in this vision was, by contrast, *actively* counterrevolutionary, as opposed to their being 'corrupted' from above. In spite of Sartre & Co., and although maybe not necessary, this seems unfortunately sufficient to explain the unacceptability of Emmanuel's model to either French or any other Western Marxists or Communists. Its rejection is the common feature in all responses and elaborations of his original model. To Marxists of the Third World the difficulties were perhaps not as grave, but even here the monopoly and dependency tradition was predominant. With Bettelheim functioning as economic adviser it is unsurprising that Emmanuel's (1964) second publication on unequal exchange appeared in Castro's and Geuvara's Havana, Cuba.

In these early years, however, the novelty of Emmanuel's economic model overshadowed the heresy of his vision. On the one hand, his first presentation (1962: 24) noted as the most important conclusion of his two-country model that any *augmentation* of wages in one country would aggravate the terms of trade of the other. On the other, he also told of how capitalism, in spite of all its efforts, had not succeeded in isolating the workers from general development, because of the inherent contradiction in capitalism between keeping wages as low as possible and the necessity of popularising its products, creating new demands, and thereby ultimately raising what is considered the normal standard of living and expectations, *i.e.*, the normal 'value' of labour power, in the Marxist sense. Suddenly, however, capitalism found itself confronted by the 'underdeveloped man', barely emerging from the tribal era so far as his needs were concerned, but with the same ten fingers and brain functions as 'developed' man: "*It is this difference between the capacity of underdeveloped man to handle the utensils of our époque, while still being a long way from having the needs of our époque, which in the final analysis provides the superprofit of unequal exchange*" (*loc. cit.*, trans. J.B.). We see the emerging contours of the importance attached to levels of *consumption* in a capitalist economy, particularly as they reverberate on the international scene.

However, the political implications were mostly confined to the last of his concluding 'interrogations', when he suspected unequal exchange to constitute one of the reasons why the call of revolutionary Marxism for the unity of the global proletariat had evoked only a familiar echo. Perhaps, he speculated rhetorically, the internal antinomy demonstrated in his model between wages in developed and underdeveloped countries respectively was one of the factors determining the phenomenon of desolidarisation observable between the working classes of these regions (*ibid.*: 32, trans. J.B.): "Must we, then, enlarge Lenin's notion of the labour aristocracy, by saying that the working classes of today's advanced countries constitute the labour aristocracy of the Earth?" As of yet, however, the active participation of the working class itself was hidden in the expression of an 'independent' variation of wages.

Bettelheim's comments partly tried to incorporate Emmanuel's idea into his own previous notion of commercial exploitation, but also distinguished between two kinds of unequal exchange. First, the 'broad' sense in which a high capital intensity (*i.e.*, organic composition) ensured a flow of value, and secondly the 'narrow' sense in which low wages (or a high rate of exploitation), caused a similar flow of value, and where Emmanuel only admitted the latter to be called unequal. There was already an observable difference between the 'independent' wage variations of Emmanuel and the 'low' wages of Bettelheim, in that wages in the former conception is an active determinant of prices whether they are increasing or diminishing. Bettelheim got this notion from the above quoted passage on the low established demands of underdeveloped man, which he did not consider sufficient explanation. Reflecting on the consequences of international specialisation, Bettelheim was close to seeing the primary importance of wages, when he himself suggested that the wage differential of Emmanuel's

restrictive definition may also be what determined the *aggravation* of the situation for the low wage countries, and that Emmanuel's kind of unequal exchange thereby deserved to be held as particularly important. However, this is still not an independent variation, and only a few pages on Bettelheim (1962: 5, 12) instead referred to how the export of capital tended to lessen the 'demand' for labour in the less developed countries, thereby contributing to maintain their low wages. If labour 'demand' has an influence on wage levels, however, these would no longer be independent variables, showing that he had not yet understood the assumptions of Emmanuel's model, or that the latter had not yet expressed them with sufficient clarity; in particular, judging from Bettelheim's misunderstanding, it had not been made clear that the forces of change behind the historical establishment of wage levels were distinct from anything found in Emmanuel's particular model of unequal exchange. However wages were established, when put into his model – or, in the real world, whenever conditions began to match those assumed in his model – they were independent, 'exogenous', 'given', variables, and thereby 'political' or 'institutional'. The only factors considered political or institutional by Bettelheim were those instigated by colonising metropolises on 'dependent' economies to maintain feudal or semi-feudal structures in the underdeveloped countries, which in themselves constituted an obstacle to accumulation and thereby contributed to miserable life conditions and low wages.

### Reversing the assumptions of the Heckscher-Ohlin theorem

Emmanuel based his theorem on what he argued to be Marx's position, where the system is 'open' towards the dimension of class struggle, and where wages were not merely held at subsistence through population pressure, as in the Malthusian or Ricardian iron-law of wages, but were somehow determined by 'historical and moral elements'. Emmanuel considered his only innovation in this respect to lie in the application of such Marxian wages as independent variables in the international context. In clarifying his theory's assumptions, he (1975a: 36) also noted some historical facts which were not on Marx's agenda, but which by contrast should have been familiar to his followers as well as neoclassical theorists:

- 1) A particularly efficient trade-union movement since the end of the nineteenth century, in the developed countries, coincident with
  - a) the repression of similar activities in the underdeveloped countries under colonial or semi-colonial regimes, and
  - b) the draining off by direct means of surplus which could have enabled negotiated wage increases in these countries.
- 2) A growing mobility of capital throughout the same period, which put in motion the mechanism of the equalization of the rate of profit on an international level.

Remembering our discussion in Chapter 2, as well as Innis's later work (Chapter 3), these changes seem intimately related to changes in means of communications, particularly to the expansion of the press, enhancing the level of political organisation, consumer demands, and nationalist bias of the labouring masses, and to ocean shipping, railways, and telecommunications, enhancing not only the international mobility of capital, but also of labour. Although not commented on by Emmanuel, the latter in turn emphasised the problems of wage disparities and put the 'international solidarity', worker or not, to the test in which it failed so miserably in the World Wars and notably, as had been pointed out both by Lewis (1954, 1978a) and in Gunnar Myrdal's *An International Economy* (1964 [orig. 1956]), in the political restrictions on Chinese and Indian immigration (instead guided to other tropical low wage areas), encouraged by worker protests in the British Dominions (pioneered in Labour governed 'workers paradises') and the United States, and then generalised. We will not go

over again the obvious intellectual stimulation offered by the growth of development economics in general and the problematic of the falling terms of trade in particular, but only point out the stimuli offered by Myrdal to a re-evaluation of international trade theory and a reversal of its assumptions.

Though Myrdal did not, like Lewis and Emmanuel, relate these phenomena to the terms of trade (although he had other stimulating proposals in that area), and cannot be considered a theorist of unequal exchange, he was just as observant on the implications for international solidarity. While Europeans had moved internationally as free men for many generations, 19<sup>th</sup> century Indian migration functioned for a period, somewhat like the foregoing slave trade, as 'indentured labour' before being allowed to move freely within their designated regions. The First World War marked an abrupt end to the era of relatively free labour mobility, and that "vicious instrument for state control of its subject citizens. The national passport [...] became increasingly a requisite for passing all frontiers", indicating "a totally new regulative and restrictive attitude towards people's movements" (Myrdal 1964 [orig. 1956]: 90). Throughout this new era of restrictions the main impediments had nevertheless been immigration bars, with America taking the lead in "closing the doors to those from the backward countries of Southern and Eastern Europe and elsewhere." The immediate cause of the new legislation, a closure which was of course much felt in Emmanuel's Greece, was "the powerful upsurge of nationalism in the United States as a result of her participation in the First World War." European countries soon followed but here, as in the British Dominions, the emphasis lay on a licensing system for the foreigner's permission to work. "Vested interests on the part of trade unions and professional organizations developed speedily, and these vested interests became more vocal as unemployment rose during the Great Depression" (*ibid.*: 91). This licensing system gradually came very close to prohibiting international movements of labour in Europe, and the same trend had continued after the Second World War and in other parts of the world.

Myrdal estimated, however, that the poor countries would first have to solve their 'population problem' before proposals to the rich countries to open up their boundaries could reasonably be made. This problem, should it be so allowed, was never even mentioned by Emmanuel, although it was the defining characteristic of the neo-Malthusians (cf. Chapter 10 below), but he observed that Myrdal has recourse to the Lewisian idea of a 'surplus labour'. From a wider perspective he concluded that this enclosure of national boundaries is "frankly one of the most reactionary trends of our time and intrinsically damaging to strivings for international integration", instead strengthening a parallel process of national integration. Narrowing the elbow room of the common man and closing the doors precisely at a time when cheaper travel made movement easier and the spread of knowledge opened up new vistas and horizons, it was also "one of the many factors leading to an absurd intensification of national allegiances which is continuously weakening that basis of international solidarity upon which international policy has to be built." Instead the sights were lowered and the horizons restricted of individuals and of nations (Myrdal 1964 [orig. 1956]: 95). "The improved economic status and security of employment of the working classes have given even the labourer vested interests at home as a professional" (*ibid.*: 96). As the network of ever quicker and progressively cheaper transport is rapidly drawing the countries of the world closer together, the rich everywhere and not so rich of the wealthier countries would be able to travel for pleasure. While certain types of specialised workers would have an international labour market, he prophesied, the common people "will be tied to their land of birth as firmly as in feudal times the serf was tied to the estate of his lord. He could go sightseeing or visit the market, but he had to return. This national bondage for the common man is a deeply dismaying trait of the worlds now coming into being. It operates against the feeling of belonging to a world and not merely to a small part of it" (*ibid.*: 97).

International capital movements had closely followed those of labour, apparently without similar political restrictions, but focusing on the wealthier countries and on enclaves in the poorer, where close relations were retained with the metropolitan state. Emmanuel would see a causal link in this connection, but in the context of his specific theory preferred to emphasise the tendency towards international equalisation of profits.

In the years preceding the publication of Emmanuel's theory, Myrdal in particular had underlined the unrealistic assumptions and counterfactual conclusions of the then traditional international economic theory, *i.e.*, the so called Heckscher-Ohlin theory, more recently in new formalisation by Samuelson (1948). Facing half a century of increasing protectionist sentiments and economic nationalism, Eli Heckscher, in the wake of the First World War, had written an article which was to become one of his few contributions to economic theory (as opposed to economic history). In it he demonstrated the benefits of free trade, reinstalling confidence in comparative costs but without having recourse to the problematic labour theory of value of classical economics. Instead he based it on the newer theory in which prices were determined by relative scarcities. In a world where international movements of capital and labour, although they had been higher than ever before, were again becoming restricted, he argued that free international trade could achieve optimality and equalisation of factor remuneration, even without mobile factors.

Thus, under conditions of free trade a country would specialise in that branch which set her most abundant factor at work, increasing its demand and price, while lowering demand and price for the scarce factor. Ultimately an equilibrium was reached, where all factors were fully put to work at equalised factor prices, and corresponding to the optimal specialisation for the whole world and each of its participants. Since it is not countries but individual producers who make the economic decisions, a crucial assumption for this theory is that the relative scarcities of productive factors determine their prices, ensuring that enterprises, to minimise their costs, will choose the most abundant factor. Thus, if the price of a factor diminishes or increases, this is explained by the Heckscher-Ohlin theorem as the result of a corresponding decrease or increase in the number of workers, the amount of land or capital. The mobility of goods replaced the mobility of factors, so that instead of capital one imported capital intensive goods, etc. In this manner, trade would tend to equalise not only prices of goods, but also the price of each factor. This was the crucial point of Heckscher's (1919: 12) original argument, and that it was not fulfilled – indeed, gravely falsified – in the ensuing years, was one of the principal stimulants for the postwar development economists such as Myrdal.

The basic assumptions of Heckscher's and Bertil Ohlin's theorem on international trade were (1) that the distribution of income was proportionate to the relative scarcities of factors (Heckscher 1919: 6), and (2) international immobility-immutability of these factors (principally labour and capital) (*ibid.*: 13). The first assumption set marginalist and neoclassical theories in general apart from the foregoing classical (Ricardian) and Marxist ones, and was a common point of criticism emerging from Sraffa's (1951, 1960) and various Marxist attempts at classical revival (*e.g.*, Emmanuel 1962, 1969a, Dobb 1973). The principal difference between classical and neoclassical theory is often considered to be that according to the latter the remuneration of productive factors (wages, profit, rent, taxes) is determined by prices of goods, and in turn by their relative scarcity and consumer 'utility', whereas according to the former prices of goods are determined by relations or costs of production, input-coefficients, Emmanuel's 'established claims', etc.<sup>51</sup> To the classical economists, and even more to Marx,

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<sup>51</sup> Although Hollander does not admit it – *e.g.*, (1979: 683): "There is no sharp distinction between Ricardo and Walras" –, at least *on this difference* between two main and rivalling frames of reference within political economy, there is no dispute between Jevons (1879: xlvi-lvii), Walras (1954: 44f.) and Dobb (1973). I have followed the interpretation offered by Dobb and others, not only because I find it more plausible, but also because in the present context it will be the more informative.

the interpretation of exchange values began with the socio-economic circumstances which create class relations, the laws governing the distribution of Earthly goods being, in Ricardo's (1951: 5) words, "the principal problem in Political Economy" (cf. Dobb 1940: 16, n. 1). In Dobb's (1973: 32) summary, "for them Political Economy was a theory of distribution *before* it was a theory of exchange-value". As for the second assumption, in his article Heckscher (1919: 13) was not greatly concerned about "the premises' correspondence or non-correspondence to reality", but he believed factor immobility to be "generally true for capital and even more so for labour power, and of course absolutely true for 'land', *i.e.*, natural resources." Oddly, in view of this characterisation, the only alternative to complete immobility of factors he then considered was *complete* mobility – which would obliterate any specificity for international trade – and not the more reasonable case with merely internationally mobile *capital*. Developing a theory based on this contrary assumption was Emmanuel's unique contribution.

In Emmanuel's view, the first assumption ruled out any idea of the distribution of national revenues being influenced by the struggle between antagonist classes and groups, or more generally the relationship of power between them, which, he said, went against all historical experience. Wages did not decrease or increase depending on whether the number of workers per unit of capital decreased or increased, and neither did the rate of profit change according to the amount of capital per inhabitant in a country (Emmanuel 1975a: 19f.). It was one of Emmanuel's standing arguments that at least the price of one factor, that of labour, which was also the most important of all, could not be considered a commodity, and that it was not and never had been negotiated under market conditions.

The second assumption, he (1975a: 20) protested, "not only denies capital any mobility on the international plane, but does not allow at all for the fact that, with the exception of certain geo-climatic factors which are indeed given and immutable, factors of production are themselves produced within each country and consequently cannot be considered as inelastic, however immobile they are on the international plane." It implied that specialisation in chemicals depended on a country-specific abundance of chemists, and ultimately a congenital predisposition for handling test-tubes, not that chemists were formed, or 'produced', because there were so many chemical plants offering attractive employment. However, following Kindleberger, Emmanuel reminded: "instead of making her foreign trade fit the proportions of factors, a country can modify these proportions to make them fit the orientation of her trade."

For Heckscher-Ohlin's two basic assumptions: the determination of wages by the market and the immobility/immutability of the factors of production, Emmanuel's theorem of unequal exchange thus substituted:

- for the first, an extra-economic, institutional determination of wages, qua the effect of the relationship of power between social classes in each country at each epoch;
- for the second, a relative mobility of capital, sufficient to give rise to a tendency for world-wide equalization of the rate of profit, and a relative immobility of labour allowing considerable predetermined disparities in the wage rates of various countries. (Emmanuel 1975a: 36.)

Emmanuel was clearly in line with certain Sraffa-inspired Marxist critics of neoclassical theory, such as Dobb (1973), but applied it directly to international trade theory. He followed Marx and went beyond Lewis or traditional Ricardianism in substituting a socially determined wage for the physiological subsistence wage, and challenged the fundamental assumption of comparative costs of international immobility of capital. In spite of the similarity with the Sraffian rejuvenation of Marxism, his earliest presentations were still in Marx's traditional price-of-production schemas, on which ground the French debates were conducted.

# Chapter 7. Emmanuel's unequal exchange in Marxian, Sraffian and ecological terms

Although, in principle, Emmanuel's theorem of unequal exchange is applicable to any internationally immobile and exogenously determined factor of production (in the presence of one internationally mobile factor of production, *i.e.*, capital, or an equalised rate of profit), he most often chose to put it in terms of the labour factor (wages). Remembering this, what Emmanuel had set out and needed to do in order to demonstrate the phenomenon of unequal exchange, was the following (here conflated from Emmanuel 1973: 70 and 1975a: 38):

- 1) to show that, *if* the wage is an exogenous (institutional, independent) variable, and *if* a tendency exists for the formation of a general international rate of profit, then any autonomous variation in the wage-rate in one branch or in one country will entail a variation in the same direction of the respective price of production and a variation in the opposite direction of the general rate of profit;
- 2) to justify the realism of these two hypothesis.

A variation in the same direction of the price of production means that its equilibrium price will increase *relatively* to other equilibrium prices, thus favouring the terms of trade of that branch, country, or region, and which was of course the phenomenon his model purported to explain. Emmanuel (1973: 70) also remarked that it would be readily observable to any reader that it was not the first, but the second of these tasks that constituted the essentials of his (1969a, 1972a) work. The formal demonstrations below concern exclusively the first of these tasks, to which his book had only consecrated a dozen or so pages, and which he in fact considered so basic as not to need any mathematical proof. The real issue was over the second point, on the choice of independent variable, in his case whether wages really *were* exogenous. Whether it was prices, themselves determined by demand, that determined revenue, or the distribution of revenue that determined prices could not be determined in any model, whether by Marx, Sraffa or anyone else, and had to be resolved outside the model, by empirical and historical considerations (Emmanuel 1973: 71). It is a pity that so much commentary and effort have been spent on formal instead of historical matters, but while agreeing that the historical implications are the much more important, Emmanuel's various demonstrations will nevertheless be reviewed below. In this chapter, we shall start with the most intuitive, then turn to the Marxist formulations, and finally see how it turns out in Sraffian and more ecological terms. Only in our next Chapter 8, do we turn to the problematic from Emmanuel's own specific angle.

The 'intuitive' demonstration read simply as follows:

At any moment, the total of world revenue, that is the sum of world wages and profits, is a given magnitude. It follows that any variation of wages in a particular country, leading to an identical variation in the world total of wages, must entail an opposite variation in the total amount of world profits and, therefore, in the profits of the country [in] question. However, this variation of the profits is spread out among all the countries and it is only a part of it that affects the products of the country [in] question, while the equivalent but opposite variation of wages is passed on in its entirety to these products alone. Consequently, the *relative* prices of these products will vary in the same direction as that of the supposed variation of wages, whereas the general rate of profit will be in the opposite direction. (Emmanuel 1975a: 39.)

Historically first, most debates have centred on the formulation in terms of the Marxian prices of production. The one preferred by Emmanuel, however, was as Sraffian input-output matrices of varying degrees of generality. When turning to these in due course, the reader will have to bear with the level of formalism he can muster. The most general case ought to be the most interesting for those wishing to criticise it, or reach the more comprehensive understanding, and I will treat it as expressible in plain language. For now, we shall keep to the Marxist price-of-production schemas of Emmanuel's original demonstration in both 1962 and 1969, and then exercised on occasion, including a version incorporating its reproduction.

## Unequal exchange in Marxian terms

The presentation in 1969 seems to have caused some confusion regarding precisely where the exact definition of unequal exchange was to be found, and also with what equal exchange the unequal was to be compared. At the time of Emmanuel's first presentation in 1962, Sraffa (1960) had recently been published, but seems not to have made much impression in France, where traditional Marxism remained the only school developing the classical tradition of price determination from the cost-of-production side. Marx's own exposition of prices of production (in *Capital*, Vol. 3, Marx 1959: Ch. 9) as a truer representation of price formation under capitalism than the value schemes (in *Capital*, Vol. 1, Marx 1867), implied that capital intensive branches (*i.e.*, with 'high organic composition') would gain 'value' compared with labour intensive ones, as the surplus value of each branch was 'transformed' to an equal rate of profit. In the same manner, countries with an above average capital intensity would gain 'value' from lower than average ones, assuming an internationally equalised rate of profit.

Now, *distinguishing* his definition from this conception, Emmanuel first gave a schema with differing capital intensity ( $K_A/K_B \neq 1$ ), but equal rate of surplus (*i.e.*,  $m/(c+v)$ ), *not* considered unequal in his sense, but against which to compare it (Table 7).

Table 7. *Price of production schema with non-equivalent exchange due to different organic composition.*

Region	$K$	$c$	$v$	$m$	$V$	$R$	$r$	$p$	$P$
	Total capital invested	Constant capital consumed	Variable capital	Surplus value	Value $c + v + m$	Cost of production $c + v$	Rate of profit $\Sigma m / \Sigma K$	Profit $rK$	Price of production $R + p$
A	240	50	60	60	170	110		80	190
B	120	50	60	60	170	110	33 1/3%	40	150
	360	100	120	120	340	220		120	340

Source: Emmanuel 1972a: 62.

According to the more traditional Marxist conception, non-equivalent exchange would be expressed as the difference between exchange at values and at prices of production,  $170A/170B < 190A/150B$ . The schema encompassing unequal exchange in Emmanuel's book is expressed in terms of unequal rates of surplus (Table 8).

Table 8. *Price of production schema with unequal exchange due to wage differential.*

Region	$K$	$c$	$v$	$m$	$V$	$R$	$r$	$p$	$P$
	Total capital invested	Constant capital consumed	Variable capital	Surplus value	Value $c + v + m$	Cost of production $c + v$	Rate of profit $\Sigma m / \Sigma K$	Profit $rK$	Price of production $R + p$
A	240	50	100	20	170	150		80	230
B	120	50	20	100	170	70	33 1/3%	40	110
	360	100	120	120	340	220		120	340

Source: Emmanuel 1972a: 63.

Thus, in the former case 190A corresponds to 150B, whereas in the latter 230A corresponds to 110B, giving the precise expression of unequal exchange as  $190/150 < 230/110$ . The former was called unequal exchange in the ‘broad’, and the latter in the ‘narrow’ sense in Bettelheim’s 1962 commentary, and in his book Emmanuel adopts this terminology for the sake of argument, preferring to refer to his own usage as the ‘strict’ sense. Delarue (1973: 150, n. 1), who was apparently unaware of the 1962 presentation, accuses Emmanuel of making this differentiation, which in Delarue’s opinion forces him to make an invalid comparison between situations with and without trade. So far as it concerns the book presentation his observation is partially true.

Since the rates of profit,  $r$ , in these two cases were identical, his numerical definition did not correspond to his above proposal, as his 1975 and, in fact, already his 1962 presentation did (Emmanuel 1975a: 39; cf. schemas 2 & 3 in Emmanuel 1962: 20, 23). Thus, in his 1969 presentation it looked as if the rise in wages in region A had somehow *directly* lowered the wages in region B instead of the general rate of profit, and counter to his argument for wages as independent variables. Thus, to Emmanuel’s (1973: 80) great surprise, *e.g.*, Somaini (1971: 45) had interpreted him as saying that a wage-rise somehow *caused* a lowering of wages in the other countries. To be in accordance with his 1962 presentation, as well as his later ones, the above schema (Table 8) should instead have been compared with something like the schema in Table 9.

*Table 9. Price of production schema with equally low original wages and equal exchange.*

Region	$K$	$c$	$v$	$m$	$V$	$R$	$r$	$p$	$P$
	Total capital invested	Constant capital consumed	Variable capital	Surplus value	Value $c + v + m$	Cost of production $c + v$	Rate of profit $\Sigma m / \Sigma K$	Profit $rK$	Price of production $R + p$
A	240	50	20	100	170	70		$133\frac{1}{3}$	$203\frac{1}{3}$
B	120	50	20	100	170	70	55.9%	$66\frac{2}{3}$	$136\frac{2}{3}$
	360	100	120	120	340	220		120	340

An autonomous fivefold increase in the wages of region A from this starting point, with the equal (assuming equal labour intensity) exchange  $203\frac{1}{3}A = 136\frac{2}{3}B$  and the rate of profit 55.9%, would result in the above Table 8 schema, where  $230A = 110B$  and the rate of profit  $33\frac{1}{3}\%$ . Unequal exchange would thus be defined instead as  $203\frac{1}{3}/136\frac{2}{3} < 230/110$ .

The book definition of unequal exchange, repeated from his 1962 exposition, is in terms of different equilibrium prices because of ‘institutionally’ different rates of surplus value:

*Regardless of any alteration in prices resulting from imperfect competition on the commodity market, unequal exchange is the proportion between equilibrium prices that is established through the equalization of profit between regions in which the rate of surplus value is “institutionally” different – the term “institutionally” meaning that these rates are, for whatever reason, safeguarded from competitive equalization on the factors market and are independent of relative prices. (Emmanuel 1972a: 61, 64; cf. 1962: 22.)*

It is, in fact, not the event of ‘equalisation’ of profits between regions that gives rise to unequal exchange, as one might be misled to believe from this formulation (*e.g.*, Samuelson 1976: 101f., Evans 1976 [but cf. 1980, 1981a], Clunies-Ross 1976: 58ff., Shaikh 1979: 298f., and even after decades of debate Darmangeat 1991: 94, Howard & King 1992: 190f.), but precisely the institutionally determined wage levels (‘rates of surplus value’) in the presence of an internationally equalised rate of profit.

The presentation given here is consistent with the three general conclusions of Emmanuel’s (1962: 23f.) initial presentation, which from this point of view is superior to that in his book: (1) Values are unchanged, both individually and taken together, and the total is also equal to

the total of prices of production (The problems involved in assuming *total* value to be equal before and after equalisation of wages was one of the reasons to revert to the Sraffian system); (2) The augmentation or diminution of wages influence inversely, but non-proportionally, the general rate of profit; and most importantly (3) any increase in wages, in one or other of the countries, has detrimental effects on the terms of trade of the other country, just as the effects of any lowering of wages will be beneficial.

The presentation in terms of labour values was not only a source of conflict with Marxists, but also a source of confusion among neoclassicals (Samuelson 1973, 1975, 1976, 1978, M. A. M. Smith 1979, Spraos 1983; cf. Emmanuel 1978b-c, 1985: 199-216, Evans 1980: 16ff., 1981a: 121, Raffer 1987: 46ff.). More particularly, it seems as if Emmanuel's (1969a) presentation, and subsequent reception, was led astray by the necessity to relate to his tutor Bettelheim's early commentary on broad and narrow senses. Perhaps it could also be seen as an intellectual short-cut, because of his ambition to illustrate high-wage worker 'exploitation' of low-wage workers. The dynamic of Emmanuel's argument assumed that continuous exogenously enforced wage increases over the preceding century or so had created crucial incentives to invest and thereby helped 'save' the capitalist system from its inherent blocking. In a closed system such an increase would rapidly have reduced the rate of profit to nothing, and it was made possible only by letting the rest of the world (the periphery) pay for these (centre) wage increases through the terms of trade, *i.e.*, through unequal exchange. To show this, Emmanuel again reverted to the Marxian schemas in a presentation before the London School of Economics (LSE) in March 1979 – again because they were more easily deciphered than Sraffian systems, but thereby leaving us without a presentation of this 'dynamic unequal exchange' in the generally preferred Sraffian terms. It could perhaps also be said to reintroduce some confusion over whether or not the question was over the opening of trade.

Beginning with the closed system, without external gains from trade, Emmanuel constructed a schema (Table 10) for extended intensive reproduction, similar to that of Bauer which Grossmann had used to demonstrate the collapse of capitalism (Chapter 2). Here, however, wages increase, as well as the technical composition,  $c/(v + m)$ , from period to period (intensive reproduction), in order to mirror technological progress in the real world, while the organic composition,  $c/(c + v)$ , is the same in both departments and every period (0.8).

Table 10. *Wage increase in closed system (no external gains from trade).  
Extended intensive reproduction.*

Period	Department	<i>c</i> Constant capital	<i>v</i> Variable capital	<i>m</i> Surplus value	<i>V</i> Value $c + v + m$	<i>r</i> Rate of profit $\frac{\Sigma m}{\Sigma(c+v)}$
1 <sup>st</sup>	I	3,840	+ 960	+ 960	= 5,760	20.00 %
	II	960	+ 240	+ 240	= 1,440	
		4,800	+ 1,200	+ 1,200	= 7,200	
2 <sup>nd</sup>	I	4,608	+ 1,152	+ 768	= 6,528	13.33 %
	II	1,152	+ 288	+ 192	= 1,632	
		5,760	+ 1,440	+ 960	= 8,160	
3 <sup>rd</sup>	I	5,222	+ 1,306	+ 614	= 7,142	9.41 %
	II	1,306	+ 326	+ 154	= 1,786	
		6,528	+ 1,632	+ 768	= 8,928	
4 <sup>th</sup>	I	5,713	+ 1,429	+ 492	= 7,634	6.88 %
	II	1,429	+ 357	+ 122	= 1,908	
		7,142	+ 1,786	+ 614	= 9,542	

Source: Emmanuel 1979a: 192.

Both products grow at the same rate and the demand for means of production in department II increases in the same rate as production in department I (1306/1152:6528/5760, and 1429/1306:7142/6528), so that nothing impedes realisation of the products. The only problem is the drastic fall in the rate of profit, approaching zero at tremendous speed. It was this that could be resolved by unequal exchange.

Opening the system to external gains from trade, through unequal exchange with the periphery, and letting these compensate for the wage increase in the centre, the opposition between internal outlets and an acceptable rate of profit could be resolved (Table 11).

Table 11. *Centre wage increase with external gains from trade (equalised profit rate).  
Extended intensive reproduction.*

Period	Region	Department	<i>c</i> Constant capital	<i>v</i> Variable capital	<i>m</i> Surplus value	<i>V</i> Value <i>c + v + m</i>	<i>r</i> Rate of profit $\frac{\Sigma m}{\Sigma(c+v)}$	<i>P</i> Price of production $c + v + p$
1 <sup>st</sup>	Centre	I	3,840 +	960 +	960 =	5,760	20.00%	
		II	960 +	240 +	240 =	1,440		
		<u>4,800 +</u>	<u>1,200 +</u>	<u>1,200 =</u>	<u>7,200</u>			
2 <sup>nd</sup>	Centre	I	4,608 +	1,152 +	768 =	6,528	19.75%	6,898
		II	1,152 +	288 +	192 =	1,632		
		<u>5,760 +</u>	<u>1,440 +</u>	<u>960 =</u>	<u>8,160</u>	10,538		
	Periphery	<u>7,800 +</u>	<u>1,000 +</u>	<u>2,200 =</u>	<u>11,000</u>			<u>19,160</u>
3 <sup>rd</sup>	Centre	I	5,222 +	1,306 +	614 =	7,142	18.79%	7,754
		II	1,306 +	326 +	154 =	1,786		
		<u>6,528 +</u>	<u>1,632 +</u>	<u>768 =</u>	<u>8,928</u>	10,336		
	Periphery	<u>7,900 +</u>	<u>800 +</u>	<u>2,400 =</u>	<u>11,100</u>			<u>20,028</u>
4 <sup>th</sup>	Centre	I	5,713 +	1,429 +	492 =	7,634	18.33%	8,452
		II	1,429 +	357 +	122 =	1,908		
		<u>7,142 +</u>	<u>1,786 +</u>	<u>614 =</u>	<u>9,542</u>	10,176		
	Periphery	<u>8,000 +</u>	<u>600 +</u>	<u>2,600 =</u>	<u>11,200</u>			<u>20,742</u>

Source: Emmanuel 1979a: 193.

The fall in the rate of profit has been considerably softened, due to the mass of surplus value extracted in the periphery, and the terms of trade have improved along with wage increases for the centre. The contrast between the situation with non-equalised rate of profit with that of equalised was not what gave rise to unequal exchange, but it apparently still had a role to play for Emmanuel, at least in illuminating how unequal exchange could have helped saving capitalism, if not from itself – an honour bestowed on the continuous exogenous wage-increase itself – then at least from that same increase in centre wages. Unequal exchange was thus offered as the solution to the problem of the fall in the rate of profit, in a way similar to that suggested by Grossmann in the 1920s, although, by contrast, in Emmanuel's case the rise in wages was the source both of unequal exchange and the fall in the rate of profit.

The French debate on unequal exchange was conducted almost exclusively in terms of the correct interpretation of Marxism and the labour theory of value, and of the political implications concerning international worker solidarity. Participants almost exclusively had deep political commitments, and were often active in party politics. There was not so much argument and evolving debate as a statement and restatement of various positions. The

consensus resolution probably consisted in the view that Emmanuel was a cunning, if un-Marxist and bourgeois, critic of orthodox trade theories, who misunderstood the profounder layers of the labour theory of value, neglected productivity differences, had erroneously tried to hide class struggle by emphasising national struggles, mistook the developed-country working class as the cause and beneficiary of an unequal exchange, both of which were actually attributable to monopolies and ‘monopoly capitalism’, and was thereby mistaken on the question of international workers solidarity. The new synthesis was basically in line with the old dependency approach, and was perhaps best stated in the work of Samir Amin (1970, 1973, 1974, 1976, 1977). With the exception of some brief notes by Henri Denis (1970a-b), there was commonly no mention of, and certainly no argumentation on the terms of trade. Except for the connection observed by Christian Palloix (1970b, 1972), Sraffa was more or less unknown, but a dispute evolved between Emmanuel and his opponents which was similar to that between Sraffian and orthodox Marxists later in the 1970s. Furthermore, most or all of the charges reappearing throughout the debates, economic as well as political, and as it turned out not only in France, had been made in one form or another by Bettelheim.

Having pointed out the importance of the subject and the usefulness of Emmanuel’s critique of Ricardo’s theory comparative advantage, Bettelheim still felt the necessity to critically examine certain of the theoretical foundations that he found problematic. This, he felt, was “unavoidable because some of the theses upheld in the book strike me as being [...] capable of leading to incorrect conclusions that could be the source of political and economic practice that would prove disappointing and eventually dangerous” (Bettelheim 1969a: 274). The examination thus began by questioning Emmanuel’s use and understanding of the labour theory of value: Emmanuel had failed to recognise that ‘prices of production’ (as presented in Marx’s *Capital*, Vol. III) were intimately dependent on ‘values’ (as presented in Marx’s *Capital*, Vol. I). He assumed that ‘factors of production’ could be interpreted as ‘established claims’ to a primary share in society’s economic output, in the sense of the monetary payments (wages, profits, etc.) of those factors (labour, capital, etc.), which added up to the equilibrium prices of goods. This was not the Marxist concept of a ‘factor of production’, he explained, because it meant *isolating* the monetary aspects from the domain of production relations (class struggle, ownership of means of production) and productive forces (the objects and instruments of labour), with which Marx had *also* been concerned, and placed Emmanuel’s analysis on the level of mere appearances. He had reduced Marx’s formula’s to play the part of mere models of ‘dependent’ and ‘independent variables’, fostering the illusion that to abandon the inequality of exchange it was enough to change wage levels, *i.e.*, the ‘independent’ variables. One consequence of this, which particularly vexed Bettelheim, was that he had discarded the notion of unequal exchange in the ‘broad sense’, suggested to him in 1962, *i.e.*, of unequal exchange as expressing differences in ‘organic compositions’, or as expressing differences of the development of the productive forces: “Because Emmanuel’s problematic tends to ‘reduce’ the inequality or unevenness of the development of the productive forces to inequality of wage levels, without setting the latter in a law-governed relation with the former, he is also prevented from appreciating the importance for ‘unequal exchange’ itself of the lower organic composition of capital in the economically weakest countries, which is why he rejects the idea of ‘unequal exchange’ in the broad sense” (Bettelheim 1969a: 285; cf. 275-85).

Bettelheim also observed that although wages were treated as the ‘independent variable’ of the system, because they cannot be determined solely by capitalist production relations, this did not – even to Emmanuel, although this is not clear from Bettelheim’s account – mean that they were wholly undetermined. The ‘historical element’ included economic, political, ideological, etc., factors neither of which could be singled out as the determinant, but which were “nevertheless entirely integrated in the complex structure of a concrete social formation

and are thus in no way “independent” of this structure.” The problem, over which Samir Amin (*e.g.*, 1973: 15, 25, 29ff., 44f., 1976: 151, 1977: 185f., 192, 194f., 205f.) was to make great fuss as his own particular revelation, was that in capitalism one could not separate an element such as wages from the rest as ultimately causal:

In Emmanuel’s problematic, however, changes in wage levels appear as automatically determining changes in the whole system of prices of production and in the positions of different countries in relation to each other. Hence the apparent possibility of drawing this “practical conclusion”: if the countries with underdeveloped productive forces were to “modify” upward the level of wages they pay to their workers, these countries could only become “richer” and so escape from unequal exchange and “underdevelopment.” (Bettelheim 1969a: 288.)

For Bettelheim, low wages would instead have to be “related” to the low level of development of the productive forces and to such production relations as hindered the growth of these forces. Though he carefully avoided saying that wages ‘depend’ on the development of the productive forces, this is in essence what he means, or that developments in the sphere of production was prior to changes in the sphere of circulation and monetary rewards. That an increase in wage-levels could actually drag development with it was simply too much to muster. This was, at any rate, the conclusion Emmanuel would ultimately come to (not only with respect to Bettelheim), and for whom an established rise in wages functioned *precisely* as a siphon, both geographically and chronologically. Answering how and why this was so in a monetised capitalist society, and thereby as reflected in the theory of value, was the point of the argument in his *Profit et les crises* (1974a, 1984).

A central pillar of the reaction against Emmanuel’s theory was the defence of international worker solidarity. Even disregarding the War in Algeria, the stage on which it appeared was already ripe with conflicting and heavily politicised opinions. Sino-Soviet tensions had hardened, manifestly putting in question socialist internationalism. Chinese convictions that the Soviet model had gone astray provoked Mao’s attempt to renew an anti-urban, anti-elitist, anti-educational revolutionary spirit. With the Cultural Revolution in full swing, the Prague Spring and the Soviet invasion of Czechoslovakia made Mao think more of restoring order than restoring seal, and in March 1969 Chinese and Soviet troops clashed in the disputed Ussuri river area. The confusion in the traditionally Soviet-friendly PCF was enforced by wild strikes and the revolting students in Paris and elsewhere in the world. While students were full of idealist internationalism, U.S. trade unions and international policy at the same time demonstrated an undisputed nationalism both versus Cuba and Vietnam, not to mention the Cold War itself, which was hardly an expression of grass-root international solidarity. Emmanuel (1972a: 179) reminded of some of these experiences: “It is in the name of the national interest and with reference to this interest that the communist parties defend the line they choose to adopt in foreign policy”, he observed; “yesterday and today, as between the United States and the Soviet U.S.S.R., today and tomorrow, as between the U.S.S.R. and China, the latter choice of position confirming already in deeds, if not so far in words, that the antagonism between rich and poor nations is likely to prevail over that between classes.” If international conflict had entered between socialist states, in the richest countries international conflict had even taken precedence over class struggle. “The workers in the most advanced capitalist countries now hold frontline positions in the defense of the national interest”, Emmanuel (*ibid.*: 181) argued, reminding of President Kennedy’s common reference to American trade-union leaders as “pressure from my Right”, and of President Johnson’s facility in stopping any strike by American dockers by reference to the harmful effects it would have on the Vietnam war, while failing with some bourgeois elements, or more particularly their sons and daughters in the universities: “In former times dockers went on strike precisely in order to prevent imperialist interventions. Today they stop strikes they have

begun for other reasons in order to avoid embarrassing these interventions in any way. They even go on strike rather than unload ships trading with Cuba, against the advise of their own government” (*loc. cit.*).

The traditional approach in explaining away this and other such embarrassing facts relied on the seduction of monopolists and corruption of politicians. However, political parties were by nature opportunist, Emmanuel (*ibid.*: 179) reminded, since their business was the conquest of the masses and the seizure of power at a given historical moment: “To explain a historical fact that has endured for nearly a century by the corruption of the leaders and the deception of the masses is, to say the least, hardly in conformity with the method of historical materialism.” Parties could neither afford to renounce on principle any interest in the men of the present moment, nor “ignore structural objective conditions persisting for generations, on the excuse of service to a transcendental truth” (*ibid.*: 180). In the event of such changes, a party could still go on, through inertia and “living outside the realities of its epoch”, but eventually must either transform itself or disappear:

Due to this time lag between base and superstructure, however, when the objective antagonisms are intensified the masses are more revolutionary than their parties, but when the antagonisms soften the parties remain for a long time more radical than the masses. [...] It is not the conservatism of the leaders that has held back the revolutionary élan of the masses, as has been believed in the Marxist-Leninist camp; it is the slow but steady growth in awareness by the masses that they belong to privileged exploiting nations that has obliged the leaders of their parties to revise their ideologies so as not to lose their clientele. (*Loc. cit.*)

If Emmanuel’s style was sometimes provocative, this was more true of his conclusions, challenging fundamental beliefs in international worker solidarity. Going beyond, *e.g.*, Sartre in this direction, the argument was both novel and gruesomely logical – much more so than the still conventional idea ascribing world inequality and environmental disruption to malicious multinationals and politicians.

Unsurprisingly, if only in view of official party policy, French reactions were strong from the start. The debate between Emmanuel and Bettelheim was soon brought to the press, with an exchange of views in *Le Monde*, which reverberated to an English-reading audience in the *Monthly Review* (Emmanuel 1969b; cf. ‘P.F.’ 1969; quotations will be from the uncut translations Emmanuel 1970b, Bettelheim 1970). Naturally, the editors rather consistently chose to focus on the question of international worker solidarity rather than any dispute over economic theory behind it. As soon as the debate went public, it centred on what Lenin (1964: 105) had once, after the collapse of the Second International in 1916, referred to as “the fundamental question of modern socialism”. The fire that stirred about the debate – when it stirred – was due to the conclusion on which Emmanuel had ended already in 1962 and now advertised in the titles of his articles, that the working classes of the rich countries of the world participated in the exploitation of the poor, and that, accordingly, their well-meaning intellectual spokesmen suffered from ‘delusions of internationalism’. “The most bitter fruits of my work on *L’échange inégal*”, Emmanuel (1970b: 13) began, “were the negative conclusions arrived at regarding the international solidarity of the working people.” If his quince of knowledge had first made itself evident in the phenomenal world, the bitterness was no less for having a reasonable explanation. It was not “merely a matter of acknowledging that manifestations of this solidarity are becoming feebler and feebler throughout the world – this is a fact of life which it would be hard for anyone to deny.” Instead, he (*ibid.*: 13f.) continued, the issue was “the question whether the objective basis itself for this solidarity has gone or whether it is only a passing wave of opportunism that is preventing the peoples of the rich countries from becoming conscious of their long-term interests.” His critics argued on the latter presumption, but since ‘awareness’, whether ‘opportunist’ or not, also formed part of

reality, he (*ibid.*: 14f.) suggested, “if the working people of today decline to take account of the long run, this is perhaps because this long run is longer than ordinary people can look ahead. And that constitutes an *objective* obstacle to internationalism. In the long run we are all dead, as someone [*i.e.*, Keynes] has already observed.” The increased living standards not only of white-collar but also of blue-collar workers, organised by trade unions, had expanded the former ‘labour aristocracy’ of certain well-off countries into wholesale ‘aristocratic nations’ of the world.

Bettelheim’s article replied already in its title (presumably the choice of the editors) by reaffirming that ‘the workers of the rich and poor countries have common interests of solidarity’, but chose not to comment on the lack of any observable expressions of international worker solidarity. Instead, he now observed that the basis for Emmanuel’s claim was the role of wages as ‘independent variable’ in determining the level and structure of prices. This prominent role for wages was perfectly arbitrary, he countered, in a way that risked appealing to ‘common sense’ because of the immediate evidence for it, and which ‘science’ therefore had to question. A rise in wages would lead to a fall in profits, he explained, and so prices were not determined by wages. Instead, both theory and concrete analysis (apparently as opposed to ‘immediate evidence’) showed that international wage differentials were the result of unequal development of the intensity and productivity of labour, which tended to rise with capitalist development. Indeed, this differential was so great – a ratio even as high as 1 to 40 – that it exceeded the wage differential between the most and least developed countries – a ratio of some 1 to 20 or 30. This had the ‘paradoxical’ consequence that the ‘rate of exploitation’ was much higher in developed countries than in underdeveloped ones, even when the level of consumption was very much lower in the latter. Bettelheim (1970: 22) thus concluded that when workers in developed countries raised their wages, they helped workers of poor countries, despite their ‘miserable wages’, by increasing the competitiveness of their industries, thereby stimulating a higher rate of development:

Ultimately it is the unequal development of the productive forces under conditions of world domination by capitalist production relations that is the basic fact explaining the international economic inequality of wages. This is what manifests itself in the form of “unequal exchange.” This is the basis of imperialist exploitation (which in turn worsens still further the inequality of development). This is what, finally and above all, manifests itself in the form of a “blocking” of the productive forces of the less developed capitalist countries.

This ‘blocking’ of the economically less advanced countries, Bettelheim (*loc. cit.*) continues, “is nothing but the expanded reproduction of existing economic inequalities.” The enrichment of the more highly developed countries was founded less on the ‘exploitation’ of the underdeveloped countries, which technically speaking would have required that they become developed, but rather on keeping them undeveloped. In itself this was perhaps not so different from what Emmanuel had said, partly inspired, no doubt, by his tutor Bettelheim’s comments in 1962. Emmanuel asked who were the principal beneficiaries of the low prices ensured by low costs of production, and came up with the principal consumers, *i.e.*, the ‘proletariat’ of the rich countries. For Bettelheim (*ibid.*: 23f.) it meant, by contrast, a reconfirmation of standard political conclusions. He instead emphasised that any contradictory interests between rich and poor workers were subordinated to the basic conflict within capitalism over the control of the means of production. There was indeed an objective basis for international worker solidarity, he reiterated, and felt that a “reminder” of this was “particularly necessary today”, at the time of the open war in Vietnam and the Middle East and civil and guerrilla warfare in Asia and Latin America, when peoples were at the mercy of national and international crises, produced, he maintained, by the capitalist mode of production itself.

Of course, Emmanuel agreed as to the desirability both of international solidarity and of a socialist mode of production, and seems not to have needed such a reminder. The problem for Bettelheim, then, was to remind *workers* of their ‘objective’ interest in international solidarity, which they ‘subjectively’ tended to forget. The problem with Emmanuel’s theory was that, in his and any historical materialist’s view where history is determined by ‘objective’ economic interests, it could not serve as such a reminder. Emmanuel, himself a believer in historical materialism, had nothing to offer by way of a political program for communist parties in rich countries (cf. his ‘Preface’ in Communist Working Group 1984) – his political point was that workers tended rather to be counter-revolutionary. Observing similarities with Rosa Luxemburg and Henryk Grossmann, Bettelheim (1969d: 95; cf. Emmanuel 1972a: 309) pointed out that a theory like Emmanuel’s, where the overturning of capitalism implied the revocation of benefits from imperialism, would serve to ‘pacify’ the workers of the rich countries. That the principal problem with Emmanuel’s theory was of a ‘political’ kind was emphasised by the intervention of another Marxist economist, Henri Denis, and soon reiterated throughout the debates. The problem, then, became one of reintegrating the concept of unequal exchange with the ‘correct’ political conclusions.

Looking at the French debate, one easily gets the impression that the concerns were primarily with Emmanuel’s faulty political conclusions, and that criticism of the economic means of reaching them acted rather as a pretext for arriving at the politically correct ones. It should be remembered, however, that French Marxist economics largely defined itself in terms of its monopoly on the critique of neoclassical theory. The polarised institutional setting, where editors and academics belonged to either camp, benefited the more orthodox thinkers and put strains on contributors to define themselves in terms consistent with its language. Those who did not tend to be placed in the opposite camp, thereby risking to fall between chairs.

There are, however, serious objections to Marxian schemas, concerning the ‘transformation’ from value to ‘prices of production’, and referred to by Emmanuel as ‘Bortkiewicz’s objection’. Bortkiewicz’s problem had been rediscovered to the English-speaking and generally Marxist world by Sweezy (1942). Howard & King (1989, 1992) probably give the best overview of the transformations of this problem over the past century and a half, and the interested reader should turn to them for greater elaboration. Emmanuel (1972a: 99, n. 33) initially tried to avoid the problems of the Marxian prices of production formula by treating the values of ‘inputs’ of products of past labour “as having *already* been transformed into prices of production”, *i.e.*, his figures were said to correspond not to values but to international prices. This was expressed already in the first paragraphs in his definition of a ‘factor of production’ as “every established claim [Fr. *droit*] to a primary share in society’s economic product” (1972a: 1),<sup>52</sup> including wages, profits, rents, and indirect taxes, and which, in order to avoid any question-begging should, really be talked of as “factors of price, provided, of course, we accept that it is the quantities and rewards for these factors that determine prices, and not the other way round” (*ibid.*: 2).

In the ensuing debates, Emmanuel (*ibid.*: 390f.) was much more outspoken on the limitations of Marx’s formulas, thinking a reading on the line of Bettelheim, or any other “modern disciple of Louis Althusser”, would have been “highly embarrassing” to Marx if his Vol. 3 (1959) of *Capital* had been a work as finished as Vol. 1 (1867). Whether Marx believed in an ‘absolute value’ or not, he was, like Ricardo, unable to find one, and his

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<sup>52</sup> He (*loc. cit.*) continues: “These claims, which have been called primary incomes, are indeed essentially different from secondary incomes in that they are directly connected with the realization of the product, which is effected through the exchange of different commodities, so that (whatever may be the determinant and whatever the determined) there is a precise correspondence between the relative size of these incomes and the rate of exchange, or exchange value, of the commodities concerned.”

‘transformation’ formulas were unsatisfactory, Emmanuel went on, because as Bortkiewicz had showed – and he “has never been refuted on this point” – transformation “must take place either completely or not at all”. The reasons for still holding on to the Marxian schemas of prices of production was basically because of their comprehensibility (Emmanuel 1973: 71), but also indicates something of the intellectual climate of French Marxism at the time (1972a: 391f): “I chose in Chapters 1 and 2 of my book to avoid dealing with this question, in order not to overload my text and also in order to keep to the structure of Marx’s formulas [...]. I thought it best to do this so as not to call in question the sanctified concept of ‘transformation,’ and because the practical conclusion of my demonstration, in regard to unequal exchange, was in any case not affected. In view of the reactions provoked by my presentation of the matter, and the theoretical misunderstandings to which it has given rise, I am now convinced that I made a mistake.” This was written even before the non-Marxist misunderstandings began to set in.

Bettelheim and other Marxists charged that by utilising prices of production, Emmanuel remained within the ‘sphere of circulation’ – which, it should be remembered, is something very contemptible in Marxist language, similar to the ‘fetishism of commodities’ in Marx –, chastising him as a ‘bourgeois’ economist, and therefore as not penetrating into the ‘sphere of production’, where the more essential ‘values’ reigned supreme. This was not evidently a position from which discussion could progress, and neither does that appear to have been Bettelheim’s intention, for Emmanuel was even reproached for having stated that he was not “particularly concerned about orthodoxy and aimed at addressing myself to economists of all tendencies in a common language” (Emmanuel 1972a: 323; cf. Bettelheim 1969b: 349). For his own part, Emmanuel (1962: 12, trans. J.B.) declared that the price phenomena observable in the falling terms of trade for underdeveloped countries, illustrated a general rule: “Now, as with all economic phenomena, unequal exchange reflects relations among people, by no means relations between things – in the present case the relations of underdeveloped man with developed man.” Similarly, he (1972a: 401) rejected Bettelheim’s assertion *cum* accusation that his theory is confined to the sphere of circulation by instead referring it to the social and historical sphere of the class struggle:

The reality is that neither profit nor wages are engendered by the process of circulation, but by that of production, and that, on the other hand, these two magnitudes are inversely proportional to each other, which fact gives rise to the inevitable antagonism between the classes, since the share taken by one can increase only at the expense of the share taken by the other. It is this and this alone that enables us to go from economic laws and categories to historical ones. This can be shown and illustrated, however, without resorting to the transformation quibble.<sup>53</sup>

Entering into that debate, we risk sliding down a slippery slope from which there is no elevation in either time or space. Having considered many labour-value and transfer versions of ‘unequal’ or non-equivalent exchange, and the wealth of confusion reigning in this area,<sup>54</sup>

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<sup>53</sup> The best non-technical summary of the whole issue has surely been given by Samuelson (1971: 400): “As the present survey shows, better descriptive words than “the transformation problem” would be provided by “the problem of comparing and contrasting the mutually-exclusive alternatives of ‘values’ and ‘prices’.” For when you cut through the maze of algebra and come to understand what is going on, you discover that the “transformation algorithm” is precisely of the following form: “Contemplate two alternative and discordant systems. Write down one. Now transform by taking an eraser and rubbing it out. Then fill in the other one. *Voilà!* You have completed your transformation algorithm.” By this technique one can “transform” from phlogiston to entropy; from Ptolemy to Copernicus; from Newton to Einstein; from Genesis to Darwin – and, from entropy to phlogiston ....”

<sup>54</sup> Cf., e.g., Amin 1970, 1974, 1976, 1977, 1990: 105, Amin & Saigal 1973, and the criticism in Andersson 1976: 93f., Brewer 1978, 1990, Disney 1976, Emmanuel 1984: 374, n. 75, Evans 1984: 215f., Mainwaring 1980: 29, 1991: 184, Smith 1980; for contributions in French see also Bush 1973, Chatelain 1973, Darmangeat 1991,

it is easy to agree with Koont (1987: 10): “It would be desirable to extricate the concept of unequal exchange from the morass it has sunk into on the terrain of value transfers.” Thus, we pass directly on to the presentation in terms of Sraffian industrial equations.

## Unequal exchange in Sraffian terms

Emmanuel’s first published demonstration of his theory in terms of a system of equations of the Sraffa type appears to have been in his reply to Christian Palloix (1970b). Responding to Somaini, Emmanuel admitted that at the time of writing his thesis and book he had not gone deeper into the question of transformation, as with Sweezy (1942) having only seen a quantitative gap in Marx’s error. It was thus “in responding to those who reproached me of not having respected the logical subordination of prices to values that I subsequently studied the question more closely” (Emmanuel 1973: 68, trans. J.B.). Above we reviewed both the ‘intuitive’ and Marxian demonstrations of his theorem. Turning to the formulations in terms of Sraffian input-output equations below, I will confine myself to a numerical demonstration, not that for a two equations system (Emmanuel 1973: 72ff., 1975a: 40f.), and the considerably more abstract general demonstration for an  $n$  equations system (Emmanuel 1973: 74ff., 1975 41ff.), with which Emmanuel himself was provided by Antoine Delarue. However, I will follow Emmanuel’s example and give the point of it ‘in plain language’.

Let us first remind of that the phenomenon of unequal exchange that Emmanuel (1973: 70, 1975a: 38) had set out to demonstrate, was “that, *if* the wage is an exogenous (institutional, independent) variable, and *if* a tendency exists for the formation of a general international rate of profit, then any autonomous variation in the wage-rate in one branch or in one country will entail a variation in the same direction of the respective price of production and a variation in the opposite direction of the general rate of profit”. Thus, a wage increase would result in improved terms of trade.

Let us start with the numerical example. Take two countries producing the goods A and B, which are at one and the same time consumption goods and means of production and thereby included as invested capital in both countries. Country A disposes a stock of 70A and 35B, and of 200 hours of labour force, with which it produces 32A, spending 6A and 1B on intermediate consumption and depreciation. Country B disposes 20A, 45B, and 300 hours, producing 21B, by spending 16A. If the wage rate is  $1/40B$  per hour and B is taken as the money good (*numéraire*), if  $p_a$  is the price of a unit of A, and  $r$  the rate of profit we get the situation in Table 12.<sup>55</sup>

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Dhoquois 1970, Florian 1973, Granou 1970, Lahire 1970, Palloix 1969b, 1970b, 1972 (cf. Emmanuel 1970d) Suret-Canale 1970, Van de Klundert 1972; for exemplars of Anglo-Saxon Marxism see Bernal 1980: 167, de Janvry & Kramer 1979, Devine 1990, Fine & Harris 1979: 166; Gibson 1977, 1980, Harris 1991: 179, Howard & King 1992: 190ff., Kidron 1974, Pilling 1973: 178, Robinson 1973, Shaikh 1979: 298f. 1979-80: 53, Roemer 1983 [cf. Schweickart 1991, Baiman 2001], Webber & Foot 1984 [cf. Foot & Webber 1983]; and elsewhere in the Western hemisphere, Andersson 1972a-d, 1976, Braun 1977, Frank 1975, 1978, Mandel 1975, not to mention the East.

<sup>55</sup> Arguing with Marxists that his solution in no way was confined to the ‘sphere of circulation’, Emmanuel’s (1970d: 46ff; 1972a: 402ff.) first demonstration instead assumed a real wage, a physical basket of goods,  $(A+2B)/100$  per hour, something which in all probability has contributed to the uncertainty whether his independent variables are real or nominal wages, in spite of his insistence on the latter.

Table 12. *Two-country Sraffian input-output system with equalised rate of profit before wage increase.*

Region	$K$ Total capital invested	$c$ Constant capital consumed	$v$ Variable capital (wages)	$p$ Profit	$P$ Price of production
A	$70p_a + 35$	$(6p_a + 1)$	$5$	$+(70p_a + 35)r$	$= 32p_a$
B	$20p_a + 45$	$16p_a$	$7.5$	$+(20p_a + 45)r$	$= 21$
Total	$90p_a + 80$	$(22p_a + 1)$	$12.5$	$+(10p_a + 7.5)r$	$= 32p_a + 21$

Sources: Emmanuel 1970d: 46ff, 1972a: 402ff, 1973: 81f., 1975a: 40.

Here we have two simultaneous equations, one for country A and one for country B, which have been presented so as to be easily comparable to the Marxian price of production schemas used so far, thus illustrating that prices of production can be found without the ‘complicating detour’ of labour values. While the total amount of profit is known from given physical parameters of production, thus, before the problem of prices has been solved, *i.e.*,  $(32A + 21B) - (22A + 13.5B) = 10A + 7.5B$ , and even the share of profits for each branch/country is given, *i.e.*,  $(70A + 35B)$  to A and  $(20A + 45B)$  to B, the proportion accorded to each cannot be determined until the respective values/prices of A and B have been found. This requires the introduction of an additional unknown variable, the rate of profit,  $r = (10A + 7.5B)/(90A + 80B)$ , which, however, “can be determined only *at the same time as prices*”, by solving the system of simultaneous equations. Taking B as *numéraire* we have:  $p_a = 0.5$ ,  $r = 0.1$  (10%).

According to Emmanuel (1972a: 403), this further illustrated his point in taking wages rather than profits as the ‘independent variable’:

if we want to solve the problem of quantifying commodities while basing ourselves exclusively on the conditions of production, the only magnitude we are obliged to rely upon is wages, [...] profit being merely a residue. If we lack this magnitude, if wages are not “given,” if they do not constitute an *independent variable*, then the problem of defining value on an objective basis is insoluble, and no abstract equilibrium price (of production) can be found. In this case all that is left to us is the marginalist solution, which gives us the momentary concrete equilibrium price on the market.

Now, if wages are doubled in A (from  $1/40B$  to  $1/20B$ ), the equations turn out as in Table 13.

Table 13. *Two-country Sraffian input-output system with equalised rate of profit after wage increase.*

Region	$K$ Total capital invested	$c$ Constant capital consumed	$v$ Variable capital (wages)	$p$ Profit	$P$ Price of production
A	$70p_a + 35$	$(6p_a + 1)$	$10$	$+(70p_a + 35)r$	$= 32p_a$
B	$20p_a + 45$	$16p_a$	$7.5$	$+(20p_a + 45)r$	$= 21$
Total	$90p_a + 80$	$(22p_a + 1)$	$17.5$	$+(10p_a + 5)r$	$= 32p_a + 21$

Sources: Emmanuel 1973: 81f., 1975a: 40.

Solving the equations after the wage increase gives:  $p_a = 0.614$ ,  $r = 0.0641$ . The price of A has accordingly varied in the same direction as wages, while the rate of profit has varied in the opposite direction.

Generalized for a two equations system, and for simplicity assuming that all invested capital is consumed in a single production cycle ( $K = c$ ), this can be expressed as follows. If  $A_a$  and  $B_a$  denominate the quantities of A and B consumed (as depreciation and intermediate

consumption) in country (A), and  $A_b$  and  $B_b$  the corresponding quantities in country (B), if  $w_a$  and  $w_b$  are the wages, and if  $A$  and  $B$  are the quantities produced in each of the two branches/countries, then we have the following equations:

Country	$c$	+	$v$	+	$p$	=	$P$
(A)	$(A_a p_a + B_a)$	+	$w_a$	+	$(A_a p_a + B_a) r$	=	$A p_a$
(B)	$(A_b p_a + B_b)$	+	$w_b$	+	$(A_b p_a + B_b) r$	=	$B$

or abbreviated,

$$\begin{aligned} (A_a p_a + B_a) (1 + r) + w_a &= A p_a \\ (A_b p_a + B_b) (1 + r) + w_b &= B \end{aligned}$$

It can easily be shown (Emmanuel 1975a: 41) that if  $w_a$  increases, there is only one combination consistent with both equations, *i.e.*, that in which  $r$  decreases and  $p_a$  increases. Thus, any increase in wages will imply improved terms of trade as compared with a situation before or without it.

The demonstration for the general case becomes significantly more intricate. Even seeing the general case written down (Table 14), each line representing a country specialised in one branch, may seem too intricate for some readers. The structure and, so far as Emmanuel's system is concerned, outcome and logic, are nevertheless exactly the same as before. Since it is the ultimate form of expressing his or most other theories of unequal exchange – although to their loss they commonly rest content with a two-country system – and since it will reappear, it may be well to habituate the eye to it.

Table 14. Emmanuel's K-country Sraffian-like equations system.

Total capital invested	Constant capital consumed	Wages	Profit	Price of production
$A_a p_a + B_a p_b + \dots + K_a$	$(A'_a p_a + B'_a p_b + \dots + K'_a)$	+	$L_a w_a$	$+(A_a p_a + B_a p_b + \dots + K_a) r = A p_a$
$A_b p_a + B_b p_b + \dots + K_b$	$(A'_b p_a + B'_b p_b + \dots + K'_b)$	+	$L_b w_b$	$+(A_b p_a + B_b p_b + \dots + K_b) r = B p_b$
...	...	...	...	...
$A_k p_a + B_k p_b + \dots + K_k$	$(A'_k p_a + B'_k p_b + \dots + K'_k)$	+	$L_k w_k$	$+(A_k p_a + B_k p_b + \dots + K_k) r = K$

Source: Emmanuel 1970d: 49, 1972a: 407.

Abbreviated and, as above, with the simplifying assumption that the speed of rotation of all inputs is equal to 1 ( $A_a=A'_a$ , etc.), it can be written as a system of Sraffian industrial equations, or input-output matrices:

$$\begin{aligned} (A_a p_a + B_a p_b + \dots + K_a) (1 + r) + L_a w_a &= A p_a \\ (A_b p_a + B_b p_b + \dots + K_b) (1 + r) + L_b w_b &= B p_b \\ \dots & \\ (A_k p_a + B_k p_b + \dots + K_k) (1 + r) + L_k w_k &= K \end{aligned}$$

where  $A_a, A_b, \dots, A_k$  represent the quantities of A consumed in the production of the industries a, b, ..., k,  $B_a, B_b, \dots, B_k$ , represent the quantities of B consumed in the production of the same industries, etc.;  $A, B, \dots, K$  are the total quantities produced in a, b, ..., k;  $L_a, L_b, \dots, L_k$  represent the quantities of labour expended in a, b, ..., k;  $w_a, w_b, \dots, w_k$ , represent the wages for a unit  $L$  in a, b, ..., k;  $p_a, p_b, \dots, p_j$  represent the prices of one unit of A, B, ...J;  $K$  is the money good so that all  $w$  and  $p$  represent a certain physical quantity of  $K$ ;  $r$  is the general rate of profit.

If wages are given exogenously, as Emmanuel assumes, there are  $k$  equations and  $k$  unknown ( $k - 1$  prices, plus  $r$ ), and the system is completely determined. Assuming convertible currencies (the point of which as we shall see in Chapter 8), any variation of wages will have the reverse variation of  $r$ , and entail a proportionately higher increase in the good of the branch undergoing the wage increase than in any other. Thus, as before, any wage increase will improve the terms of trade for the country in question. The general demonstration of this for an  $n$  (or, using the above symbols,  $k$ ) equations (= countries or lines of production) system becomes mathematically more intricate and will not be presented (cf. Emmanuel 1973: 74ff., 1975a 41ff.), but in plain language, it reads as below and is informative of the processes involved.

Assuming that in each country (area of mobility of the labour force) there is only one process of production, corresponding to one line in the matrix, and that all prices, including wages, are expressed in physical quantities of the *numéraire*-commodity (in a convertible currency system), Emmanuel (1975a: 44) described what would have to take place after an exogenously given rise in the wages of one branch/country. Initially: “The country, in which a rise of monetary wages has taken place, will try to pass it on in the form of an increase in the sale price so as to preserve the previous rate of profit. Since wages are only one of the constituents of cost, a rise in the price less than proportional to the increase in wages will be sufficient for profits to be maintained.” This would have different consequences depending on the type of good. If the commodity in question was *exclusively* a consumer commodity, there would be no change in the prices of the goods of other countries or in the general rate of profit, and the only consequence “will be the increase in the real revenue of the workers in this same country and, consequently the fall in the real revenue of the capitalists in the whole world,” including those of the first country, in proportions depending on whom the consumers of the costlier commodity are. If, on the other hand, the commodity in question was a means of production (whether exclusively or jointly), two logically separate but in reality overlapping processes of equalisation would begin to operate.

In the first, the countries/branches using the dearer product as an input would react, in the same manner as the first country in the face of the rise in wages, by trying to raise their prices, and, for the same reasons, “the resulting rise in the price of the output will be proportionately less than the rise in price of the corresponding input”. Thus, all prices, except that of the *numéraire*-commodity, would rise in the same direction, although unequally so, and the branch which has endured the increase in wages most of all, “this being the only means by which the constancy of its rate of profit can be secured” (*loc. cit.*). The money commodity would not vary, simply because it had no price at all, being itself the standard of all prices against which the general rise in prices made sense. Each time the input-output chain crossed this branch, generally the gold mines, Emmanuel (*ibid.*: 45) went on, “the process of the transmission of the rise in price from one product to the other is interrupted, since this branch produces directly nothing but money, sells nothing and consequently has nothing to pass on the rise to. This makes it possible for adjustments made by the equalization of the costs to stop somewhere and not go on indefinitely.” However, at the end of this first round of adjustments, the general equilibrium was not yet reached, since the other branches had been able to transfer the whole burden of the lower rate of profit to the gold mines, “since the prices of all their inputs (except wages) expressed in gold have been increased but physical production of gold has remained unchanged” (*loc. cit.*).

Thus, Emmanuel (*loc. cit.*) continued, a second round of adjustments set in, equalising the rate of profit, and starting with capital indiscriminately abandoning the gold mines for other branches “Following this, the prices will undergo new changes but this time not because of the equalization of costs, but because of the imbalance between the relative quantities produced, as they are influenced by the inflow of capital, on the one hand, and the structure of

demand which has not changed, on the other.” The final equilibrium was reached when the general level of prices expressed in gold fell sufficiently to allow gold mines to realise the same rate of profit as everybody else, which general rate of profit would thereby fall.

But if the rate of profit falls (or remains unchanged), no branch, among those where wages remain unchanged can, in the same terms, have an output which rises proportionately more than *every one* of its inputs. There must exist *at least one* input which increased more than the output. (*Loc. cit.*)

This input would have to be the one originating in the branch undergoing the initial wage increase. To show this, Emmanuel reverted to the above Sraffian language.

If  $r$  had decreased (or remained the unchanged), and  $L_i w_i$  and  $K_i$  had remained unchanged in the following line of production,  $i$ ,

$$(A_i p_a + B_a p_b + \dots + I_i p_i + K_i) (1 + r) + L_i w_i = I p_i$$

then  $p_i$  could not increase at a rate greater than each one of  $p_a, p_b, \dots$ ; *i.e.*, at least one of these prices must have risen at a rate greater than that of  $p_i$ . Letting  $p_j$ , the price of input  $J_i$ , be this price, then there must exist one branch

$$(A_i p_a + B_a p_b + \dots + J_j p_j + K_j) (1 + r) + L_i w_i = J p_j$$

“in which the rise of the output at a higher rate than *any* input is indeed *possible*.” Now, considering the invariability of  $K_j$  and the decrease of  $r$ , it was clear that  $p_j$  could rise *more* than  $p_a, p_b, \dots$ , only if  $w_j$  had increased.

In other words, the existence of a branch, whose price advances more than all others, being necessary, and this effect being possible only in the branch hit by the increase of wages, it follows that this effect is necessary in the same branch. Then, with the price of the product of this branch rising more than that of any other in absolute terms (*numéraire-commodity*), it follows that this price rises in relative terms with regard to any one of the others. Hence, the necessary improvement of the terms of trade of the country producing and exporting this article. (*Ibid.*: 46.)

Summing up, it could be said that with a wage increase in a given branch, country, or region, the price of its products must increase, both in relative terms compared to other goods and in physical quantities of the money commodity, whereas the relative prices of the products of other branches, and some perhaps even in physical quantities of the money commodity, will correspondingly fall, and the general rate of profit will decrease. *Q.E.D.*

One shortcoming of the Marxian schemas is the impossibility of making the distinction between real and nominal wages. All through his writings, Emmanuel insisted that it was only nominal wages which could be regarded as ‘independent variables’, and this was how he understood wages (the ‘variable capital’) in his schemas, which thus could not influence one another. Real wages, on the other hand, were determined only after the sale of the products, and were consequently affected by the resultant alteration in the terms of trade. An increase in *nominal* wages of one region would, under most circumstances, result in a lowering of *real* wages of the other, as will be seen below when considering some differences between Emmanuel’s approach and that of more conventional Sraffians.

One of the more notable of the latter is the above Antoine Paul Delarue, whose (1973, 1975a, 1975b) contribution to unequal exchange theory differs markedly from other French, mainly through his training in Sraffian economics.<sup>56</sup> He had no problem placing the concept

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<sup>56</sup> Another unnoticed and interesting contribution is that of Soubeyran 1978.

of unequal exchange in that setting as a comparison of prices of production as they are with what they would have been at uniform wage rates, and in contrast to the Walrasian scheme where prices determine wages rather than the other way around. In general he followed rather closely the standard Sraffian solutions to problems, *e.g.*, on the problem of the unit of measurement in using a 'standard commodity'. His following was certainly more strict than Emmanuel's, particularly in the reasons allotted for rejecting wages as independent variables, instead preferring the so called 'Cambridge closure' with an exogenous rate of profit and given relative wages.

Rejection of wages as independent variables is so common as to seem almost involuntary. The wish to base the wage-rate on the level of productivity has been a most consistent force in the reception of Emmanuel, explaining the tendency even of Marxists to draw him back towards Arthur Lewis or even marginalism. In the case of the followers of Sraffa, it could simply be a reflection of the master's own treatment. When constructing the simple model in the beginning of his book, Sraffa – like Marx, although this is denied by many – did take wages to be independent variables. In that context he spoke only of *real* wages either as an assortment of "specified necessities", or as an abstract mathematical fraction of the net social produce. In the final paragraphs of Ch. 5, however, Sraffa abandoned this closure for one in terms of the rate of profit. His 'Standard net product' seemed to him irreplaceable as the medium in which the wage was expressed and "if we wish to eliminate it altogether, we must cease to regard  $w$  as an expression for the wage and treat it instead as a pure number which helps to define the quantity of labour which at the given rate of profits constitutes the unit of prices" (Sraffa 1960: 32). This argument led to a reversal of the practice followed from the outset "of treating the wage rather than the rate of profit as the independent variable or 'given' quantity":

The choice of the wage as the independent variable in the preliminary stages was due to its being there regarded as consisting of specified necessities determined by physiological or social conditions which are independent of prices or the rate of profits. But as soon as the possibility of variations in the division of the product is admitted, this consideration loses much of its force. And when the wage is to be regarded as 'given' in terms of a more or less abstract standard, and does not acquire a definite meaning until the prices of commodities is determined, the position is reversed. The rate of profit, as a ratio, has a significance which is independent of any prices, and can well be 'given' before the prices are fixed. It is accordingly susceptible of being determined from outside the system of production, in particular by the level of the money rates of interest.

In the following section the rate of profit will therefore be treated as the independent variable. (*Ibid.*: 33.)

Thus, contrary to real wages, which have no meaning before the determination of prices, the rate of profit had a meaning independent of prices and could accordingly be 'given' ahead of them. Following Sraffa, Delarue's argument was simply that selecting a price or wages as independent variable "necessitates first choosing a unit whereas  $r$  is a pure number" (Delarue 1973: 23; cf. Emmanuel 1975b: 152). Delarue gave no positive indications as to in what such an exogenous determination could consist, and Sraffa did no more than mention the above "level of the money rates of interest."

This was unacceptable to Emmanuel (1972a: 409): "It seems to me that this is a deadly blow dealt by Sraffa himself to his own attempt at rehabilitating classical theory." If by this rate of interest, "determined from outside the system of production", Sraffa had in mind identifying the rate of profit with 'the margin of the rate of interest', then the neoclassical model, which Sraffa had just turned out of doors, was invited in again by the window. Furthermore, on his quest for an 'ultra-real' wage, as Emmanuel termed it, Sraffa seems never even to have considered the possibility that *nominal* wages could be treated as independent variables. This

perhaps helps explaining the difficulty many Sraffians have in accepting, or even taking in, the possibility that *nominal wages and nothing else* were the independent variables in Emmanuel's basic model. Now, the argument raised by Sraffa against wages as the independent variable, that it could not be considered as 'given' independent of prices whereas the rate of profit could, *cannot* be used against money wages. What Sraffa had forgotten, Emmanuel (1975b: 153f, n. 1) countered, was that nominal wages not only *can*, but actually *are* 'given' before prices in the everyday praxis of the world.

As observed by Delarue (1973: 23), Sraffa's initial simple *real-wage* model was analogous to the model of a *barter* economy. Emmanuel seems to have agreed, adding that in this both Sraffa and the Marxian schemas, with their physically specified and predetermined ingredients, accorded better with the situation of a *pre-capitalist*, or even *slave* economy, than with the developed capitalist societies for which they were conceived. It was perhaps confusing in this respect that the Marxist schemas in which Emmanuel first presented his theory could have given the impression of basing themselves on real wages, and even more that his initial Sraffian examples, trying to demonstrate to Palloix and other Marxists that prices of production could be determined without reference to values but based on the *physical* data of production, had recourse to a real wage 'basket of goods' (Emmanuel 1972a: 402). On the other hand, the same presentation explained that contrary to Sraffa's 'ultra-real' wages, he himself argued in terms of 'semi-real' wages: "In my model wages is the independent variable. It is expressed in terms of a single commodity, the money-commodity. I have called it a semi-real wage because its *real* counterpart, the definite assortment of goods consumed by the worker, is not and cannot be given *ex ante* but is ultimately dependent on prices, which are in turn dependent on the organic compositions of the industries producing the workers' consumer goods as compared with that of other industries" (*ibid.*: 407). I really cannot see why Evans (1980: 17) interprets the same passage as proof that Emmanuel considered both nominal *and* real wages as independent variables, when the point of it is quite clearly that *real* wages are residual.

What meaning could a repartition in monetary terms have without pre-established set of relative prices, Emmanuel asked, and why would workers struggle for a mere nominal increase in wages, for mere physical quantities of the money-commodity (or even inconvertible sight-bills or fiduciary money), rather than for more bread, steaks, and clothing? It so happens, he reminded, that in the real world of capitalism workers did *in fact* struggle for increased amounts of the 'money-commodity', and why this was so or how it could be otherwise was strictly speaking a philosophical question rather than an economic one. However, both workers and capitalists understood that whatever the amount of real products that could be purchased for a hundred francs or dollars, one hundred and ten of these units would represent a greater purchasing power, in physical terms and independently of prices, than would one hundred units of the same money. The reason was, as Emmanuel had shown (indeed with the help of Delarue), that in the system of prices no price could vary *more* than the wage which caused prices to rise to begin with, because prices consist of both wages and profits, and the rise in wages will generate a fall in the general rate of profit. Any increase in the money commodity, then, will increase the physical amount of consumption goods as compared to what it could buy before of the same assortment of goods (given that the expenditure does not transgress certain limits set by the combined elasticities of demand). This is what gives meaning, Emmanuel concluded, to the negotiation in terms of money and before prices have been determined (Emmanuel 1975b: 157ff.). That an increase in money wages is thus translated into an increase in real wages, does not, so far as I am aware, in any way turn real wages into independent variables.

A fundamental reason why Sraffa and Delarue preferred the rate of profit as 'given' variable was apparently that it constituted a 'pure' ratio, intrinsically independent of prices. Emmanuel

(*ibid.*: 154f.) could not accept this argument for several reasons. First, as suggested above and central to his whole argument on ‘profit and crises’ (1974a; cf. Chapter 8), in the real world the profit is an income only *ex post*, thus being the endogenous variable par excellence. What workers negotiate was not pure numbers or ratios of the national income in relative terms, but their own remuneration in money and in absolute terms. Secondly, in the neo-Ricardian context, choosing the rate of profit as independent variable was no solution at all, because it incorrectly presupposed that the problem of ‘reduction’ had been solved. The fact was that there was not simply one unknown variable,  $w$ , representing a unit of simple abstract labour, which together with a given rate of profit could close the system of equations, but several unknown ‘ $w$ ’s which are *irreducible* to one another. There is really no plausible way out of this dilemma, and for all of his weaknesses, it is certainly one of Braun’s (1977) strengths that he clearly perceived that the only choice of independent variables, was between wages or prices. Thus, thirdly, whereas in the national context the rate of profit has meaning as representing the relative strength of political forces, applying not only to each separate industry but on the national scale, taking it as given in the international context, while assuming an international equalisation, led to the utterly vague notion that a single global rate must simultaneously reflect equilibrate independently each and every national relation of antagonistic political forces at the same time. The proponents of this solution thus tended to take not only the rate of profit, but *also* all the ratios between national wages as given, leaving one single, usually subsistence, wage as determined endogenously. Any autonomous variation in the rate of profit would thereby make all the national wage rates vary inversely but proportionately according to their predetermined ratios. Naturally, Emmanuel remarked wearily, this was as politically reassuring as it was economically absurd: politically reassuring because one could not imagine an international solidarity more mathematically perfect than that, and economically absurd since it implied that the repartition of income was negotiated, first, between all capitalists and all workers over their respective shares, then, between the various national workers to fixate their respective sub-shares of the global fund already accorded to workers globally.

The seeming inconsistency of arguing both for wages as independent variables and high wage country exploitation of low wage countries was only apparent. Emmanuel (1975a: 62) asked: “How can workers in underdeveloped countries be affected by increased wages in developed countries, since all wages are supposed to be *independent* variables?” And if they were not affected, “how can one say that by obtaining increases in their money wages, workers in developed countries exploit or share in the exploitation of workers in underdeveloped countries”? Of course, money wages in underdeveloped countries, being independent variables, could not be influenced by rises in developed countries, at least not immediately or directly. However, and this is the simple point of the theory, it was equally evident that real wages *were*,

because of the resulting increases in the price of products imported from developed countries, in so far as these products are part of their consumption, either directly, in the form of goods, or indirectly, as the raw materials of other consumer goods produced locally. In other words, variations in the money wages of one group determine variations in the corresponding relative prices, and it is *these* variations of money prices that determine in turn the respective variations in the real wages of the other group. (*Loc. cit.*)

In principle, and in the short run, this meant that, to the extent that workers in the underdeveloped countries did not consume the imported high wage good, either directly or indirectly, the only losers in that country would be the local capitalist, because of the fall in the global rate of profit and because of the rise in the price of the imported (by definition) luxury goods. But in the long run things were not so simple: “Whatever their opposition to their own capitalists it is not at all a matter of indifference to workers in poor countries that

increased wages in foreign countries whittle away the profits of their own national capitalists, which constitute in any case a potential subject of bargaining and a factor influencing their own demands for future wage increases. However determined these workers may be to expropriate their own capitalists, they cannot favour an expropriation which would only benefit the working classes of another country” (*loc. cit.*; cf. 1973: 83).

Like Delarue, Evans (1980: 23ff.) argued against the “superficially convenient” solution of taking ‘wages’ (no distinction is made between real and nominal) as independent variable, although he, too, advanced not a single positive argument in favour of what he calls the “superficially problematic” choice of preferring the rate of profit. Indeed, he realised the absurdities eventually arising from taking the rate of profit as given, but because he was adamant that one “should not” fall back on the “comfortable” closure from the wages side, he instead drew the conclusion that *any* such neo-Ricardian models must be abandoned!

As an interpreter of Emmanuel, Evans is often considered one of the most sophisticated, certainly much more than Samuelson of whom he was highly critical (*e.g.*, Evans 1980: 16ff., 1981a: 121). As he saw it, Emmanuel’s attack on the theory of comparative advantage was threefold. First, he challenged the assumptions made by Ricardo about factor mobility, retaining, in his view, the assumption of international labour immobility – Emmanuel on the other hand pointed out that the mobility or not of labour was irrelevant in Ricardo’s system since wages were always determined by the level of subsistence – while arguing ‘forcefully’ for the treatment of capital as internationally mobile, and thus for a rate of profit tending towards equality in all countries. “In this respect,” Evans (1981a: 120) concluded, “Emmanuel’s model is but a special case of ‘English’ neo-Ricardian model”. Secondly, he continued, Emmanuel “rejects the lack of explicit treatment of capital in the Ricardian model, and the treatment of capital as having a marginal product equal to its profit, as in the neo-classical case”, instead treating capital as produced input, as in Marxian schemas or the English neo-Ricardian system. Thirdly, and finally, Emmanuel “adopts a specific theory of income distribution, namely, that money and real wages are determined independently by institutional, historical and moral forces” (*loc. cit.*). More precisely, we can perhaps say that *money* wages are determined by the more political among these forces, while *real* wages are *also* dependent on an equally exogenous structure and character of demand.

While confirming Bacha’s (1978) interpretation, Evans (1980: 11ff.) expanded it into “the complete neo-Ricardian analogy to the Emmanuel system” for two countries, borrowing a 1973 presentation by Parrinello (in Steedman 1979). A problem with this presentation, since it purports to supply the ‘dynamic’ version of Emmanuel’s theory, is that its closure, in both Parrinello and Evans, requires the condition that ‘savings = investment’, and that “total world income equals total world output” (*ibid.*: 12). Considering that Emmanuel had written a 400-page book (1974, 1984) to which Evans refers, but *whose exclusive argument is the refutation of this very equation*, maybe this would at least have deserved mention. In it he also criticised economic theory from the physiocrats and Smith, via Ricardo and the classical economists – even Malthus and the underconsumptionists –, *via* Marx and the Marxists, marginalists and neoclassicals, to Schumpeter and Keynes, Keynesians and monetarists, for making this basically *static* assumption, which now, apparently, engulfs also the neo-Ricardians. This is not to say that Parrinello’s and Evans’s ‘dynamic’ growth model is without any value even in this case, since it may well be a stepping stone towards expressing *both* of Emmanuel’s fundamental arguments in a single comprehensive model.

According to Emmanuel, the principal economic difference between the market and planned economic systems was not the elusive and illusory alleged greater *efficiency* of the latter, but the *elimination of crises* of overproduction. This was because *ex ante* decisions would determine investment and consumption instead of the contrary market solution where investment decisions were determined by consumption and changing purchasing power. This

perspective has no evident connection with either Sraffian analysis or neoclassical, nor with the obsession with the determinants of static equilibria in the struggle between them.<sup>57</sup> Here Emmanuel is closer to the Keynesian, or rather post-Keynesian view, which is also that of a certain Marxist tradition, although it was not one favoured by Bettelheim.

Neither Emmanuel's static nor even his own 'dynamic' model, Evans (1980: 4) observed, took account of the 'laws of motion' of unequal exchange, involving "the complex set of considerations which lead to the hypothesis that Unequal Exchange is likely to be reproduced and intensified through time." Emmanuel's static model said nothing "either about the level or distribution of employment, or the composition of demand": "Nowhere does Emmanuel present a systematic analysis [...] which spells out the relationship between the distribution of economic activity and economic growth. Rather, the argument switches over to a discussion of the "laws of motion" of Unequal Exchange in which it is assumed that the high-wage "centre" provides the market which is the focus for accumulation and technical change, whilst the low-wage "periphery" misses out on development precisely because wages are low and the market small" (*ibid.*: 8). This required something else and more, connected with what Evans saw as an *underconsumptionist*, Bettelheim had seen as *petty-bourgeois*, and Raffer (1987) for his part a *Keynesian*, view:

Thus, in Emmanuel's view, the alleged worsening of Unequal Exchange over time is caused by an under-consumptionist process of capital accumulation in which rising real wages play a central role in the development of productive forces. Rather than a rise in real wages being the effect of technical progress and industrialisation, high wages precede and are a cause of development in many important cases [...] High wages both cause higher levels of development, and because of the differential "centre-periphery" worker bargaining power, push the "periphery" further into Unequal Exchange. Thus, the "centre" workers are in effect a labour aristocracy exploiting the "peripheral" worker. (*Ibid.*: 4f.; cf. 1984: 209.)

Unfortunately no one, including Evans, seems to have made any effort to understand this 'underconsumptionist', or 'overproductionist', process as seen by Emmanuel himself, *e.g.*, as spelled out in his work on 'profit and crises' (1974a, 1984). Evans is one of few even to refer to it, but its argument seems to have left no impression on his interpretation of Emmanuel, who is simply denoted an 'underconsumptionist'. Nothing is said of in what this consists, and since everyone knows that underconsumptionism is false, that is the end of it. Whether one believes in it or not, it would have been more honest to point out where assumptions are clearly opposed to those of Emmanuel, at least if one claims to be presenting his theory. Instead, Evans (1984: 220) merely reverts to the conclusion that Emmanuel's understanding and presentation of the capitalist laws of motion is 'un-Marxist' and 'circulationist':

The entire dynamic of change is based on the capacity of workers, through their short-run money-wage bargains, both to put sufficient pressure on capital to force the pace of technical change and to provide the required market for accumulation. At this point I find the Emmanuel argument entirely unconvincing. Unlike most of the Marxian tradition, Emmanuel is a circulationist par excellence, simply because Emmanuel believes that it is the size of the market which is the central limiting factor in capitalist accumulation.

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<sup>57</sup> Cf. Kalder's (quoted in Targetti 1992: 133) reflection on Sraffa: "In my opinion, price theory and distribution theory occupy a disproportionate place in both classical and contemporary economics; economics ought not to concentrate on equilibrium conditions which are never attained (or even approached), but on the forces which produce change and which themselves are subject to constant changes of direction." However, as long as the reasons for disequilibrium have not been demonstrated on the same level of analysis in which equilibrium has been assumed, any extension of its apparatus into 'disequilibrium' analysis would appear to be superficial.

In fact, it was not simply the *size* of the market, but in a truly dynamic sense its *growth* which mattered for investors.

Evans (1980: 24) objected to the proposal that by raising wages a more attractive market and improved terms of trade will counter the possibly 'dire effects' on unemployment and the balance of payments which he saw around the corner of successful trade-union wage-bargaining, no matter what the historical record seems to show: "Of course, Emmanuel supposes that other changes will occur under any exchange rate regime before such dire effects are evident, arising from the stimulus of investment from the growth in the market resulting from the real wage rise."<sup>58</sup> Evans found this to be a highly implausible assumption. Be this how it may, the plausibility would perhaps seem greater if one accepted, in line with Emmanuel's general argument, that there was a basic tendency for the value of production to exceed the purchasing power facing it, a corresponding chronic deflationary tendency, and lack of profitable investment opportunities. Before returning to this argument and some of its implications for the understanding of unequal exchange, we shall note how the political implications of the theory have come out – indeed, rather ecologically so – in the Sraffian perspective.

### Unequal exchange in ecological terms

Even Sraffians appear to have had difficulties accepting the political conclusions of Emmanuel's version of unequal exchange. Nevertheless, these become more conspicuous here than anywhere else, when the Sraffian argument in terms of physical inputs is related to the ends of the Earth. Why was it not possible for the whole world to follow the capitalist road to development? The most facile answer was suggested to Emmanuel in his debate with Somaini. Protesting against taking wages as the independent variable, Somaini (1971: 45f.) further argued that one could legitimately speak of 'exploitation' only if it could be shown that if the wages (he even said the most elevated wages) of certain countries were globally generalised, profits, or better the whole non-worker share, would become negative. Only in this case was there any appropriation of surplus value by the workers of certain countries, Somaini explained, since in the absence of profits the remainder would have had to be taken at the expense of other workers. However, he challenged, no protagonist of unequal exchange theory had ever attempted such a demonstration.

Emmanuel was surprised at this declaration, admitting that neither he nor anyone else had ever done so, and that, as to himself, it had never occurred to him that he could have convinced Somaini and others by so little effort. "There are questions for which one does not bother oneself to pick up a pencil and paper", he retorted, but handled by making a ruff mental approximation. Spelled out this approximation ran something as follows: The gross domestic product of the non-communist developed world in 1969 was less than \$US 2,000 billion, and that of the corresponding underdeveloped countries less than \$US 400 billion, so the total was sure to be less than \$US 2,500 billion. This meant that national income (factor incomes) was bound to be much less than \$US 2,000 billion. World population was 2,500 million, of which more than 35%, or 875 million, were active workers or self-employed. If profits or surplus value were zero, the sum of factor remuneration would average  $2,000/0.875 = \$US 2,285$  per year per capita, \$US 190 per month, or about a dollar an hour. An unqualified worker in the United States made \$US 3-4 an hour and the average for all kinds of

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<sup>58</sup> "That the disequilibrating effects of the prices themselves and that the balance of trade deficit in itself, should bring forth a compensating flow of finance, that capital is attracted by a certain vacuum and goes where it is needed, that there are mechanisms of communicating vessels in the capitalist system, that the need to sell is such that one often gives the means of payment away to countries willing to buy, all this cannot come in question for a view placing itself between the classical and the neoclassical" (Emmanuel 1973: 105, trans. J.B.).

labour considerably more (even not counting social charges and security contributions paid by employers and therefore included in the national income). This means that even if ones estimations were mistaken by 300% there was still ample margin. Emmanuel further demonstrated that even if one looked merely at the wage differential within the O.E.C.D. countries, *i.e.*, among the developed countries themselves, for which precise statistics were available, profits were not enough to cover an upward equalisation of wages. Indeed, already here it turned out that profits would have had to be approximately *ten* times larger to cover an equalisation of wages at North American levels (Emmanuel 1973: 78ff.).

Having thus got a taste for this kind of exercise, Emmanuel (1974b: 78f., 1975a: 63ff., 1976a: 71f.) was to repeat or remake it on at least three occasions over the next couple of years, significantly adding an ecological dimension and/or an inequality expressed in terms of raw materials consumption, dispersal of waste, and occupation of environmental space. On the first of these occasions, a reply to an influential article by Bill Warren (1973), he chose to express the development gap in physical and ecological terms. Noting the recent upsurge of Third World industrialisation, Warren had seemed to believe not only that this represented a substantial drop in the world's income disparities, but that it boded well for the Third World ultimately achieving First World standards of living. His optimistic interpretation of industrialisation neglected not only that industry could be underdeveloped just as agriculture could be developed, and that looking at the relevant per capita income levels, there was no diminished income gap – quite the contrary. He also disregarded that it was *physically* impossible to bridge the gap upwards.

Thus, Emmanuel (1974b: 78) reminded, it seemed “materially out of the question for the two billion people in the periphery to follow the same path” as the few underdeveloped countries which had indeed succeeded. If it had happened in some cases, as with the small-country success stories of the Tiger economies or Greece, that the ‘impasse of development’ was overcome, and a poor country had become rich, this was possible only *because* it was not generalized. Equalisation of international levels of income and consumption was impracticable, first, *downwards* to underdeveloped levels because of the political impossibility in the high-wage countries, and secondly, *upwards* to ‘overdeveloped’ levels, on the one hand since this by a wide margin would eat up all profits, and on the other because of the physical and ecological impossibility. Drawing on an argument by Yves Saulan posing the question whether the development of the Third World was still possible, he argued:

The impasse of development can be made brutally plain if it is translated into real terms. Some 6% of the world's population – the inhabitants of the USA – consume more than 40% of an available quantity of raw materials. An equalization of consumption to US levels implies, therefore, a more than sixfold multiplication, on average, of the present volume of extraction – assuming that the USA does not progress any further. Geologically and technically, a leap such as this is out of the question in the foreseeable future. (Emmanuel 1974b: 78.)

At the same American level, “[p]resent world production could only feed, clothe, house, etc., about 600 million people” (*idem* 1975a: 65). Taking one example, the inhabitants of the United States consumed 700kg of steel per head per annum: “If the entire world followed their example,” he (1974b: 78; cf. 1973: 65f.) suggested, along the lines of contemporary geologists such as Preston Cloud (1971), “all our planet's known reserves of iron ore would be exhausted in 40 years – assuming the world's population ceased to grow”. The same equalisation of international consumption would exhaust copper within 8 years and tin within 6 years, but it was in the domain of oil that the ‘impasse of development’ was most complete. At US levels of consumption the world would need about 14-15 billion metric tons a year, while the world's know reserves at the time amounted to 80 billion, thus corresponding to a stationary state future of 5½ years. Suggesting that only half of the land reserves had yet been

discovered and that equally much could be found at sea – low estimates as it has turned out – the equalised world could look forward to another 22 years of oil consumption as US-levels. The recent experience of the Club of Rome seems to have entered Emmanuel’s mind, and he also turned to other ecological problems of waste and space:

But exhaustion of deposits and reserves is not the only factor that rules out equalization of consumption upwards. Ecological limitations represent another. If the advanced countries of today can still get rid of their waste by dumping it in the sea or allowing it to pass into the atmosphere, this is because they are the only nations to be doing so (Emmanuel 1974b: 78f.; cf. 1973: 66, 1976a: 72).

In this sense, Emmanuel’s theory of unequal exchange is essentially a theory of the economic consequences and political implications of the non-equalisability of global remunerations expressed in physical terms. If this formulation qualifies as an ‘ecological unequal exchange’, it is the first, and indeed *only*, of its kind to be the expression of an actual economic *theory* – aimed primarily at explaining historical developments – or, at any rate, the first since Cantillon’s, should that so qualify. More recently, Martinez-Alier & O’Connor (1999: 386) have emphasised, on the latter’s suggestion, that “it is readily possible to ‘ecologize’ the Sraffian approach”, but in their view apparently only “through a generalization of the joint production theory” – which Emmanuel (1972a: 409) for his part found “as useless as it is cumbersome” – “to include ecological production and economy – ecosystem exchanges of natural resources, environmental services and waste products.”

It must be admitted that the width of Emmanuel’s ecological examples is not breathtaking (the only additional example given is the risk of skies becoming too crowded with airplanes). Still, he drew – or confirmed – all the basic political conclusions of many a radical ecologist or believer in global solidarity of his day. Apart from all other considerations and antagonisms, the people of the rich countries could consume all the things making up their well-being only because others did not, and “reprocess their wastes simply because others have nothing much to reprocess”: “Otherwise the ecological balance would be fatally imperilled” (Emmanuel 1976a: 73). This was the meaning of calling the entire working class of certain countries the ‘worker aristocracy of the Earth’, of dividing the world into an overdeveloped centre and an underdeveloped periphery:

Here then, it is no longer a question of the abstract rhetoric of concepts – surplus-value, capital, profit, and so on – but of material consumption. It is therefore the great mass of the population of the advanced countries, the wage-earners themselves, who are implicated. The consequence is that, regardless of any other consideration or antagonism, in the objective natural and technical conditions of today and of the foreseeable future, the peoples of the rich countries can consume all those articles to which they are so attached *only* because other peoples consume very few or even none of them. It is this that breaks solidarity between the working classes of the two groups of countries. (*Loc. cit.*)

We have today reached a point at which, equalization being impossible either downwards, for socio-political reasons, or upwards, for natural-technical reasons, the only solution lies in a global change in the very pattern of living and consumption, and the very concept of well-being. Since the framework and parameters of this solution must be those of mankind as a whole, the contradictions between classes within the advanced countries, which still undoubtedly subsist, have nevertheless become historically secondary. The principal contradictions, and driving force for change, are henceforth located in the realm of international relations. (Emmanuel 1974b: 79.)

Emmanuel’s conclusion is noteworthy, that ‘the only solution lies in a global change in the very pattern of living and consumption, and the very concept of well-being.’ This was

Emmanuel at his most 'ecological' and it would obviously have been true even under socialism and central planning.

Yet, whereas 'ecological awareness' was, or at least appears to have been, centred in the 'centre' – or, like the belief in international solidarity, rather in its intellectual and idealist part – Emmanuel did not let go of the idea that the periphery was where true radicalism dwelled. Everything happened as if certain nations had fused into a sort of class-nation, he (1975a: 67) observed, while others remained merely divided into classes: "This means that in the first type of country a true political struggle becomes more and more implausible: there can only be a strictly economic struggle, as there has always been inside any class. This also means, in a sense, that the countries on the periphery are henceforth not the weakest link in the chain but the only true revolutionary area." Still, he gave no indication of how this change in the pattern of living and consumption and in the concept of well-being was to arise, and he (*ibid.*: 85) was scornful – perhaps with reason – of warnings to the underdeveloped countries "against the adumbrations of the 'consumer society' into which the developed countries have been led by a *quantitative* growth which has become an end in itself."

As he saw it, the trouble which people in the advanced countries had come across was that, in the midst of their abundance, they had become bored by the monotonous routine of their lives. Finding that their affective life had become impoverished instead of enriched, that human relations had become impersonal, that cities and motorways were inhuman, "people advice the poor countries to look for other ways of development, without, of course, saying which these are", and charging that the previous proposals for merely quantitative growth was 'Euro-centric'. Put like this, he (*ibid.*: 86) was right to feel outraged: "It is not difficult to see what is particularly European (indecent into the bargain) about making the boredom of the dyspeptic rich into the main problem of a world where hundreds of millions of men are hungry, deprived of medical care, unable to read and write, and with only an average life expectancy at birth of 40 years. Surely it is completely ridiculous to condemn technical progress and 'productivism' on the pretext that one risks [lo]sing one's soul to the private car and the washing machine, in a world where two thirds of the population go barefoot and are underfed." Perhaps he (*loc. cit.*) was also right in seeing the capitalist system as a 'for-better-or-for-worse' commitment making "for man's transformation into a consumer of gadgets, but also for his general education; for pollution as well as for abundant and efficient medical services; for the greatest possible exploitation as well as for proteins for adults and milk for children; for the alienation and desocialization of man and the desiccation of his affective life as well as for a certain material comfort, for children's nurseries and a considerable lengthening of the expectation of life at birth."

On the other hand, how can one expect a harmonious ecologically aware mode of production to arise out of constant groping for more on all behalves? Emmanuel (*ibid.*: 87) tried to get away by distinguishing ends and means: "If one is obliged to dispute the ends one cannot simply ignore the problem of the creation of the means." Sure enough, the wealthy should not be the ones to throw stones, but just as well one could argue that having concentrated on discussing means for so long, and being told by the greatest minds, such as Karl Popper, that ends are evil and bound to lead to authoritarian violence, it is more called upon than ever to discuss the *ends* and what *ultimately* concerns. If the problem is indeed global, as Emmanuel agreed, then must not the solution also be? It cannot be put in terms of one part of humanity trying to outconsume the other until time is up.

If Emmanuel's thoughts have any bearing, they may bring a realisation, to some part of the population, of an inherent self-reinforcing feature of consumption within our system, and its global interconnections with world poverty and ecological disruption, which with the passage of time has turned out to be pathologically repetitive. Conjointly with the prospects of liberation from the above 'boredom', which is surely related not only to the lack of

meaningful *ends* but also to meaningful *means*, such insights may bring resolution to turn things over, together with some criteria for constructing a different world. “If ‘the quality of life’ has any meaning at all, which I am not very knowledgeable about,” Emmanuel (*loc. cit.*) concluded, “it ought to mean, among other things and perhaps most of all, replacing individual consumption by community consumption.” In the meantime, letting his historical materialism take overhand, he (*loc. cit.*) saw no prospects but to opt for unrestrained development of the forces of production: “So first and foremost we must produce these materials and for this we must improve technology, accumulate the product of past work, and increase the productivity of living labour. In other words, we need growth, and never mind the type of production and consumption.” This was hardly an ecologist standpoint – indeed the contrary – but in this respect a point of view consistent with most of both Marxism and development theory. It remains highly incomplete, and the problems are of the same kind as those he (1979b) admitted socialism would have to face regarding the bureaucratization of the state in the ‘transition period’. There is still more to be learnt, however, from Emmanuel’s perspective for both ecology and economics.

# Chapter 8. Emmanuel's unequal exchange in a world of its own

A standard bone of contention in responses to Emmanuel's theory has been over the choice of wages as the independent variable of the system. Usually the objectors instead referred to 'production' as being the source of consumption, wages, and exploitation and unequal exchange, which could then logically and much more politically conveniently be referred to monopolies. For Emmanuel, contrary to his Marxist brethren but very much like contemporary ecological critics of overconsumption, exploitation and unequal exchange was not a question of production but of appropriation. The development of the forces of consumption was much the more important even, at least in contemporary capitalism, with respect to the development of the forces of production. Unlike ecologists, Emmanuel, as an historical materialist believing that global socialism could only be built on the shoulders of the Third World, was a passionate advocate of such development, but whatever their development and whatever the level of monopolisation, there was no material way to achieve globally the standard level of consumption of the rich countries.

This was the ultimate foundation of unequal exchange, necessitating politically enforced labour immobility and surfacing in the terms of trade. In this sense, 'unequal exchange' was another name for the Maxwellian demon at the threshold of countries with wealthy populations maintaining and enforcing this wage and consumption differential, and not necessarily through physical transfers from the poor to the rich regions. This distinction will become more central when discussing Third Worldist theorists of ecological unequal exchange in Chapter 11. Contrary to the political inclination of many of these, wages and inegalitarian average levels of consumption are necessarily central to any such theory, and the only one so far to have tried to develop it on this basis is Emmanuel.

As noted, wage increases have a central role in Emmanuel's theory because of the centrality of the sale in a capitalist economy, itself a consequence of a fundamental disequilibrium between the value of output and the purchasing power facing it. Presenting itself *in between* the conventional arenas of 'objective' theories of value – with their focus on the 'real' economic factors of supply – and subjective – centring around determinative consumer demand – this is a problem that cannot appear in classical or neoclassical economics or in standard Marxian or Sraffian schemas. However, with certain similarities to dynamic post-Keynesianism, it presents a link to the common mercantilists understanding of the economy with which we set out. It is with this problematic we shall now turn and how, in Emmanuel's understanding, it related to the phenomenon of unequal exchange proper. Hopefully, it will enable us to see Emmanuel more as he presumably saw himself, as trying to fulfil Marx's projected interpretation of international trade, the world economy and crises, which is not to say that non-Marxist historical understanding could not also benefit from the effort.

## The importance of wages to investment in theory and history

We have already touched upon the peculiar role allotted to wages in Emmanuel's perspective, and below I shall try to indicate some of the theoretical reasons behind this central place. On several occasions, he pointed out that it was not unequal exchange or the terms of trade in themselves which caused unequal development. However, the different wage levels which gave rise to unequal exchange *also* caused unequal development. At first, this appears counterintuitive, since unequal exchange corresponds to a wage-increase, consisting of

unproductive worker consumption. Economic development was instead a matter of accumulation, capital formation and investment (productive consumption), originating with savings and the rate of profit, which was instead lowered by the same rise in wages (Emmanuel 1973: 54). Unequal exchange could make foreigners pay for domestic wage increases, and lead to increased national product and standards of living, but not in itself lead to economic development or extended reproduction. Although not via unequal exchange there was indeed a connection between wage-levels and levels of development. The bridge was the (1) incentives to investments, (2) movements of capital, and (3) choice of specialisation and technology: “All in all, it is not unequal exchange that is a factor of development, but the augmentation of wages itself” (*ibid.*: 54f., trans. J.B.). This was one of the points in Emmanuel’s reply to Bettelheim, where he asked rhetorically:

Would it be enough to improve the terms of trade, by increasing wages, for development to follow?

Certainly not. However substantial may be the transfer of value engendered by unequal exchange, and even if we take into account not merely the immediate and momentary impact this has but also its cumulative effect from year to year, this transfer does not seem to be sufficient to explain completely the difference in standard of living and development that there is today between, on the one hand, the big industrial countries, and on the other, the underdeveloped ones. To find the reason for this we must look at the movement of capital and the international division of labor.

These two factors do indeed include forces that *block* the development of the Third World. *But it so happens that the same cause, that is, the disparity between wage levels that produces unequal exchange and thereby, indirectly a certain unevenness of development through the draining off of part of the surplus available for accumulation, also produces, directly and independently of this draining off process, uneven development itself, as a whole, by setting in motion the mechanism of these blocking forces included in the movement of capital and the international division of labor.* (Emmanuel, 1972a: 371f.)

It is curious that he should feel obliged to remind Bettelheim of this, since in 1962 Bettelheim himself suggested these ‘problems to elaborate’ pertaining to international specialisation and the flow of capital.

Already in 1962, when proposing that the fundamental cause of unequal exchange and underdevelopment was the low level of pre-established consumption, Emmanuel seems to have had something like this imperative in mind, but not related to a variation in time, as in the business cycle, but to a variation in space. Ten years previously, precisely such a point had been made by Ragnar Nurkse (1952: 574), albeit from a slightly different perspective:

Incidentally, the weakness of the market incentive for private investment in the domestic economy of a low-income area can affect domestic as well as foreign capital. It may help in some degree to account for the common observation that such domestic saving as does take place in the underdeveloped countries tends to be used unproductively: hoarded, exported, or put into real estate.

Private investment generally is governed by the pull of market demand, and private international investment is no exception to this. A particular instance of the relation between investment incentives and market demand appears in our old friend the acceleration principle. The relation holds, albeit in a different way, in space as well as in the time dimension.

Nurkse developed at great length the argument of the ‘vicious circle’ involving investment as a function of consumption in his important and influential, but perhaps not sufficiently acknowledged 1953 book, which was on both Myrdal’s and Emmanuel’s reading list. Contrary to what apparently remains a common misconception, capital did not flow from high-wage to low-wage countries, but rather ‘in the wrong direction’. As seen in Chapter 5 above, Arthur Lewis (1954: 440; cf. Emmanuel 1972a: 45), in whose basic perspective it ought to constitute a ‘paradox’, observed that even with a surplus of labour power available at

subsistence-level wages, opportunities for investment abroad was often found to be more profitable: “Many capitalists residing in surplus labour countries invest their capital in England or the United States.” Later he concluded that investments follow the rule that “to him that hath shall be lent” (Lewis 1978a: 177). Furthermore, in responding to Emmanuel’s original argument, Bettelheim himself suggested the importance of international technological specialisation according to wage-levels and the international flow of capital, as one of the essential features in the dynamics of development and underdevelopment.

Under conditions of free international mobility of capital “and in the absence of *systematic* inequalities of wages”, Bettelheim (1962: 7, trans. J.B.) concluded, there was no reason to expect an initial difference in the organic composition of capital in different countries to engender future aggravation of unequal exchange:

One is thus led to ask oneself if it is not the inequality of wages, that, on the one hand, aggravates the inequality of exchange (or if one retains the restrictive definition of Monsieur Emmanuel even explains it) and that, on the other hand, also determines an economic *evolution* which is *more and more* unfavourable to low-wage countries. If this were the case, one would be justified in considering the type of unequal exchange resulting from the existence of different rates of exploitation to deserve being held as particularly important.

The differences of wage-rates in different countries, maintained not least by the difficulties in labour movements, Bettelheim (*ibid.*: 8, trans. J.B.) informed, entrained a certain *international specialisation* in different activities. International specialisation was not determined solely by the diversity of natural riches, but also by differences in cost prices, in themselves resulting from wage differences: “Evidently, the lowest wage countries will be the ones tending (through market laws and competition) to specialise in types of production demanding a relatively low organic composition of capital. It is, in fact, for these types of production that the comparative ‘advantage’, from the perspective of the influence on cost prices, is the most pronounced. What we would have here is a *type of specialisation that would be socio-economically based*, no longer merely techno-economically.” High-wage countries tend to attract capital-intensive branches, while low-wage countries attract labour-intensive branches.

Considerations such as these were also the reason for Emmanuel’s critique of the theory of comparative advantage from the point of view of the *efficiency* or *optimality* of international specialisation under free trade, another theme in his book and notably in the argument with Paul Samuelson (1973, 1975, 1976, 1978, Emmanuel 1978b-c). The argument, which became popular with the neo-Ricardians in the 1970s, can be easily understood if one realises that a pattern of international specialisation – cloth in England and wine in Portugal –, presumably based on comparative advantage according to the natural and technical ‘endowments’ of productive factors, can be reversed – wine in England and cloth in Portugal – merely by raising (‘exogenously’ or politically) the wage-level in one of the countries/branches, while all technical and natural factors remain unaltered. *Both* patterns cannot be ‘optimal’ at the same time from the point of view of technical and natural factors available in the countries, *i.e.*, their ‘endowments’.

Liberal economists, Bettelheim continued, tended to believe that *international movements of capital* would tend to reabsorb any inequality between nations it may have engendered. Thus, according to this view, capital would tend to flow towards the low-wage countries, where, accordingly, the cost price would become lower. However, even with considerable international mobility of capital, the facts spoke against this hypothesis, and demonstrated the limited opportunities practically available for investment. Concrete reality had shown that the zones with high-wages and elevated organic composition were precisely the zones with high consumption, whether productive of final. “It is thus at the heart of these zones, or just around them, that the peak of production has an interest in being *localised*” (*ibid.*: 9, trans. J.B.).

It is interesting to see Bettelheim expound this thesis of the centrality of final consumption, since less than a decade later he was to charge Emmanuel's similar argument with being a petty-bourgeois Keynesian one. The few goods whose production could evade this consumer-centred localisation, he explained, were those where low wages outweighed the increased cost of transportation to the high-wage zones, in practice, limiting investments to certain branches where countries benefit from particularly favourable natural conditions, or which require particularly intense employment of labour. This limited attraction, for investors, of low-wage countries with reduced organic composition compared to that of high-wage countries, he continued, was one of the principal factors aggravating the initial differences in economic level between nations or even regions (*ibid.*: 10). Significantly, contrary to the above liberal conception, there was no tendency towards international equalisation, but a cumulative process whereby these directed investments contributed to further widening the wage-gap: "Thus, the *zones of intense investment and rising wages are precisely the zones already developed and where relatively high wages prevailed before*, not, as a certain 'liberal' conception would suggest, the low-wage zones" (*ibid.*: 11). Therefore, he believed (*loc. cit.*, n. 1), Emmanuel's kind of analysis was especially relevant: "This influence of the level of wages on the aggravation of economic inequalities justifies placing wage inequalities at the centre of analysis of factors contributing to the *aggravation* of international economic inequalities".

At the time, then, Bettelheim was almost as Emmanuelian as Emmanuel was to become. There was, however, what may appear a tiny difference in how to interpret this cumulative process, where Bettelheim came to see the connection between the resulting productivity-increase and the wage-increase as more or less automatic, while Emmanuel argued more systematically for the wage-increase as an *exogenous* factor even in the cumulative dynamics, specifically noting the role allotted to the masses of the people in acquiring higher wages and standards of living.

Did Bettelheim get cold feet in the freezing subliminal waters of international worker antagonism, or were his later objections always primarily of a purely scientific kind? Ordinarily, the life of the mind is not so orderly, and most probably there was a mixture of both subliminal fears and scientific objections. At this stage, we cannot even exclude the influence of possible party strategy, since the political implications of Emmanuel's theory seemingly left no real exit for a successful communist party within the parliamentary system. Arguing in favour of the subliminal or political interpretation was the unison rejection of and outrage over the political consequences of Emmanuel's theory, while his economic analysis was rather more difficult to refute without resorting to Marxist Byzantinism. Interpreting any individual in this light is very much more difficult, however, and would probably be unfair in the case of Bettelheim, as well as in many other instances, since any argument is bound to be incomplete, if not erroneous, and no one is obliged to be persuaded by Emmanuel's.

For Bettelheim, the above factors were even such as to entail an *exportation* of capital from the underdeveloped zones towards the developed, which had the further negative consequence of lessening demand for labour, thereby, in his view, tending to maintain lower wages. This consideration seemed to Bettelheim particularly important, since he felt that Emmanuel's explanation of low wages in the less developed zones by the low initial level of workers' needs was insufficient. Emmanuel, too, pointed to the non-equilibrating, self-reinforcing flow of capital and investments from the low- to high-wage areas rather than the contrary. Investment opportunities were an increasing function of the size and growth of the market, which in itself was proportional to the wage-level, making capital movements generally unfavourable to the low-wage countries. These offered outlets only for certain consumption industries, such as food, textiles and clothing, not for more sophisticated consumption or equipment industries, since the number of light industries was not great enough to sustain it (Emmanuel 1973: 55f.). If Bettelheim made this observation first, it certainly fitted well with Emmanuel's perspective

as elaborated in *Le Profit et les crises*, focusing on why in a capitalist economy it was easier to buy than to sell, and why its principal effort was thereby directed towards selling. The approach was clear already in his thesis, and presumably informed by his African experience:

Since the prime problem for capitalism is not to produce but to sell, capital moves toward countries and regions where there are extensive outlets and expanding markets, that is, where the population's standard of living is high, rather than toward countries and regions where the cost of production is low. It thus moves toward high-wage countries, neglecting those where wages are low. This is true not only of foreign capital flowing in but also of the small surplus formed locally in low-wage countries. Unable to find attractive investment opportunities on the spot, owing to the narrowness of the market due to the low wage level, this local surplus is either wasted in luxury consumption or is expatriated and invested abroad, bringing about those movements of capital that have been called "perverse" because the run from countries where there is a shortage of capital to countries where it is plentiful. (Emmanuel 1972a: 372.)

Similarly to Bettelheim, and originally in his (1970a) response to Granou (1970) and Dhoquois (1970), Emmanuel pointed out that the only way to increase societal production, and thereby consumption, was to raise the organic composition of capital and/or labour, *i.e.*, the quantity and quality of tools, and/or the quality of labour as compared with its quantity. Since all branches did not have the same possibilities to increase the organic composition, wage-differences would affect the international division of labour, by making it relatively cheaper for investors to choose branches of production with low capital intensity and little qualified work in low wage countries (cf. Emmanuel 1973: 56). "Thus, low-paid laborers keep machines and engineers out of the underdeveloped countries, while machines and engineers take the place of highly paid laborers in the advanced ones. This substitution of one factor for another, caused by market forces alone, is the most dynamic element in the blocking of subsequent development in the first group countries and in the accelerated growth in the second group, the combination of these two effects being what Bettelheim calls the expanded reproduction of world production relations" (Emmanuel 1972a: 374; cf. 1970a: 84). Thus, he (1973: 54f., trans. J.B.) concluded in his response to Somaini:

There really exists a link between the variations in wages and those of development, but this link does not pass via the terms of trade and resulting transfer of value. It is based directly on the incentives to invest, on capital movements, and on the subsequent specialisation and techniques. All in all, it is not unequal exchange that is a factor of development, but the very rise in wages itself, without the mediation of the terms of trade, which is only another, parallel and independent effect – at least in the direct etiological chain – of the variations in wages.

Opposing Bettelheim, but in line with his tutor's 1962 comments, he placed wages at centre stage. Whereas one could only find an *indirect* link between wage-increases and technological development, he (1972a: 124) explained, *e.g.*, via decreasing employer resistance, by contrast, "the level of wages acts *directly* – that is, by the mere operation of the law of value – upon the economic factors, *by determining the necessity for an intensification of the organic composition of capital and by encouraging investment through the expansion of the market.*"

There were many instances where the economic *possibility* of a rise in wages had not lead to this actually occurring, at least until the institutional factor had come into play, but "not a single example where high wages have not lead to economic development, in other words where institutionally established wages have proved to be too high in relation to the actual or possible level of economic development and have had to be brought down on the basis of inadequate development" (*loc. cit.*). In the ensuing debates, he (*ibid.*: 371) confirmed: "The capitalist world cannot show a single instance of a high-wage country that has had to reduce wages owing to failure to develop, or a single instance of a country that has been able to

develop while keeping wages low.” Emmanuel had a preference for paradoxes and, although similar observations were made by Senghaas (1985: 243; cf. 65), these categorical statements have provoked many counterclaims, invoking countries which stagnated or regressed in connection with the Great Depression (Germany, Uruguay). Perhaps these counter-examples do not always appreciate the long term perspective implied by ‘established’ or the width of the ‘institutional’ factors, *e.g.*, even in once prosperous Latin American countries.

Lewis (1978: 16) observed that the ‘dependency’ relation now associated with Prebisch was at the basis of the ‘staple thesis’ of Innis (1930). Less often noticed is that a major point of the latter was that the motivating force behind colonials’ or settlers’ search for a profitable staple was to be able to retain their ingrained consumer habits. Since settlers had devoted even more attention to retaining their European patterns of consumption, one could speculate that this emphasis became even more ingrained than in the mother country. However this may be, the heritage of consumer and institutionalised habits become more important when comparing North and Latin American development, which was not yet on the agenda in the interwar years, and with which Innis himself was never overly concerned.

Even in the late 1960s, Emmanuel (1972a: 363) could write (disputing with Frank 1967): “Up to now nobody has to my knowledge explained how countries so thoroughly ‘blocked’ as were Britain’s colonies of settlement proved able not merely to escape from this situation but to surpass by far the level of their former metropolitan country.” Neither are they likely to be explained merely by the regions’ different geographical and climatic factors, with which Innis was commonly concerned and important as these may be, nor by the corresponding staple goods exported to retain their respective levels and structure of consumption. In Emmanuel’s view, which usefully complements Lewis’s (1978) more fleshed out record, the explanation was principally to be found rather in these different consumer habits themselves, originating in concert with the development of the means of production no doubt, but then independently exerting a determining influence, together with the heritage of institutional factors, on the different equilibrium wages in respective regions:

If wages in the United States in the eighteenth century, or in Australia in the nineteenth, were so high, that appears as an historical accident so far as the United States and Australia are concerned. But it was no accident for all the countries of the world together in the context of world economic evolution. The men who settled in the United States and Australia in those periods came from certain parts of Europe that were already advanced and had a standard of living higher than the others; when they emigrated they naturally demanded even higher incomes. This was not the case with the Spaniards and Portuguese who settled in Central and South America, or even with the French who settled in Quebec. The consequence has been that Quebec has remained backward in comparison with the rest of Canada, and Latin America has remained underdeveloped as compared with the United States, although, except for a few regions, the conditions and natural resources were much the same throughout the New World.

It could thus be said that though the different development of the United States has not determined the level of wages in that country, the uneven development of the world has certainly determined this wage level in the last analysis, since it has determined the different subsistence minimum and different “demand on life” of the men who peopled the United States. (Emmanuel 1972a: 126f.)

Except for the original standards of living of the immigrants, Emmanuel gave two additional institutional factors, which had helped keep wage-levels and therefore levels of development low in Latin America:

- i. The transplanting to the colonies of the clerico-feudal structures of the home country, as regards landownership and ground rent. These structures prevented agriculture from playing the role of an activity in which men could take refuge and thereby acting as a check upon the reduction of urban wages, which was the role it played in North America (and this without the surplus value exacted by

the Spanish landlords being used for development, since that class, unlike its British counterpart, was oriented toward unproductive expenditure rather than accumulation).

ii. The partial survival of the native population, and interbreeding by the settlers both with them and with the blacks emancipated from slavery. (*Ibid.*: 156, n. 20)

Not only was the emigrants' standard of living lower to begin with,<sup>59</sup> "but the partial survival of the natives and interbreeding between them and the colonists, kept the value of labour power at a low level" (*ibid.*: 370). In fact, this correlation is visible even in the regional divergences within Latin America itself.

As to the feudal institutions, Emmanuel (*loc. cit.*) argued, what they amount to in practice was this: "the Spanish *conquistador* had a choice between taking employment as a wage earner, and cultivating a piece of land burdened with tithes, taxes, or rent; whereas the British 'adventurer' had a choice between taking employment and cultivating free land. It can therefore be said that these feudal institutions were, in the last analysis, only a supplementary factor in the differentiation of wages between Latin America and North America. Inside North America itself the slaveowning states of the South developed much less rapidly than those of the North, not only during the period of slavery, owing to the low cost of the slaves, but even after the abolition of slavery, owing to the low wages of the freedmen."

His argument here can largely, if not fully, be made congenial with that which Brenner (1976, 1982, 1989a-b, 1997, 2001) was to make for Early Modern Europe up to the mid-18<sup>th</sup> century. According to the so called 'Brenner thesis', population growth (proposed as determinant by the 'Malthusian' school) and commercialisation (which had occupied that role in both the formerly dominating school and in the 'world-system' approach with which Emmanuel has become associated) had different effects depending on property relations and politically determined social structures, and the diverging agricultural productivities of Europe were consequences of these. In brief, the interpretation runs as follows.

In the newly colonised parts of Europe east of the Elbe, peasant organisation was weak; with the growth of European trade and both with the Black Death and the ensuing rise in population, serfdom spread accordingly. Since labour power could be had at little expense, the incentive to rejuvenate agricultural productivity was weak or non-existent. What stimulus there was, came from exports to pay for imported luxuries, since, obviously, there was no domestic market. Finally, they debouched into underdevelopment. In the West, peasants were better organised, well entrenched and, serfdom having instead declined, could profit from the lowering of population density. In France, it was the relative organisational strength of self-subsistent peasants that hindered the establishment of profit dependant landlords/tenant farmers, and the stimulus this would have given to agricultural productivity, which instead stagnated. As population began to rise again, holdings grew smaller, less commercially efficient, and less yielding as new and less fertile land was opened. As a consequence, by the end of the long 16<sup>th</sup> century (that is, some decades into the 17<sup>th</sup>), landlord/tenant incomes were in decline or stagnation all over Europe, contracting the market for manufactures and luxury goods. Only England, and to some degree in the Low-Countries and Catalonia, was more or less untouched by 'the crisis of the 17<sup>th</sup> century', thanks to its peculiar agrarian capitalist property relations procuring continuous productivity increases: in agriculture (the 'agricultural revolution'), thereby activating domestic markets and opening up the world of goods to the common man (the 'consumer revolution'), thus commencing a corresponding productivity increase in manufactures (the 'industrial revolution').

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<sup>59</sup> It is *the* particular characteristic of European wage history from the Middle Ages up to the 19<sup>th</sup> century, that English, and to a lesser degree Dutch, nominal and real wages could withstand the secular decline in wages characterising the continent; cf. Allen 2001. For an historical study inspired by Emmanuel's comparative approach see Dyster 1979: 95.

There are admittedly differences between Brenner's and Emmanuel's approaches, but they are smaller than is commonly recognised. In all probability, this is not least because the latter has become associated with Wallerstein (1974, 1979) whom Brenner (1977) criticised, among other things, for trying to apply Emmanuel's theory to Early modern Europe. Emmanuel's model assumed international capital mobility and equalisation, Brenner explained, of which there could be none in Eastern Europe of the time, where capital was not even nationally mobile. Brenner's thesis stops about 1750 at the dawn of the industrial revolution, but it is interesting to observe that when he (*e.g.*, 1998) takes up the story, in another contested interpretation of the postwar era, two centuries later on, he argues, by contrast, on the assumption of complete international mobility of capital, while opposing, among other things, the very popular monopoly school with arguments as to the tendency towards equalisation of profits. Although he is now silent on institutionally induced differences of development, he cannot possibly find a corresponding tendency towards equalisation of wages. How could Brenner reconcile his theses without passing *via* some theory of unequal exchange? He has never extended his original thesis to include the New World societies (but cf. Post 2003), or even Portugal or most of Spain themselves, but were this to be done, in a comparison of the development of the British Dominions, North and Latin America, it would surely have to include aspects such as the first of those enumerated by Emmanuel above, and if one is not too coy about it – for it is not a pretty thing to behold – also the second.

What is it that explains the relative success of former British colonies? Is it the 'island race' of Churchill, or is it rather the racism of the islanders? The latter has, in fact, something to support itself. Observing that they had all been connected to the same source of capital, and even disregarding underdeveloped India, Pakistan and Bangladesh, Emmanuel made the correspondence between wage-levels and levels of development excruciatingly clear for the colonies of settlement. South Africa had remained semi-developed, in spite of innumerable geo-climatic advantages, whereas the United States and the British Dominions had become the most developed countries in the world.<sup>60</sup>

One factor alone was different, namely, what happened to the indigenous population. Whereas in the other four colonies the total extermination of the natives was undertaken, in South Africa the colonists confined themselves to relegating them to the ghettos of apartheid. The result is that in the first four countries wages have reached very high levels, while in South Africa, despite the selective wages enjoyed by the white workers, the average wage level has remained relatively very low, hardly any higher than in the underdeveloped countries, and below that of the Balkans, Portugal, and Spain.

Let us suppose that tomorrow the South African whites were to exterminate the Bantus instead of employing them at low wages, and replace them with white settlers receiving high wages. [...] the ultimate result would be a leap forward by South Africa, which would soon catch up with the more developed countries. This is a frightful thought, I know, but it fits the reality of the capitalist system. (Emmanuel 1972a: 125.)<sup>61</sup>

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<sup>60</sup> "Out of Britain's five former colonies of settlement – the United States, Canada, Australia, New Zealand, and the Cape – the first four have become the richest countries in the world, with a national per capita income of \$3,000 or \$4,000 annually. The fifth, South Africa, has remained a semi-developed country, with a national income of about \$500 per capita, about as poor as Greece or Argentina. Yet the natural resources of South Africa are not less than those of North America and are certainly more so than those of Australia and New Zealand. All five were colonized by men of the same northern stock, tough and fearless. The climate of South Africa is no less healthy than those of the other four. Finally, all five were connected with the same the same source of capital, London, and belonged to the same commonwealth of nations and the same mercantile and financial networks" (Emmanuel 1972a:124f.).

<sup>61</sup> The accompanying footnote (*ibid.*: 155, n. 19) explained that a rise in black wages to white levels of course would have had the same effect, but: "Such an assumption being fanciful, however, I have assumed instead the

Since laboratory experiments are not possible in this context, Emmanuel (*ibid.*: 370) considered this case “a gift from history to economic science”.

In a similar vein, Lewis (1978: 183) noted: “In many cases the land was sparsely occupied by native peoples (Indians in the Americas, aboriginal Australians, African tribes). There was no hesitation in making war on these peoples, killing them off, or confining them to reservations, so that large acreages could pass into European farming.” Emmanuel’s important point, however, concerned the general institutional framework and the related establishment of levels of consumption and wages, eventually, in line with the Brenner thesis, encouraging development and determining differences in productivity. The ‘abundance of land’, once the indigenous brutes had all been exterminated, did not in itself explain development of the productive forces and the higher wages in the United States, since land was equally ‘abundant’ in Latin America:

[W]hat made agriculture an activity in the United States an activity in which men could take refuge, so to speak, thus preventing a fall in urban wages, was not the “abundance of land” but *the free access enjoyed by the immigrants to the land, without having to pay tithe or rent to anyone for the use of it*. This did not apply in Latin America, where land was just as abundant, but where the conquerors had transplanted the feudal *institutions* of their home countries. It did not apply either for a considerable period in Australia, where, on Wakefield’s advice, Britain had introduced a very heavy land tax, the effect of which was to restrict the incomes from the agriculturalists and thus make them comparable to urban wages that were acceptable to the capitalists. This explains incidentally why Australia’s development lagged somewhat behind that of the United States. (Emmanuel 1972a: 337.)

The possible minor differences between the countries of British offspring need not concern us. Emmanuel’s argument on institutional differences changing the nature of ‘land’ and expansion, has nice parallels in that of Brenner (and Post). However, in Emmanuel’s hands the international working out of such a thesis has certain surprising features that cannot be guessed from Brenner’s work.

Thus, he (*ibid.*: 172) maintained, for a country in a competitive system to derive an advantage from its foreign trade, it must consume more than the others do, whether in the form of direct wages or in that of unproductive expenditure or other kinds of consumption. This was in spite of the fact that, “[e]lementary logic and the natural order of things tell us that one can only spend as much as one earns; this is why orthodox political economy tends to think that wages depend upon prices”. It seems that very few, to date, have observed what Emmanuel declared as *the object of his study* on unequal exchange:

The object of this study is to prove that under capitalist production relations one earns as much as one spends, and that prices depend upon wages. If this thesis is correct, it will follow that capitalist production relations are contrary to elementary logic and the natural order of things. Confronted with such a dreadful consequence, many people will hope that it is not correct. (*Loc. cit.*)

This conclusion, Emmanuel came to realise in the ensuing debate, was apparently too outrageous even for Bettelheim: “what scandalizes him in my book is that it leads the reader eventually to a recognition that increased consumption brings about greater development and greater enrichment of nations.” So, with his penchant and talent for the paradoxical, he (*ibid.*: 337f.) challenged his adversaries’ astonishment by generalising the observation: “*No capitalist country has ever become poorer for having spent too much.*”

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straightforward extermination of the black population, as being, in present circumstances the less unrealistic of the two hypotheses.”

Bettelheim (1969b: 354) had replied that Emmanuel was the victim of an “ideological configuration”, which “gave rise to Malthus’s myth, which was revived by Keynes (in a special economic situation), that to “become richer” it is sufficient to consume more”. Hands full with fending off the bourgeois and the petty-bourgeois, Bettelheim (*ibid.* 356) was firm in his classical and Marxist belief that ‘value’ could only be created in the production process, and he was not one to be fooled by illusions of purchasing power created *ex nihilo*:

Whereas bourgeois ideology tends to believe, with J. B. Say, that production creates its own outlets, petty-bourgeois ideology tends to believe, with Malthus and Sismondi, that consumption creates its own production. We thus find re-edited, so to speak, certain mercantilist illusions denouncing “underconsumption” (by the richest classes), which Keynes “rediscovered” and praised. As we know, it is not a long step to take from there to illusions about “credit as creator of wealth”.

Raffer (1987: 37) notes this judgment of Emmanuel as a “petit-bourgeois believer in the theory that consumption creates its own production, like Malthus, Sismondi and Keynes, or the inverse of J.-B. Say”, and agrees: “Emmanuel is in fact quite a strong Keynesian as far as effective demand is concerned.”<sup>62</sup>

The historical confrontation with Keynes’s theories is beyond doubt, but no mention is made in these or other comparisons of the peculiarity of Emmanuel’s argument, nor of his preference for drawing Keynes towards Marx rather than the opposite. Bettelheim’s concern, however, was rather one within the French socialist movement. He (1969b: 356, n. 7) made the further point that these ‘illusions’ had fostered reformist arguments within the trade-union movement, taken up by the Confédération Générale de Travail, “according to which increased wages would make capitalism ‘work better’ – which implies, moreover, that the aim of the ‘working-class movement’ should be to ‘make capitalism work better’.”

Emmanuel (1972a: 377, 1970a: 90), who demonstrated no emotional attachment to the French socialist movement, replied by instead comparing the different development of Canada and the Congo. The same mother company, the Société Générale de Belgique, had installed Petrofina, exploiting oil wells in Canada, and the Union Minière, exploiting copper mines in the Congo. Why was it that the return on capital investment in the former was reinvested, whereas the latter instead developed into an ‘enclave’?

Are we really to suppose that the heads of the Société Générale in Brussels are solely concerned to overdevelop Canada and “block” development in the Belgian Congo? The reality is different. The simple fact is that in Canada the high standard of living of the people, resulting from the high wage level, constitutes a market for all sorts of products, whereas wages and standard of living in the Congo are such that there is nothing there to interest any fairly large-scale capitalist - nothing except the extraction of minerals or the production of certain raw materials for export that have inevitably to be sought where they are to be found” (Emmanuel 1972a: 376f; cf. 1970a: 90).

This was intimately related to the argument he had implicitly made in 1962, when maintaining that the root cause of unequal exchange and underdevelopment was the low levels of consumption. The divergent paths were “the effect, not the cause, low wages”, although it then became a cause in its turn “by blocking the development of the productive forces and, consequently, the process of creating conditions propitious to trade-union struggle”. Crippled and asymmetrical though it may be, the ‘enclave’ or MNC did not block anything: “If it had not been there, nothing else would have been there in its place. The underdeveloped countries would have lost the income, however slight, that they derive through wages, taxes, and the sale of products to the enclave.” As he liked to point out, the ‘American’ or ‘Australian’

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<sup>62</sup> That Raffer, in spite of all, has serious difficulties with Emmanuelian notions becomes clear in his own analysis where emphasis is put on demand in the *poor* colonial markets, while, in line with dependency theorists, he passes by that in the *strong* and much more important markets of the British Dominions and the United States.

model of development was not the only one possible, if even that, but it was the traditional one. It stood the world on its head, began with the end, with consumption, by creating a sufficiently large actual or potential market that attracted capital: "Like certain fish, capitalism can keep afloat and move forward only by swimming against the stream" (1972a: 378; cf. 1970a: 90). Its symmetrical opposite was the socialist one, which could start directly by setting up the works to produce capital goods.

Pointing out that many economists had failed to grasp what it was, distribution apart, that distinguished the dynamic of a free competition economy from that of a planned economy, he (1972a: 379; cf. 1970a: 90) noted: "What has especially shocked people in my thesis is this idea that excessive unproductive consumption may not only not impoverish but even enrich a capitalist country." Bettelheim, for one, believed it to be a petty-bourgeois argument and a myth. He was right, of course, Emmanuel continued, "that it is not the business of a workers' party or a trade union to act as technical consultants to capitalism and try to improve the system instead of overthrowing it." But while this was one thing, it was quite another to note that capitalism of the postwar developed world worked better than either its predecessor or its underdeveloped counterpart, with full or near-full employment and a national income per head not of 100 dollars but 30 or 40 times as much: "These are not Keynes's or anybody else's myths, but actual facts of the real world. To take them into account, when studying the system or when planning to overthrow it, is not to show oneself petty bourgeois or reformist in attitude; it is the proper business of the scientist and of the politician, even if they are the most 'orthodox' of Marxists and the soundest of revolutionaries" (*loc. cit.*).

Emmanuel hammered in whenever had the chance that contrary to any other mode of production, in a capitalist economy the level of investment and production was dependant on the level of purchasing power and consumption. In another important debate (with Warren 1973), he again explained that the common basis for the 'blockage' of underdeveloped countries and the overdeveloped feed-forwarding of consumption, lay, not primarily in deliberate, conspiratorial, or uninformed strategies of great power-holders, or even in peculiarities of social structure and technology, but in free-working market forces:

For, in the capitalist world, in which all the natural functions of human society are stood on their heads, the primary problem being not to produce but to sell, he who dominates is not the biggest producer but he biggest consumer [...].

This may seem paradoxical – as though we were saying that it is the possibility of clearing the estuary of a river that determines the volume of its tributaries. Yet it is so. Instead of consuming what it has already proved capable of producing, the capitalist system can produce – and, consequently, advance and develop – only where there is an already available capacity for consumption, either actual or potential. This is, indeed, the most fundamental difference between the dynamic of capitalism and the dynamic of socialism. In the former, all the impulses come from the market, so that investment in capital goods becomes impossible at the very moment when demand for final goods recedes or stagnates. The world is turned upside-down. What is downstream determines what is upstream. In the dynamic of socialism, production creates its own market. The world stands on its feet, and what is upstream supplies what is downstream. (Emmanuel 1974b: 72.)

The difference between the traditional equilibrium approach to capital and his own disequilibrium one was clarified in a telling image: "Capital is not attracted by a low level, like the liquid in communicating vessels, but is, on the contrary, sucked up by a siphon effect, towards active markets and high levels of consumption" (*ibid.*: 77).

Replying to Somaini (1971), this was illustrated in an imaginary example comparing two countries, the developed United States and the underdeveloped Brazil, in both of which all technical and cultural infrastructure was simultaneously wiped out by atomic bombs, leaving only a population of simple manufacturers with exactly the same rudimentary tools, and an

identical per capita stock of the most commonplace means of subsistence, which would last two years at the Brazilian standard of living, but only two months at the standard of living of the United States. After only a few decades, Emmanuel maintained, Brazil would again be Brazil and the United States again the United States (Emmanuel 1973: 56-60).

The day after the cataclysm, work was recommenced at the new low level of productivity, identical in both countries, but based on the old respective nominal wage levels. Based on this and on the respective traditions and habits, an enormous wage-gap remained between the regions. Productivity being what it was, the price of the existing stock of consumption goods would remain fairly stable in Brazil, but rocket in an inflationary wage-price spiral in the United States, where even a reduced level of consumption remained far above the level of production. The United States would be a seller's market and an ideal situation for capitalist investment. Before the stocks were wholly depleted, shipments of all kinds of goods would have arrived and continue to steer for this unlooked for El Dorado where everything sold, the people consumed more than they produced and the will to purchase exceeded the supply of goods. There would obviously be a deficit in the balance of trade, but this would be resolved in the balance of payments – compensated or outbalanced by a parallel importation of capital – since the world's capitalists would turn towards this immense potential, if not actual, market for cars, vacuum cleaners, television sets, etc., of which they knew the Americans to be such great consumers. Though it was rationally inexplicable, credit was not a problem, and bills of exchange drawn on American importers were readily accepted on the great bourses of the world. International capital would rebuild the wrecked industrial sites, resolute entrepreneurs would quickly see that at such wages and price levels much would be gained by mechanising production, and they would have no problem convincing international bankers of the profitability of their projects. Technicians and engineers would follow, while waiting for the new universities to cover the deficit. In this manner, the United States would again become the United States.

In the meantime, Brazilians managed their stocks wisely on their famine wages, making them last longer than usual until the first harvest of the new plantations, created to export a little coffee, in order to import a few new goods. There was neither tension nor disequilibrium, and goods remained long on their shelves as they had always done in poor countries. Brazil's 'equilibrium of underdevelopment' was so perfect that international investors did not trouble with it. At existing prices and wages financiers resolutely declined all eventual projects to mechanise, should someone be bold enough to suggest them. Only in refashioning the coffee plantations did they find every prospect for bankable projects, to supply the great market in the United States where, regrettably (and excepting Hawaii), coffee did not grow. Thus, Brazil would once more become Brazil.

This is not so much a fairy tale as a caricature, Emmanuel informed, because while enhancing certain features it left the basic physiognomy of history intact. The United States developed not *in spite*, but *because* of its abnormally high initial wages and of the poor quality of its early workforce. Thus, he (1973: 60, trans. J.B.) summed up: "It was certainly through high wages that the United States became developed, but not through the terms of trade: it was through the influx of men and capital, above all the Americanisation of the latter, another effect emerging from the opportunities continuously created by the widening high-wage market. It also developed through the orientation of these investments towards 'labor-saving processes', the third effect of the same cause, that is, the expensiveness and poor quality of manual labour." However, the American way was not the only one possible, Emmanuel contended, and today was not possible other than for a minority of the world's nations; nor was it as efficient as the opposite way of central planning under socialism. In this conclusion, if not in the analysis behind it, Emmanuel was perfectly at one with Baran, Bettelheim, and the tradition of Marxism they manifested.

Observations such as those by Nurkse, Lewis, and Bettelheim, as well as his own, were advanced by Emmanuel in *L'échange inégal* as an argument for capital being mobile enough to move even 'in the wrong direction', that is, from low wage to high wage countries. It was of course in that book, and not in *Le Profit et les crises*, that his basic case for such a geographical distortion of investment incentives was advanced. However, to the inconvenience of early interpreters, an elaborate presentation of its theoretical justification had to wait half a decade. It almost seems as if, by then, interest, sometimes as volatile in the humanities and social sciences as in the fashion industry, was already beginning to fade.

## The inequality between the value of output and the purchasing power of income

To see Emmanuel's point requires first of all an understanding of in what sense a capitalist economy can be considered 'blocked' in its development possibilities over and above a certain level, in spite of the indubitable fact that it was the capitalist economy that first opened up these possibilities in the first place. This is a standard old-style Marxist contention, most of which collapsed instead of capitalism after the 1930s. But it would be unfair to say that Emmanuel was engaged in saving the phenomena, and he was quite severe in the treatment of his predecessors and of the many mythologies endorsed on this and related subjects. His principal interpretation of the internal contradictions of a capitalist economy is found in *Le Profit et les crises* (1974). In addition to ample demonstrations of his acquaintance with Marxist and orthodox economic traditions, one can find also what appears to be close familiarity with the internal conducts of capitalist enterprise, giving his highly theoretical discussion a hands-on concreteness and pedagogical comprehensibility, perhaps not usually found in either the one tradition or the other.

Whereas the argument in Emmanuel's *L'Échange inégal* and related articles caused great stir, and as a consequence have become the object of scholarly attention, the latter has not followed the praxis in the humanities of relating it to his other arguments, particularly that of *Le Profit et les crises*, described by the French back cover as the second piece of a diptych. Latouche (1985: vii) has suggested that it was the success itself of *L'Échange inégal* which eclipsed his other contributions, notably *Le Profit et les crises*, but also his essays. Jedlicki (pers. comm.) agrees that Emmanuel's most important and original argument is to be found in the latter work, and yet it is the least discussed, since it has had no obvious political implications. This lack of interest on all parts is surprising in view of the foregoing, and also subsequent, heated controversies.<sup>63</sup> It is perhaps related to Emmanuel's debatable and, for much of Marxism, heretical stance on issues such as the theory of value, international worker solidarity, exportation of capital, and multinational corporations. A certain fatigue among Marxists appears to have set in before its publication in 1974, e.g., Amin declaring 'the end of

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<sup>63</sup> References to the sparse commentary on Emmanuel 1974a has been collected in Emmanuel n.d.: 32f., including all in all 7 reviews and a bibliographic note (by Duménil 1975) in French, one each by Alfred Sauvy, 'P.L.', and an anonymous author in 1975, one each by Philippe Hugon and Charles Albert-Michalet, and two by Latouche in 1976. In addition, 4 articles were identified, one by Biesmans, Joiris, & Bels in 1975, with a reply by Emmanuel 1978a, one by Van de Velde in 1976, and one each by Denis Clerc and de Enrique G. Vinuela & Günther Steinkamp the following year, along with a few comments in books. The Anglo-Saxon world was just beginning to discover his theory of unequal exchange through the 1972 translation, but there was no English translation of *Le Profit et les crises* until 1984, reviewed by Abegaz 1985 and subject of a 'Book Note' by Grahl 1985. Apparently, neither the standard editor, Monthly Review Press, nor the standard translator of Marxist economic works from French, Brian Pearce, swallowed the implied suggestion in Emmanuel's sending him a copy (which happens to be in my possession, J.B.). Another subject which caused a large reaction, and immediate translation, was Emmanuel's (1982) argument that 'appropriate technology' for the underdeveloped world was actually 'underdeveloped technology', and related arguments in favour of Third World debts and multinationals as means of transferring resources to the South.

the debate' already in 1973, and evidenced in the shortness of Bettelheim's (highly appreciative) preface to the latter work (1974: xi), contrasting with his previous forewords and afterwords and theoretical contributions to which he refers. Marxists who had just barely begun to formulate counter-theories of unequal exchange, partly, it seems, in an effort to demonstrate that the villain was not the working classes of the rich countries, but the hobby-horse the 'monopolistic' multinationals with or without the assistance of the state apparatuses, were just not up to yet another great debate on what appeared to be a wholly different subject. To most theorists it was indeed wholly different, but to assume that this was also the case for Emmanuel would not only be gratuitous but poor method.

Although published in 1974, Emmanuel announced his intention of writing this book already in 1969, speaking of a certain protectionism – that striving for a *permanent* surplus in the balance of trade, which, following Keynes, he observed so contrasted the business of trade with its post-mercantilist theory. To resolve this odd discrepancy, however, one had to go further, he (1972a: xix) declared, and “challenge not merely the assumption of full employment, as Keynes did (without, however, going very far into the matter), and not merely the assumption of the identity between purchasing power and willingness to purchase, which Marx and Keynes challenged, but also that much more fundamental assumption of equivalence between the total amount of incomes and the value of production, which Keynes did not seek to question any more than did the other economists.” It fell outside the scope of his book to refute that equivalence, he (*ibid.*: xxxviii) explained, “since my subject is not foreign trade in general but a particular feature of foreign trade, namely, unequal exchange. It needs to be made the subject of a special work devoted to examining, first, the internal working of the competitive economy and, second, the interactions between the level of internal activity and the external trade balance.”

Does this mean that the subject of *Le profit et les crises*, with the subtitle ‘a new approach to the contradictions of capitalism’, was indeed ‘foreign trade in general’? Apparently not. Its subject was a disequilibrium at any given moment between the total amount of incomes and the total sales value of production, of whose avatars said protectionism was only one:

It is this disequilibrium itself which will be studied in this work. The aim I have set myself is to show that we are dealing with an essential contradiction of this mode of production; and that, on the level of the realisation and reproduction of the product, the original contradiction between social production and private appropriation resolves itself, or transforms itself, into this contradiction.

It may therefore seem strange that I approach this contradiction, so to speak, obliquely, from the aspect of its manifestation in international trade. This is because I think that this domain shows more clearly than any other the impasse which economic science has been led into by the postulate of the material impossibility of general overproduction. (Emmanuel 1984: 2f.)

In order to account for said protectionism, “one must reject the basic postulate of political economy, that the sum of revenues generated in a given period is equal to the value of the new production of that same period” (*ibid.*: 1).

This problem appears to have been long on Emmanuel's mind. Although a demonstration of his solution is not undertaken until his 1974 book, the solution itself is mentioned in an essay from 1966 on the incompatibilities of Keynes and Marx (an area of special importance to Marxists in France, but not only there), and its area is touched upon even in one of his Congolese articles (1954b), if not before, that is, at any rate before moving to France or starting to work on his thesis on unequal exchange. If the experience in the Congo was what roused his attention to the latter phenomenon, one may even suggest that the subject of Emmanuel's second book was the historically and theoretically prior problem also to him personally. It concerned an inherent contradiction of capitalism itself, whereas unequal exchange was, and partly answered for, an aberration within the capitalist system. If, as has

often been suggested, underconsumptionist or mercantilist ideas find breeding ground during depressions, Keynes (who may have provided added stimulus) not being an exception, Emmanuel would have been amply exposed in his youth, having lived through his, not uncommonly intellectually formative, late teens and twenties in the depression years of the 1930s. Simultaneously in the Soviet Union, the end of the New Economic Policy and the beginning of the five-year plans with Stalin's 'turn to the left' – pushing the Soviet Union at breakneck speed along the road of economic development by transferring means from the production of consumption goods to the production of means of production (*i.e.*, from unproductive to productive consumption) – demonstrated that crises were not inherent in every economic system. The fundamental difference between a market and a planned economy, particularly in this respect but also others, is a constant theme running through Emmanuel's writings, including those on unequal exchange, as far back as I have been able to confirm. Nevertheless, it took several decades of unprecedented growth in the West, uninterrupted by major crises, before he was to publish a full-blown theoretical exposition of a crisis-ridden capitalist economy, together with his explanation, in which unequal exchange played a part, of the foregoing exceptional period of development.

Emmanuel (1954b) identified a dynamic difference in capitalist investment incentives between the upward and downward phases of the business cycle because of the *expected* sales opportunities. The same amount of unsold stock was something quite different in the one and the other. Similarly, the subject of *Le Profit et les crises* was the demonstration of an inequality between the value of production of a certain period and the purchasing power of the incomes generated in this same period, and how this showed up in the permanent phenomenon in a market economy of the greater ease of buying than of selling.

The first mention of this solution appears to be in an article, partly reprinted in his book (1984), which tried to spell out the incompatibility of Marx and Keynes (Emmanuel 1966a). This incompatibility, he felt (*ibid.*: 1196), had not been sufficiently elaborated by the French 'state-capital' theorist Paul Boccara. Unlike Boccara and Keynes, Emmanuel (*loc. cit.*, trans. J.B.) maintained, for Marx and the Marxists there existed an overproduction of capital in the literal sense of "unused, redundant, idle capital" which represented an actual excess of saving over investment, a true 'hoarding' on the social level, an overproduction *ex post* in the common sense of the term. Unfortunately, the passages in which Marx broached the subject had never been edited by him and ultimately left his reader in a fog as to the actual solution of the problem. How this excess was theoretically possible Marx had not told his readers, and other passages, notably those on reproduction or the realisation of surplus value, seemed to speak against its possibility. In innumerable variants, from the moderate Lenin to the dramatic Grossmann, Marxists had accepted overproduction of capital and studied this excess capital in search of placement, seeing in it a peril to the capitalist system and a reason for its flight outside national borders. In this acceptance, Emmanuel reminded, they conformed with one of the most commonplace observations, and with the experience of businessmen who would never dream of questioning the possibility of the existence of savings in excess of investments. Even the economists themselves, when they analysed things on a lower level of abstraction accepted this category: "But as long as the basic postulate of the accounting equality between incomes and the value of production has not been repudiated, pure economic theory will ignore this phenomenon. There we have another of these cases of divorce between city and science that Keynes himself has carved out so well" (*ibid.*: 1198, trans. J.B.).

As Keynes had admitted, it all depended on the definition of income:

Now, in the real world, revenue is nowise equal to the produced but to the realised value. If one part of the value, notably that corresponding to wages, is transformed into revenue before the sale and independently of its results, another part, surplus value, is not acquired as revenue until after the sale and *according to* its results. Consequently, the fluctuations of stocks assure that the sold product

does not correspond in time to the value of production and forbids our substituting the one of these magnitudes for the other [...]. To calculate revenues one must consider the unsold goods. (*Loc. cit.*, trans. J.B.)

In his pedagogical presentation of Marxist economics, Sweezy (1942: 63) noted that Marx's analysis corresponded well with modern corporate income statement, and the actual accounting categories of capitalist business enterprise: "Total value is equivalent to gross receipts from sales, constant capital to outlay on materials plus depreciation, variable capital to outlay on wages and salaries, and surplus value to income available for distribution as interest and dividends or for reinvestment in the business."

Now, looking even closer on these accounting categories, with Emmanuel, we find that

while it is true that it is the same quantum of goods which simultaneously represents aggregate supply and aggregate purchasing power, *it is not at all true that, in capitalist reality, one commodity, whether a means of production or an article of consumption, has the same (recognized) value in its producer's warehouse as it has in that of his purchaser-user.* Any chartered accountant, lawyer, or official receiver summoned to evaluate a stock, any banker invited to finance it, or any tax inspector called on to work out the tax on a capital gain or an inheritance will value the same machine at its cost price, if it is unsold in the warehouse, but at its sale price – i.e. all other things being equal, its total social value – if it is in the inventory of its user. The law itself, directly or indirectly, forbids and penalises taking stock of a commodity at a value higher than its cost price, and settling one's purchases on the basis of this inflated value, since it is explicitly laid down that one of the cases in which an insolvent will be declared bankrupt is when he has spent above his means; since the determination of his 'means' is a question of fact, the court will rely in the matter on the findings of a chartered accountant, who will assess these means by evaluating stocks at their cost price.

So it seems society recognizes two values in a commodity: the first, lower value at the close of production, not including the producer's profit – a sort of provisional value – and the second, complete value at the close of the sale, including the producer's profit. (Emmanuel 1984: 221f; cf. 1966a: 1201f.)

Disregard of this fact, which is a central observation of Emmanuel's book and article, had lead economists into certain capital problems which the mercantilists did not have:

Some saw value as created in the process of production, others in that of exchange. But neither the one nor the other would like to see anything other than a temporal and qualitative difference between the creation and realisation of value. The old mercantilists, who preferred to proclaim the facts without explaining them, rather than deny them for lack of explanation, had seen very well that the difference is quantitative and they cried out loud that in selling one enriched oneself. (Emmanuel 1966a: 1202, trans. J.B.)

Emmanuel viewed the mercantilists as being well integrated in their society and on occasion even instituting its laws, personifying 'praxis' and a time when political economy was hardly distinguishable from economic policy. By contrast, since Quesnay "economists live as if reality did not exist and men of politics acted as if the economists were not there". In spite of his admiration for the mercantilists, even Keynes himself had only seen a single superiority in the money good over other goods: its 'liquidity' (and absence of conservation cost).

Now, Emmanuel continued, money was the principal value where there was no separation between production and realisation; as soon as it was produced its value was realised. A thousand francs of money valued a thousand francs to the whole world; a thousand francs of goods might well value a thousand francs to society in general, but for its producer it valued only 700 or 800 francs (according to its cost price) until it was sold. It was something like this that the mercantilists said, Emmanuel maintained, and this was the reason why they were understood by their contemporaries. After one had discovered that the sale did nothing but

exchange value for an equal value and money was degraded to a technical accessory, economic systems became eminently logical and began to satisfy the spirit, “but they did so just a little bit too much to square with capitalist practice.” Then in the 20<sup>th</sup> century, of course, economists again began searching for the reasons for the peculiar demand for money, which perturbed their models, renaming but hardly explaining it as Keynes’s ‘liquidity preference’ (*loc. cit.*). “Only with the post-Keynesians,” he (1984: 87, n. 80) argued, “does one find as dynamic view of hoarding as that of Marx.” Money was neither a neutral element nor an autonomous factor. The important thing was not money in itself, he (1966a: 1203) reminded, but what it resulted in on the level of general equilibrium: “a dissociation of the two acts constituting the exchange, the selling and the buying.” Although he had not had the time to complete this part of his theory, Marx knew that in the real world one does not sell in order to acquire money, one sells in order to *gain*.

Right from the start, Emmanuel’s book, too, took up the thread of Marx’s *implicit* rejection, when speaking of overproduction or over-accumulation, of the equality between revenues generated in a given period and the value of the new production of that same period. But in Marx’s work as a whole and in the unfinished state in which he left it, this rejection could not stand up against his *explicit* schematisation of this very equality in the chapters on simple and expanded reproduction, and when dealing with realisation of the product. Right away Emmanuel (1984: 2, n. 3) distinguishes his position from that of Keynes, whose formulation may very well have hinted the way: “What we are concerned with here is precisely the equality between production and revenues, and not that between production and effective demand”. Although the two equations were often conflated, he (*loc. cit.*) continued, the latter had already been challenged and rejected by both Marxism and Keynes: “Keynes distinguishes between them from the outset and rejects the latter, calling it a Euclidean postulate, but unreservedly accepts the former.” Indeed, the former, which Emmanuel called a “sacrosanct equation”, was referred to by Keynes (1973: 20) as the “first axiom of political economy”, the latter as the second. Inspired by the revolution in physics, he likened the classical economist with a Euclidean geometrician in a non-Euclidean space, who when he discovered that in the real world parallel lines often crossed themselves started blaming the lines for not running the way they ought. In reality, Keynes argued, there was no other solution than throwing the parallel axiom overboard, concluding that something similar was needed in political economy. Inspiring words and image, but as Emmanuel noticed, Keynes (*loc. cit.*) was content to reject only the one: “The conclusion that the *costs* of output are always covered in the aggregate by the sales-proceeds resulting from another, similar looking proposition which is indubitable, namely that the income derived in the aggregate by all the elements in the community concerned in a productive activity necessarily has a value exactly equal to the *value* of the output”.

Again inspired by Keynes, Emmanuel then took off where his article had left it, with the example of that permanent strife for a balance of trade/payments not in *balance* but in *surplus*, which the mercantilist took for granted: “Here we have a rare case of a permanent and absolute divorce between science and business, between theory and praxis” (Emmanuel 1984: 3). Accepted by the mercantilists, the necessity to sell – anything, but preferably manufactures – more than one bought and for an indefinite period was rejected as absurd by the classics, ultimately because, if successful, it would mean giving away useful goods and services which had cost real time, effort, and material to produce in exchange for a rising pile of useless money the only effect of which would be to raise domestic prices. The world economy as a whole was a closed system, from which there could be no selling, so money was only a durable intermediate chosen to facilitate transactions of real values.

Indeed, even Keynes himself could not dispute that in the long-run a permanent surplus would be just that, absurd, but then, said he, in the long run we would all be dead. Keynes’s

point is well taken in the sense that if one does not live until tomorrow one is unlikely to live to see ones grandchildren cultivate their garden. For those philosophically inclined, it can be seen as a sort of preliminary ‘phenomenological’ going to the things themselves (Husserl), but still not a complete ‘existential’ inversion of perspective (Heidegger). However, the inherent short-sightedness in this perspective, and the blunt contradiction between the long and the short run, is dangerously similar to a short-circuit. *Long*-circuiting, Emmanuel went one step further in accepting that, although absurd, the absurdity lay not in the minds of mercantilists and economic policy makers, but in the inherent bias of the market economy itself.

Based on the assumption of a closed system where goods can ultimately only be exchanged in order to acquire other goods, as in the formula C-M-C’ (commodities/products exchanging for money, which is again exchanged for other commodities/products), the classical argument explaining why the value of production (P) is equal to total income/revenue (R) is easy to understand. The view was systematised by Marx and adopted in his reproduction schemas and, as observable from Sweezy’s description above, is a mere question of book-keeping. Each constituent element of the value also constitutes an income. The price of a good put on sale is composed of three portions: (1) goods consumed during and in consequence of its production, (2) remuneration of the workers employed in its production, and (3) the share of ‘non-working’ claimants, *i.e.*, capitalists, land owners, the state, etc. The first portion poses no problem, simultaneously eliminating a good and incorporating its value in the price of the new commodity. The portion of the price that is created in a given stage of production, its *value added*, is strictly equal to the new purchasing power created by this same stage of production. Since this is valid for each individual good it is also valid for all the goods taken together.

Taking three branches producing means of production, articles of workers consumption, and luxury goods, and using Marx’s terminology, the price of production, *P* (or if one so prefers, value, *V*), is equal to constant capital, *c*, variable capital, *v*, profit, *p* (or surplus value, *m*), so that

$$\begin{array}{rcccccc}
 c_1 & + & v_1 & + & p_1 & = & P_1 \\
 c_2 & + & v_2 & + & p_2 & = & P_2 \\
 \hline
 c_3 & + & v_3 & + & p_3 & = & P_3 \\
 \hline
 \Sigma c & + & \Sigma v & + & \Sigma p & = & \Sigma P
 \end{array}$$

Nothing is changed in the next period of production whether the system remains on the same scale (simple reproduction, whence  $\Sigma c = P_1$ ,  $\Sigma v = P_2$ ,  $\Sigma p = P_3$ ), or if we take account of accumulation (extended reproduction; distinguishing between the consumed part of profits,  $p_c$ , and the capitalised part,  $p_k$ , whence  $\Sigma c + \Sigma p_k = P_1$ ,  $\Sigma v = P_2$ ,  $\Sigma p_c = P_3$ ). The only type of overproduction possible within the schema is a *partial* overproduction between sectors which is always compensated by a corresponding underproduction, *e.g.*, an excess of workers consumption goods and a corresponding lack of means of production. There can never be *general* overproduction.<sup>64</sup>

<sup>64</sup> As has been pointed out time and again, the first theorists, or even later ones, who tried to explain overproduction (or underconsumption), Malthus, Sismondi, etc., neglected productive consumption ( $\Sigma c$  &  $\Sigma p_k$ ), and when this had been pointed out by Ricardo, Say, etc., the unanimity on the impossibility of general overproduction became almost total (cf. Bleaney 1976). When lack of purchasing *power* no longer could satisfy the intellect, the difficulties of realisation had to be explained by a lack of purchasing *propensity*, a lacking *will* to purchase. But a lack of will was no explanation at all, Emmanuel contended, since it was either temporary and could not explain either a permanent phenomenon such as the difficulty to sell or recurring phenomena such as crises, or it was equally permanent and regular, in which case it would in itself need an explanation. Consciously or unconsciously, he suggested, economists, who had accepted the phenomenon (mostly Marxists) and consequently looked for its explanation, all came up with variants of only two: hoarding and disproportionality between sectors of production, most often the latter. In a confusing way, such arguments have been advanced

Adopting Marx's formula M-C-M' (money exchanged for commodities, in order to acquire more money) in contrast to the above (although Marx himself had returned to the formula C-M-C in the reproduction schemas), meant accepting the central place of the sale as the proper description of the capitalist economy, the *raison d'être* of all economic activity. But this placing of money at the poles and separating in time the act of selling from the act of buying only revealed a precondition for disequilibrium, not its cause – a necessary condition, not the sufficient ones (*ibid.*: 28-33).

We have already mentioned Emmanuel's solution, based on the social recognition of the cost price of a good at a lower level than the price of production at which it is sold (*i.e.*, the price at which it tends to be sold in the long run). Such a doubling of values cannot be tolerated either in the static thinking of the classics and even less in the absolutist, objectivist one of Marxists. Marx himself only saw "a *qualitative, not a quantitative moment*" (Marx 1973: 677f.; cf. 1972: 504) in the sale,<sup>65</sup> but Emmanuel (1984: 228) was highly sceptical as to the meaning and content of such qualitative differences and imperfect socialisations. Whether in the form given by Marx or in Keynes's 'liquidity', the notion that *value*, in the economic sense and in a capitalist economy which only dealt with quantitative differences, could be qualitative or imperfect was ultimately a contradiction in terms, yet another way to say that it is easier to buy than to sell: "Money would not be more liquid than commodities if the supply of commodities did not exceed their demand." There was always a value at which a commodity became as liquid as money, he (*ibid.*: 228f.) *i.e.*, "a price at which one can get rid of a commodity roughly as quickly as one can get rid of money."

Indeed, there were other goods than money, credit, bills of exchange, an entry into a bank account, for which this was generally the case, including, as was indicated by their very name, 'cash-crops', and commodities made to order. What characterised these goods was that as soon as they were ready for export or delivery, society recognised their total sale price, not

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both for and against what is referred to as 'Say's Law of Markets', with the same arguments as the critics often found in Say's own writings.

The whole first part of Emmanuel's book was a long digression into his predecessors' arguments on 'Say's' law, crises and overproduction, where it was commonly the more logical critics of underconsumptionism who came out on top in the competition of logic. The extensive treatment of Marx's analysis was particularly appreciative, but he found that the fundamental explanation that would make it all coherent, again and again slipped through Marx's fingers. The theory of Rosa Luxemburg, who was again becoming one of Marxism's favourites in the early 1970s, was also treated at length, not because of the level of her analysis, but, in Emmanuel's (1984: 211) words, "because the number of logical dead-ends she reaches illustrates what we have already said: (i) that it is impossible to explain the phenomenon of overproduction as long as one sticks to the fundamental equation between production and income, and (ii) that the more one searches for such an explanation within the confines of this equation [...] the more one sinks into the most inextricable contradictions and ultimately the most commonplace absurdities." However, there was also another reason, Emmanuel (*ibid.*: 213f.) admitted: what she was unable to prove and even managed to obscure when trying (or not trying) to formulate extensive and regular arguments, her intuition made her stumble upon in barely elaborated remarks. No one had concentrated with more fierceness "on capitalism's fundamental tendency to erect the act of selling to the status of an end in itself. [...] One does not sell commodities in order to buy others; one buys them in order to resell them. [...] one does not sell them in order to obtain means of purchasing, one sells in order to get richer."

<sup>65</sup> Although he dramatised it as a 'perilous leap', 'metamorphosis', or 'trans-substantiation', and the difference in value between sold and unsold goods was also 'qualitative' depending on the latter "expressing a certain quantity of money in a merely imperfect form, since it has to be thrown into circulation in order to be realised" (Marx 1973: 218). Even if Emmanuel's interpretation of value differed from that of the classics and Marx, he (1984: 229) did not feel that it went against 'objective' theories of value in general. The new value pointed out by Emmanuel, the cost price, was not to be thought of as yet another abstract 'value' or 'price of production' with which to juggle in the world of economic metaphysics, but was simply a category on the same concrete level of phenomena as the market price. The difference between them was that while the market value was a true exchange value, the cost price was a sort of accounting value fixed before any exchange, but the one was just as concrete as the other.

merely their cost price, and their producer could, in principle, mobilise up to 100% of their purchasing power through credit. In a planned economy, where every good was ‘social’ as soon as it was produced, such exceptions became the general rule; in principle everything was made to order and effectively sold in advance (*ibid.*: 230):

This is the main advantage of planning, and not some supposed optimisation of the allocation of the factors [...]. It is the economy’s basic dynamic which changes. Instead of only investing in what can be sold, in proportion to the previous increase of sales and *after* the results of the last, the whole accumulation-fund is immediately and automatically invested, production is expanded up to the limit of the potential in men and equipment, and then one consumes what one has produced. Sales are assured by the very fact of these maximum productions and investments.

The world is put back on its feet. The community’s problem is not how to sell, but how to produce. Instead of being limited by the market, planned production creates its own market. The buyer’s market, which is the normal situation under capitalism, is replaced by the seller’s market. The effort to sell is replaced by a certain effort to buy. (*Loc. cit.*)

Emmanuel was careful to point out that his argument said nothing of the political process of decision making, which, he suggested, could be as decentralised as anyone might wish:

The above in no way implies that a genuinely planned country is *ipso facto* socialist, or rather that the socialist character of the social relations of production is a simple increasing function of the degree of reinforcement of the plan. Nor does it mean that the compulsory character of the plan is synonymous with the centralisation of economic decision-making. A democratic process of elaborating the plan is not necessarily incompatible with completely directive and genuine planning. The most centralising plan for the economy may perfectly well be worked out by the most decentralised procedures. (*Ibid.*: 233.)<sup>66</sup>

After participation in Yugoslav discussions, Emmanuel (1977b) seems to have become more sceptical about the possibility of non-bureaucratic socialist planning, implying that it represented a corresponding ‘internal contradiction of socialism’, with further implications for the role of the state in the transitional period (1979b; cf. Lewis 1949, Nove 1983).

Having established the existence of a structural excess of supply over demand, was still not demonstrating that it gave rise to any problem of realisation of the social product, and even less that this blocked its realisation at any stage. Taking an example where the value of production (= supply) was 500 and that of purchasing power (= demand before sale) was 400, the excess of supply over demand was accordingly 100, or 25 %, and the profit of enterprise (income as a result of realisation) 25% of cost price and 20% of the selling price (*ibid.*: 242):

Constant capital	Variable capital			Surplus value		Value of the product
		Before sales (rent, interest)	After sales (profit of enterprise)			
<i>c</i>	<i>v</i>	<i>m<sub>b</sub></i>	<i>m<sub>a</sub></i>	=	<i>V</i>	
300	50	50	100	=	500	

<sup>66</sup> In fact, even under capitalist relations the economic dynamic may be reversed, without either plan or authoritarian allocation of resources. This is particularly the case in wartime, as noted by J. A. Hobson (1917: 462) and even Heckscher (1931: 86, 1994, II: 100) for the First World War, and Baran (1957: 41) for the Second. Keynes (1936: 322) also shared his thoughts on what he considered to be a basic tendency of capitalism, thus far, towards unemployment: “Except during the war, I doubt if we have any recent experience of a boom so strong that it lead to full employment.” Jan Otto Andersson has reminded in conversation that Finland, contrary to other Western countries, experienced no ‘oil crisis’ in the 1980s. Having previously reached trade agreements with the Soviet Union for its oil imports according to world market prices, when prices rose, Finland was obliged to export even more of its own products and the economy boomed.

Once the original supply had been reduced by 400 to 100, an additional purchasing power of 80, arising from the profit of enterprise, had simultaneously been created (= 20% of 400), which could be used to reduce the remaining 100 to 20. This sale would in turn release another 16, which could be used to unburden the market still further, and so on, until, after an indefinite number of realisation periods, an equilibrium point was reached where all stocks had been sold, and the gap between supply and demand effectively closed (*ibid.*: 242f.).

Emmanuel admitted the existence of such a chain reaction mechanism, without which capitalism would be mathematically impossible, and immediately and permanently blocked. But the description above assumed that the world was static, despite the fact that operations were assumed to take place in a series of stages. The chain reaction lasted a certain length of time, during which supply was constantly superior to demand. Although this gap would normally be reabsorbed by the process of realisation itself, *while* it existed it gave rise to a new factor which interfered with this process and in thus prevented the reabsorption in question: “This new factor is the general price level. While it is true that the blocking effects are not *directly* caused by the structural disequilibrium between the value produced and purchasing-power, they do exist. They are mediated by the fall in prices” (*ibid.*: 244). It was this general fall in prices, Emmanuel argued, which led to depression with cumulative effects and gave rise to crises and deadlock.<sup>67</sup>

For, in reality, the process of production was continuous, and “for every lot of commodities sold to its consumer (whether for personal or productive consumption) another lot emerges from the fields and factories to take its place”, which is equal in value in the case of simple reproduction and higher in value in the case of extended reproduction: “in either case it bears within itself the same fundamental inequality and hence stokes up the excess of supply over demand by an equal or greater sum respectively” (*ibid.*: 245). Using the same initial figures as in the above example gave the figures of Table 15 for simple reproduction (the column named ‘initial production’ illustrates the above reabsorption process). A permanent excess of supply over demand by 100, equal to the profit of enterprise, still remained to be realised at each point (*ibid.*: 246f.).

Table 15. *Permanent excess of supply over demand under simple reproduction.*

S=Supply		1 <sup>st</sup>			2 <sup>nd</sup>			3 <sup>rd</sup>			Total				
D=Demand	Initial	replacement			replacement			replacement							
E=Excess	production	production			production			production							
	S	D	E	S	D	E	S	D	E	S	D	E	S	D	E
	500	400	100										500	400	100
Realisation	-400	-400													
Profit of the same		+80	-80												
Balance	100	80	20	400	320	80							500	400	100
Realisation	-80	-80		-320	-320										
Profit of the same		+16	-16		+64	-64									
Balance	20	16	4	80	64	16	400	320	80				500	400	100
Realisation	-16	-16		-64	-64		-320	-320							
Profit of the same		+3.2	-3.2		+12.8	-12.8		+64	-64						
Balance	4	3.2	0.8	16	12.8	3.2	80	64	16	400	320	80	500	400	100

Source: Emmanuel 1984: 247.

<sup>67</sup> While disputing the mercantilist ‘scarcity of money’, even Adam Smith (1937: 406f.) admitted, in the words of Edwin Cannan’s marginal note, that “it is easier to buy than to sell”. Tugan-Baranowsky (1913: 189, trans. in Emmanuel 1984: 20) specified: “In the capitalist economy, it is more difficult to sell than to buy”, explaining: “the superiority of supply over demand is not only no accident under the present economic system – it is the general rule”. By contrast, in a planned economy it is easier to sell than to buy. Domar (1960: 5) believed that “a capitalist society (without sufficient government participation) has an inherent deflationary tendency [...] and I doubt whether the problem of unemployment has been solved for good.”

In the case of extended reproduction (taking accumulation into account), the excess would increase at the same rate as the mass of the profit of enterprise (Table 16).<sup>68</sup>

Table 16. *Increasing excess of supply over demand under extended reproduction.*

S=Supply D=Demand E=Excess	1 <sup>st</sup>			2 <sup>nd</sup>			3 <sup>rd</sup>			Total					
	S	D	E	S	D	E	S	D	E	S	D	E			
	500	400	100							500	400	100			
Realisation	-400	-400													
Profit of the same		+80	-80												
Balance	100	80	20	500	400	100				600	480	120			
Realisation	-80	-80		-400	-400										
Profit of the same		+16	-16		+80	-80									
Balance	20	16	4	100	80	20	600	480	120	720	576	144			
Realisation	-16	-16		-80	-80		-480	-480							
Profit of the same		+3.2	-3.2		+16	-16		+96	-96						
Balance	4	3.2	0.8	20	16	4	120	96	24	720	576	144	864	691.2	172.8

Source: Emmanuel 1984: 249.

Added to Emmanuel's identification of the social recognition of a cost price below the sale price, these demonstrations of how the ensuing excess of supply over demand is reproduced provide the analytical core of his argument, which, to the best of my knowledge and in spite of its theoretical importance, no one has ever even attempted to refute. This, is reason enough for reproducing it here. To this is added its importance for understanding how Emmanuel understood the role that unequal exchange had come to play historically, in (temporarily) liberating capitalism to its postwar crisis- and unemployment-free investment-haven, something otherwise achievable only in wartime (if we believe the authorities quoted in note 66). If true, then, this 'underconsumption' interpretation would also be crucial to any understanding of the overdevelopment and physical *overconsumption* of these years (cf. Brodin 2003), which was once the principal concern of radical ecologists. Arriving there will of course first take us through more profane economic implications, including an application to the business cycle, incentives to overtrading, and Emmanuel's modification of unequal exchange for a system with nonconvertible currencies valid for the years from the 1970s onwards.

A permanent excess of supply over demand was obviously a remarkably unstable situation. "Prices will start to fall", Emmanuel (*ibid.*: 248) explained:

But when the prices of producer goods begin to fall, not on their own but along with those of finished products, the demand for these goods falls in volume instead of rising. Investment programmes are cut back as a result.

Some firms will make a loss straight away. Others will expect losses and halt their expansion. Yet others will simply anticipate the fall and defer or slow down their purchases in the hope of obtaining a better deal later.

So the structural shortage of purchasing power will be joined by a 'conjunctural' deficit with cumulative effects, since one entrepreneur's abstention from buying will give rise to a failure to sell on the part of another entrepreneur. Another chain reaction starts up, but this time in the opposite direction, triggering of a crisis.

<sup>68</sup> The example assumes that the portion of surplus-value corresponding to profit of enterprise is reinvested, while the remainder (rent and interest) continues to be consumed unproductively; the organic composition and rate of surplus value remain constant over time (*i.e.*, extensive extended reproduction); finally, surplus value is divided between fixed revenues (rent and interest) and variable (profit of enterprise) in the proportion 1:2. This means that all variables will grow by the ratio of profit of enterprise to the social product, or 20%.

Emmanuel claimed nothing original in this description, calling it “a cliché of economic literature”, the only difference being that the traditional scheme only went round in circles without support in the structural lack of demand and the consequent fall in prices. It was also far from complete, so Emmanuel then reintroduces the conventional explanations of disproportionality (between the Departments producing consumer and industrial goods) and hoarding (a *voluntary* abstention from purchasing), on the new foundation his argument has provided.<sup>69</sup>

The significance of this fall in prices did not concern the role of money as a means of payment or of circulation where the poles consisted of real values (cf. C-M-C). From this perspective it would matter little to the producers of coal and iron if the price of coal decreased as long as the price of iron decreased equally, since one would gain in buying what one lost in selling. As with nominal and real wages, however, such a barter economy perspective was not apt for capitalism:

This is a captivating view, but for all practical purposes, in terms of the effects which this operation will have on the economy, in their own view, in that of their bankers, their tax-collectors, their creditors and debtors, their friends and the public at large, in short, in everyone’s view apart from a few economists, both these men are losers. For in the real world, it is considered a loss to sell below the price of production, while it is not considered a profit to buy below this price (because all costs are accounted at their cost price), and from the moment we ruled use-value out of our calculations, profit and loss only exist by convention. (*Ibid.* 260.)

This was not just any convention, but based on the innermost systemic logic in which, as Marx had noted, money is at the poles (M-C-M).

In this respect, Emmanuel’s analysis was truer to Marx’s basic insight than Marx himself managed to be. Bettelheim (1984: vi) almost said as much in his brief foreword: “in my view this book is an extension of Marx’s analyses. Here we find a clear, systematic and explicit treatment and development of a collection of propositions that Marx had set out either in brief form or in terms that are open to mistaken or contradictory interpretations. [...] By clarifying these questions in a rigorous and outstandingly logical manner, Arghiri Emmanuel has made a contribution of the first order to our understanding of the capitalist mode of production”. I would only add, as Bettelheim was unlikely to have done, that the encounter with Keynesian and post-Keynesian economics must have provided an added stimulus.

## Deblocking mechanisms and incentives to overtrading

We have now presented Emmanuel’s basic argument for an inherent blockage of the capitalist economy. The third and final part of his book dealt with the ‘specific effects’ of this

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<sup>69</sup> Without being based in a prior, ‘objective’ lack in purchasing power, and the corresponding fall in prices, the ‘subjective’ abstention from productive consumption hovered in the air, or turned in circles in search of that ‘*primus movens*’ which Marx expressly admitted he had never found. As to the precise study of the *internal* mechanisms of the cycle, Emmanuel never challenged Marx’s analysis, which, he concluded, “*would become perfectly consistent and immediately acquire explanatory power* [...] if we took the step, which Marx did not wish to take, of abandoning the postulate of the equality of income and output, and if we accepted that there is a basic intrinsic (and permanent) excess of value produced over the purchasing power created by this same production” (*ibid.*: 252; cf. 84ff.). Hoarding was still the *immediate* cause setting off the crisis and still an inevitable step in the process as described by Emmanuel. But to reach this stage one must start from a situation in which there is no hoarding. What is new in Emmanuel’s thesis is that the voluntary abstention from purchasing is in turn determined by the *long-run tendency* of a fall in prices, which thus exists prior to and independently of the cycle with its inherent waves of hoarding and dishoarding. The lack of will to purchase is no longer contingent, but becomes a theoretical necessity (*ibid.*: 252).

imbalance, on the one hand the dynamics of business cycles, but most extensively in the long 9<sup>th</sup> chapter dealing with the exceptionally depression-free postwar period. Its heading – ‘re-equilibrating factors’ – should be understood against the previous interpretation of the inherent normal capitalist condition of disequilibrium. Thus, for Emmanuel, the depression of the 1930s provides something of a baseline, with unemployment levels of 20-30% of the active population not considered exceptional compared with the previous history of capitalism. How then were we to understand the subsequent years of unprecedented growth and absence of major crises?

Emmanuel was at pains to demonstrate that postwar development had not merely been a conjunctural aberration, but clearly represented a period of unprecedented economic growth rates, wage increases, and all but full employment. If in the past, the problems of capitalism had been deflation, drops in prices and slowdown of economic activity, today they were inflation, price rises and ‘overheating’. Although foretelling is difficult – and, as the saying goes, particularly the future – he (1984: 294) was “convinced that, by means of some transformations, capitalism has only succeeded in gaining a reprieve and obtaining a new margin of manoeuvre, which will be used up sooner or later like all the rest before.” Writing in 1974 when most effects of the ‘oil crisis’ were still in the future, he did not hold it unlikely that a crisis of overproduction could “break out before this book reaches publication”. However this may be – and ultimately he did not consider the following recession years to be comparable to the crisis of the 1930s – the exceptional period itself, what Jean Fourastié a few years hence would refer to as *les trente glorieuses* from the end of the war to the mid-1970s, would still require an explanation. Taking into account the inherent disequilibrium, answering how the West had managed to overcome its previous blocking was just as important and required searching for causes of stability. It was here that the argument of unequal exchange re-entered the scene as a partial explanation.

If the cause of blockage is that production/supply (P) exceeds revenues/demand (R), then the frictionless development since the 1930s had in turn to be explained by the partial or total reabsorption of this excess. The ‘deblocking’ mechanisms could be either intrinsic or extrinsic to the system. The former implied a relative re-equilibration through redistribution from profit of enterprise to forms of income partitioned before the sale. By their very nature, the intrinsic factors could merely attenuate the initial disequilibrium between supply and demand, not eliminate or even less reverse it, so the ultimate explanation of postwar economic development required opening the system to external factors, having a direct influence on effective supply of goods on a given market, or, respectively, on the efficient demand. This was through some extraneously induced demand in the form of (i) a surplus balance of payments, (ii) a budget deficit, or (iii) ‘overtrading’, in the sense of purchasing beyond one’s means. Overtrading was the most important and, as we shall see, one of its most notable incentives was the continuous increase in wages, causing and made possible by unequal exchange (cf. the Marxian ‘dynamic’ unequal exchange of Table 11). Another was the continuous depreciation of currencies, by way of which Emmanuel included a reformulation of the theory of unequal exchange for a system with inconvertible currencies, in which *both* nominal wages and the rate of profit had become independent variables

That a surplus balance of trade and payments was beneficial had been evidenced by the lasting preoccupations and convictions of politicians, policy-makers, and the public at large of all times. Emmanuel wanted to go even further than Keynes in providing the theoretical justification it had thitherto lacked, and doing so notably without presuming any elaborate theoretical understanding on behalf of such agents. This would in itself be sufficient reason to pay Emmanuel’s theory attention, and is, at any rate, one of the most pedagogical points, as he himself realised in opening his book presentation by referring to the issue. In making this case, he also examined the contradiction (advanced against his assumption of wages being an

independent variable) between a favourable development of the balance of trade and an improvement in the terms of trade.

The former implied an effort to increase the volume of sales, if necessary making concessions on prices, whereas the latter entailed increasing one's unit prices at the risk of decreasing volumes. Depending on whether there was stagnation and unemployment or growth and high employment, the former or the latter consideration should prevail. Since, in Emmanuel's view, the former situation was much the more common it had also been the most important historically. It was only since the Second World War, then, and in the context of flows between developed and underdeveloped countries that the latter had come to the forefront: "It seems as if the luxury of optimising the terms of trade can only be afforded once the maximisation of exports in particular and the marketing of the social product in general have been more or less achieved" (Emmanuel 1984: 346).

But even the underlying assumption on which the contradiction between these objectives was based, that any price variation would give rise to a *more than proportional* inverse variation of demand, "is in general a myth", and "[a]s with all myths, its tenacity rivals its ill-foundedness", even to the extent that it was sometimes confounded with the simple and correct observation that the volume of sales or purchases was a decreasing function of price (*ibid.*: 347). In technical language the assumption referred to the price elasticity of demand greater than unity. As to the compatibility of the two phenomena, Emmanuel (*ibid.*: 350) had merely to point out the fact that "for almost a century, the terms of trade of the developed countries as a whole have been improving spectacularly, while the overall balance of payments of the same group has not been in deficit". Although making no quantitative estimation, having said this was also admitting that a surplus balance of trade could not be the explanation behind postwar development. Budget deficits also realised part of the social product with purchasing power not created by this same production, and the mechanisms were similar to a trade surplus, but he made no effort to estimate the importance of budget deficits for postwar development.

There was no doubt in Emmanuel's mind, however, that 'overtrading' was the most important extrinsic factor, defined (*ibid.*: 352) as: "to spend a virtual revenue by anticipating its realisation." The term may be unfamiliar to some present day economists, but it is one with as great a lineage in political economy as anyone might wish, used already by Smith, Mill, Marx, and Kindleberger, usually considered a menacing over-speculation.

In Emmanuel's view, overtrading was a precondition of the capitalist system. General overtrading itself presumed a certain kind of credit, having existed since the dawn of capitalism, which made possible not merely spending money from somebody else's pocket, but from *nobody* else's pocket. To non-economists this may appear odd, but it is clearly part of everyday banking reality. Even in classical economics credit was only seen as a special transfer of purchasing power – directly or indirectly from person to person, from saver to investor or consumer. "The type of credit which makes overtrading possible is quite different, in that it displaces purchasing power in time, from the future to the present" (*ibid.*: 356). Classical economists (based on the identity  $P = R$ ) chose to ignore such *ex-nihilo* credit, and then to condemn it as a menacing overspeculation, leading to overheating, and this line was followed by most Marxists.<sup>70</sup> In his debate with Emmanuel on unequal exchange, Bettelheim

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<sup>70</sup> Money is created *ex nihilo* through the very process of lending, in inverse proportion to the reserve requirements laid down by the central bank. If the liquid reserve of individual banks has to be 20% of the sum of their deposits, the system will be able to create  $(1/0.2 =)$  five times the amount of 'real' money issued by the central bank (*ibid.*: 328ff; cf. Marx 1959: 520ff.). Marx had noticed this creative power, but it was really neoclassical theory which demonstrated the active role played by banks. In its absence, and with it the corresponding 'overtrading', Emmanuel argued, unsold goods would collect at all levels, all incentives to produce would disappear, and the system would be permanently blocked.

would have none of this ‘illusion’, and it is difficult to see of what use is his (1984: iv) later praise of Emmanuel’s argument, while simultaneously referring the reader to his previous objections. Among the few pre-Keynesians to have noted the positive effects of it, Schumpeter (1934: 358), distinguished clearly between “a transformation of purchasing power which would not have existed anyway in someone’s hands”. Like Keynes, however, he considered it a creation of purchasing power *in excess* of the current value of production, thus functioning as an anticipation of future production resulting from new projects. In their perspective, any purchasing power created by such credit, in excess of planned savings, could only make prices rise and thus cause forced savings. In Emmanuel’s (1984: 359) opinion, on the contrary, “although the credit in question is in excess of planned savings, up to a certain limit it only makes good the shortfall in *previously* distributed power and, as long as it stays within these limits, it does not make prices rise by depleting normal stocks, but ensures that they do not fall, by liquidating the overstocks.”

Now, the existence of the mechanism for *ex nihilo* generation of bank money and purchasing power was only a necessary, not a sufficient condition of overtrading. There had also to be opportunities for profitable projects. These, Emmanuel (*ibid.*: 360f.) underlined, must be considered subjectively rather than objectively: “Given that economic reality does not exist outside and apart from economic subjects, but is itself the result of their own acts, their optimistic or pessimistic forecasts come true to the extent that they determine behaviour, and to the extent that they are widely believed.”

Giving the briefest summary he ever made of his argument in *Le Profit et les crises*, where the tendential inferiority of the market price to the equilibrium price of production would have effectively blocked the system were it not overcome by overtrading, Emmanuel distinguished three kinds of incentives to overtrade: (1) erratic and momentary, (2) recurrent, and (3) chronic ones. Significantly, the latter was connected directly to his argument on unequal exchange:

The market price is *tendentially* inferior to the equilibrium value of production, or the price of production, and it would be effectively and durably so, resulting in the definitive blockage of the system, were this tendency not counteracted by ‘overtrading’. This overtrading can be: a) erratic and momentary, by consequence of certain accidental ruptures (innovations, discoveries, opening of external markets, etc.); b) recurrent, linked to the upward phase of the business cycle; or c) chronic, following from certain modifications of structure. The most important of these modifications, in the developed countries of recent decades, has been, on the one hand, an institutionalised inflation, on the other, a regular rhythm of augmenting wages, which latter, in turn, has been made possible by external resources originating in the exploitation of the Third World, and made effective by trade union struggle and, more generally, the political promotion of working-class aristocracies in Occidental societies. (Emmanuel 1978a: 59f., trans. J.B.)

In Emmanuel’s perspective, the recurrent incentives to overtrading were central to the functioning of capitalism itself, and in the book itself he treated them separately. They followed a permanent overall law, and were contrasted to specific or individual circumstances among which were the erratic and chronic ones (although he did not discriminate them as such). Nevertheless, there, too, it was clearly the ‘chronic’ incentives which were of interest for understanding the postwar era. We will treat recurrent, erratic, and chronic incentives in turn where the latter are thus of particular relevance because of the link to unequal exchange.

(1) The recurring incentives to overtrading could be seen in the upward phase of the business cycle. Naturally, much of Emmanuel’s argument, both with his predecessors and in itself, circled round this phenomenon and its theory (*vide* the chapter ending his book, and ‘crises’ in the book’s title), but he did not attempt to create a completely new theory from scratch, but

rather to reformulate important points from his predecessors (particularly Marx) on the new basis of the fundamental inequality between production and revenues, and the consequent tendential fall in prices below their equilibrium price of production. His basic point in this context (cf. already 1954b) was that in a capitalist economy due to the subjective motivations of capitalists, investment (*i.e.*, productive consumption, the production of means of production) was an increasing function of consumption (*i.e.*, unproductive consumption, the production of consumer goods), whereas objectively (always, under all circumstances, and in any other system) productive consumption varied inversely with *unproductive* consumption, as being “*the only two components of a given total magnitude, social production capacity*” (*idem*, 1984: 395). Capitalists were obliged ‘to act at the wrong moment’,

to invest when – because of the absorption of a greater part of the social product by final consumption – the means of investment are becoming scarce, to disinvest, or slow down investment, when – because of a fall in final consumption – means of investment are overabundant. This is the way in which the fundamental contradiction between social production and private appropriation of the product acts, on the level of realization of the product. It is this contradiction which underlies the structural disequilibrium of the capitalist mode of production, or even the market economy in general. (*Ibid.*: 396.)

The basic argument here has been formulated even before Emmanuel’s 1954 article, and he cited Keynes’s contrasting of the market and socialist systems’ dynamics, as well as Joan Robinson and André Paquet to the same point.<sup>71</sup>

That the private enterprise system was not immediately deadlocked for ever was explained by the productive forces being set to work at a level lower than total productive capacity, where they were thus allowed to vary in concert: “It is these variations, this *cycle* between higher and lower levels of *under-employment* of the capacity, which permit simultaneous variations in the same direction of the two components and which, in a closed free enterprise system, ensure conjunctural and temporary equilibrium on the very basis of structural and permanent disequilibrium” (*loc. cit.*). Thus, with a ‘reserve army’ of unemployed workers and/or equipment to be activated and de-activated at times productive and unproductive consumption could still increase together, but only move between unbreachable limits. The capitalist or market system, Emmanuel summed up, (1) “can only reproduce if it is impelled by a combination of impulses which we cover under the category of overtrading”, but moreover (2) it “can only invest as an increasing function of final consumption, therefore – the supreme paradox – as a decreasing function of saving” (*ibid.*: 399), and insight described as the deepest and yet insufficiently explained meaning of Keynes 1936 (1973). (3) Since all magnitudes vary in the same direction and reinforce one another, equilibrium was unstable and reflected a contradictory mode of existence. (4) The cumulative process could only stop at

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<sup>71</sup> *I.e.*, Keynes (1936: 379): “apart from the necessity of central controls to bring about an adjustment between the propensity to consume and the inducement to invest, there is no more reason to socialise economic life than there was before”; Robinson (1937: 4): “The profitability of capital goods depends upon the demand for the consumption goods which they produce. Thus if individuals decide to save, that is, not to spend on immediate consumption, they reduce rather than increase the motive of the entrepreneurs for acquiring new capital goods, and the decision to save reduces the demand for consumption goods without increasing the demand for capital goods.” Paquet (1952: 322, trans. in Emmanuel 1984: 396): “The weak point of traditional theory lies in its assertion that a growth of capital goods is possible at the same time that demand for consumer goods is falling”. Emmanuel (*ibid.*: 397) himself wrote: “instead of consuming as an increasing function of production capacity and as a decreasing function of investment, capitalism produces and invests as an increasing function of unproductive consumption”.

the end points of full employment and the greatest possible unemployment, where it is instead reversed in the opposite direction.<sup>72</sup>

It may be recalled that in Marxian terminology three kinds of reproduction are possible, (i) ‘simple reproduction’, in which neither of the departments producing either consumption goods or means of production varies; (ii) ‘extensive extended reproduction’, in which both departments grow at the same rate, and (iii) ‘intensive extended reproduction’, in which the production of means of production grows, while the production of consumption goods stays constant (or, combining with (ii), grows at a slower rate). Now, Emmanuel (1984: 403) pointed out, in developed capitalism simple reproduction, requiring that all profits were spent on personal consumption, was virtually impossible. Given that the rate of profit exceeds the rate of population growth, the same went for extensive extended reproduction, except together with immigration of foreign workers or an increase in either wages or the level of employment. Thus, as long as unemployment was being reabsorbed, this kind of reproduction was quite possible, but as soon as the reserve of unemployed was ‘used up’ and the conjunctural rise in wages slowed down or was insufficient, it became impossible – unless it was supplemented either by immigration of foreign workers or by an *institutionalised* rise in wages. Otherwise, the crisis would be set off:

In the absence of these factors, the only *objectively* possible alternative left is intensive extended reproduction, but this is *subjectively* impossible for the reason [...] that it implies increased investment in means of production, just when the market for consumer goods suddenly stops expanding or even contracts. (*Loc. cit.*)

The subjective impossibility of turning from extensive to intensive extended reproduction represented “an essential transformation for the agents of capitalist reproduction” and was “the nodal point of all the contradictions” (*loc. cit.*). The *recurrent* overtrading which brought the system, through extensive extended reproduction, in sight of full employment could no longer ensure the system’s reproduction. There had to be either a *momentary*, or, preferably, an *institutional*, *i.e.*, ‘chronic’, overtrading of the kind which, Emmanuel argued, characterised the postwar decades. It was based on three factors which had themselves become institutionalised, apart from an immigration of workers, an institutionalised wage increase and chronic inflation: “The precarious nature of these three factors reflects the limits of their apparent resolution of present-day capitalism” (*ibid.*: 405).

As suggested at the beginning of this chapter, and by Nurkse (1952), this chronological impact of the capitalist imperative of producing and investing as an increasing function of

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<sup>72</sup> The peculiarity of Emmanuel’s (1984: 399) argument concerning the business cycle is that “if overtrading were a disequilibrating factor, the point at which equilibrium is disturbed would have to be located well below full employment” thereby putting “everything in doubt, since such an unemployment situation would itself stand in need of explanation.” Pre or anti-Keynesian neoclassics have tended to elaborate a rationale for unemployment as a normal feature of the system’s harmonious functioning, and any lowering of unemployment below the normal level is called ‘overheating’, from which crises, disturbances, tensions and disequilibria spring as backlashes of measures to improve the level of employment. Keynes (1936: 322) would have nothing of such theories as proclaimed that equilibrium required a policy in which there was still unemployment, and according to which to avoid falling, one must give up climbing: “The right remedy for the trade cycle is not to be found in abolishing booms and thus keeping us permanently in a semi-slump; but in abolishing slumps and thus keeping us permanently in a quasi-boom.” However, in Emmanuel’s (1984: 402) view, Marxism, Keynes and the Keynesians merely “attempted to show that equilibrium at various levels of employment does not contradict the fundamental equation of the Law of Markets” (*i.e.*, ‘Say’s’ law), as indeed, in a formal and static sense, it did not. However, presenting ‘hoarding’ or ‘liquidity preference’ as generators of unemployment presupposed what should be explained: “For it could only be a characteristic of capitalists, and could therefore only concern investment. But any abstention from investing implies a previous failure to sell, which is precisely what must be explained and which is in outright contradiction, substantially and dynamically, with the Law of Markets and its fundamental equation” (*loc. cit.*).

unproductive consumption had a parallel geographical impact. Working itself out on the international arena, it surged in the explanation of the development-underdevelopment rift, and was apparently on Emmanuel's mind when he proposed that the fundamental cause of unequal exchange and underdevelopment was the low level of pre-established consumption.

(2) The erratic and momentary incentives included technological and/or commercial *innovations*, where the former concerned the introduction of new techniques in the production of the same articles, and the latter the introduction of new articles. Emmanuel (1984: 361) observed that this was a field in which there had grown up an extensive literature ever since Schumpeter, and only warned against assuming that the innovations of either kind would eventually lead to the partial or complete removal from the market of other producers, and that the only increase in activity at the social level would be that resulting from the investment proper: "Except in the case of full employment, the new output will, in its own right, distribute additional revenues and expand the market." Thus, whereas an entrepreneur calculated his chances and future profitability on the potential of the pre-existing market, the setting up of his business would distribute new revenues and thereby create an additional market for other industries, so that any contraction among his competitors was compensated for by an equivalent expansion in other industries.

The same considerations applied to *foreign markets*, whether pre-capitalist or capitalist, which did not act as a function of their own capacity to absorb a surplus, but as a psychological catalyst. In practical and historical terms, Emmanuel maintained, it had always been a matter of an underdeveloped region being opened up to foreign trade by a capitalist country, "since only this case would provide investors with the factors that convince them", *i.e.*, a privileged position due to political domination or simply being first. However, the role of pre-capitalist markets as a catalyst of expanded reproduction in the developed regions did not last long, and was basically completed with the colonialist partitioning of the world, or as suspended by the division of the world. The horizontal expansion of the system was basically completed, and there were certainly no major new inclusions during the crisis-free decades (*ibid.*: 369). Indeed, Emmanuel argued, the poor regions rapidly became sources of additional surplus, far from confirming what he (1972b) elsewhere referred to as the 'myth of investment imperialism'. Related to this whole field was also Emmanuel's (1982) controversial book claiming that 'appropriate' (or in E. F. Schumacher's expression 'intermediate') technology, for the underdeveloped regions was nothing but underdeveloped technology, and precisely the thing to be avoided. Instead, he favoured high-tech transfers *via* multinational corporations, the primordial enemy of those still believing that investments are part of monopolistic conspiracies to underdevelop the Third World. The argument is unlikely to appeal to those of an ecological ilk, but difficult to refute on its own ground (cf. Fieldhouse 1983: 130 for one of the rare positive commentators).

(3) Among the chronic incentives, Emmanuel ranked depreciation of the currency and institutionalised wage increases.

If the general problem is one of the relative demand for money and for every other good, it should be easy to see how a *depreciation of the currency* could act as a stimulant facilitating sale and as an incitement to overtrade.<sup>73</sup> Emmanuel began with an historical survey,

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<sup>73</sup> "If money, as Proudhon says, is not the key, but the 'lock' of trade, it should be quite easy to see how and why its depreciation frees trade and tends to prevent crises. If money, as Marx says, is a kind of anti-commodity, it is not surprising that the process of its annihilation has a positive effect as the negation of a negation. If the passage from commodity to money is an elevation from the particular to the general, a 'trans-substantiation' of capitalist wealth, it is natural that putting money in question, desanctifying it, should amount to an elevation of the profane world of commodities. If the demand for money is nothing other than the supply of commodities, a reduction in

establishing that devaluations were far from modern phenomena, although the century before the First World War was one of monetary stability.<sup>74</sup> Nevertheless, the rates of devaluation were very much lower before than after the 19<sup>th</sup> century interval. In the earlier period revaluations were discontinuous events, interrupting periods of stability “long enough to prevent the phenomenon of depreciation from being imprinted in society’s collective memory, and something to be expected.” There had been a certain continuity in the increased production of precious metals themselves, Emmanuel admitted, particularly following discoveries of new geological veins, but these changes had still been momentary (*i.e.*, belonged to the previous heading). This all changed in 1928, he (*ibid.*: 376ff.) proposed, after which devaluations became almost continuous, and therefore a normal characteristic of the economy, which could be taken for granted in all forecasts. The early depreciations were different in principle in that capitalist relations were not developed, and that their main aim was to procure resources for the prince. Nevertheless, several authors did point out the beneficial effects on economic activity, sometimes turning into a veritable flight from money, such as when paper currency was introduced.

Just as a flight from commodities gave rise to hoarding, a flight from money, engendered by its relative degradation, accelerated realisation and induced expansion, not only directly through increased purchases of consumer goods, but also through the dishoarding caused by expectation of price rises. A variation in the value of capital itself had much greater effects than variations in its yield, so their fear of price rises “compels businessmen to invest *without delay* all their liquid assets – cash and cash deposits – *even when there are signs that the market is contracting.*” Even more, it mobilised both ‘spatial’ and ‘chronological’ credit, thus creating or anticipating purchasing power and encouraging overtrading. While the other incentives to overtrade were all based on the hope of a new market, whether a new article, a foreign outlet, or a wage increase, and consequently involved a considerable degree of uncertainty, depreciation of the currency “creates a universal bonus for investing, and the only thing to predict is its rate” (*ibid.*: 382). There was also a difference concerning the respective limits of these incentives. Innovations were by their very nature more localised, and at any rate, there had been nothing in the postwar decades of comparable repercussion on the economy as a whole to the railway construction of the 19<sup>th</sup> century. Although not limited in their effects, both opening-up of new markets (already passé) and wage increases have a limited possibility of arising, and a common non-inexhaustible source in the periphery. By contrast, inflation as an internal cause of overtrading would seem to have no such limits.

However, it could not become the ultimate weapon of capitalism, and limits emerged in the effects on the metropolitan capitalist countries in international trade. The flight from money at home was meant to stimulate domestic activity and operate in favour of one’s own country’s commodities, not the commodities and currencies of one’s competitors:

The contradiction here is that devaluation itself promotes an inflow of foreign exchange, but the expectation of devaluation promotes their outflow. On the one hand allowing prices to rise in order to stimulate domestic activity, on the other hand clamping down on price increases to preserve the overseas competitiveness of one’s industries; on the one hand stoking up inflation to annul *ex post*

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the former amounts necessarily to a reabsorption of the latter. If, as Silvio Gesell says, money has too many qualities to serve as a vehicle of circulation, its debasement can precisely enable it to fulfil its role. If bad money chases out the good, as stated by Gresham’s Law, money even worse than the worst commodity can realize all the commodities and disencumber our markets and warehouses” (Emmanuel 1984: 381).

<sup>74</sup> He also noted an interesting difference between the pound and the franc: “On the basis of a parity calculated at the free market price of gold, and ignoring a mere change of denomination in 1959, it turns out that the ratio of the value of the French currency today to that of 794 is approximately 1:80,000. The ratio of the current British pound to the original pre-1300 unit is 1:66. Over time the French currency has lost value about 1200 times as quickly as the British” (Emmanuel 1984: 376).

the wage increases which one has had to concede, on the other hand fighting inflation to cut off the exodus of capital and outflow of foreign exchange; these are the two pairs of contradictory objectives between all the capitalist countries are now separately floundering. (*Ibid.*: 383.)

Regular recourse to devaluation ultimately made it predictable, which predictability in turn made it objectively necessary. Also, in case of a flight from domestic currency, foreign currencies were a likelier refuge than domestic commodities.

In modern capitalism of the postwar era, Emmanuel (1984: 384-94; cf. 1986) argued, the stimulus arising from inflation was closely related to that of wage increases, where the latter urge on the former – though not necessarily since an alternative effect would be decreased profits – in so called cost-push inflation. The special circumstances necessary for this kind of inflation were either goldmines in countries not hit by the wage increase, or universal inconvertibility, which became official after 1971. As a consequence, the rate of profit could vary independently of wages, by making wage increases wholly or partly nominal after they had occurred. In this way the late capitalist system had managed to create double stimulation, partly through any residual real wage increases, and partly through the expansion of the market for means of production through overtrading. The latter would entail decreased resistance towards further wage-increases. Nevertheless, even this solution was not without limitations, he explained, revealing themselves when wages were no longer able to increase faster than prices (as had happened with oil), and extensive expanded reproduction – the only one consistent with overtrading – could no longer be maintained.

Returning to the Sraffian formulation of unequal exchange, it could easily be seen that *inflation*, on the hand, and *wage increases*, on the other, were closely intermeshed. ‘Cost-push inflation’ indicated that inflation usually followed wage-increases, but it did not mean that it was the *inevitable* result. On the contrary, Emmanuel (1984: 385) maintained, under the conditions which applied in Marx’s and Ricardo’s times, which were also those assumed in the above demonstrations of the unequal exchange theorem, with metallic or convertible money, it was an *impossible* result. For a truly general rise in wages, including those of the gold mines, to make *all* prices rise was impossible, since it would also have made the standard measure rise. However, two new conditions in the real world had fundamentally altered these assumptions.

First, since gold mines were generally located in underdeveloped countries, they had not been hit by the general rise in wages of the advanced countries,<sup>75</sup> and the increased cost of material inputs had been compensated for by increased productivity, maintaining a low cost of production corresponding to their wages. Secondly, Emmanuel (*loc. cit.*) noted, unofficially before 1971 (through voluntary abstention by the central banks from converting their dollars and giving way to political pressure from the United States) and officially since August that year, when an embargo was imposed making all currencies nominal at a stroke, “the capitalist world has seen the introduction, for the first time in its history, of a system of universal inconvertibility.” With these alterations, wages and profits ceased to be decreasing functions of each other, making possible an increase in wages without any fall in profits. This also introduced fundamental changes in the equations and demonstrations of unequal exchange, which have so far not been observed in the extensive critical commentary.

In the first case, currency is still convertible, but production costs of gold are kept constant and productivity increases compensate for increased costs of inputs. In the language of Sraffa-systems used in Chapter 7, this can be put so that  $K$  becomes an endogenous variable, joining the unknown variables, and giving us  $k + 1$  unknowns for  $k$  equations; alternatively, if extra-

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<sup>75</sup> Furthermore, by turning a national paper currency (first the pound, then the dollar) into international money, linking it to gold, the monetary ‘consumption’ of gold had been restricted “enough to avoid the creation of a rent in the gold-mining sector, which would have cancelled out the effect of its low wages” (*loc. cit.*).

economic manipulations make production cost immaterial, by eliminating the  $K^{\text{th}}$  industrial equation, giving us  $j = k - 1$  equations for  $j + 1 = k$  unknowns. To close the system we are obliged to take one of the unknowns as given, allowing us to take the rate of profit,  $r$ . Thus, an increase of any  $w$  except  $w_k$  is compatible with an increased, or constant,  $r$ .

In the second case there is universal inconvertibility, meaning that all prices are nominal, and gold itself becomes an ordinary commodity. Thus,  $p_a, p_b, \dots$ , etc. cease to represent a certain number of units of  $k$ , and instead become abstract numbers representing arbitrary external objects, francs, dollars, pounds. This introduces another unknown,  $p_k$ :

$$\begin{aligned} (A_a p_a + B_a p_b + \dots + K_a) (1 + r) + L_a w_a &= A p_a \\ (A_b p_a + B_b p_b + \dots + K_b) (1 + r) + L_b w_b &= B p_b \\ \dots & \\ (A_k p_a + B_k p_b + \dots + K_k) (1 + r) + L_k w_k &= K p_k \end{aligned}$$

and with wages still taken as given, there are  $k + 1$  unknowns for  $k$  equations. The solution, as before, and contrary to Emmanuel's basic definition of unequal exchange, is to make the rate of profit,  $r$ , independent of prices and exogenous, thus independent also of wages. In this case, a rise in any  $w$ , *including*  $w_k$ , is compatible with an increased, or constant,  $r$ .

What does this mean? In less formal words this shows that, in both cases, *relative* prices – relations between commodities within the system – have become *absolute* prices – relations of the commodities with something determined outside the system, gold in the first case, and an arbitrary denomination in the second. Furthermore, it means that capitalists are free simply to add their normal – or any – rate of profit to an increase in wages, which they have had to concede.

This archetypal cost-push inflation was what happened in the reality of his day, Emmanuel (*ibid.*: 387) explained:

It is pointless to deny that wage increases lie at the bottom of the process, but it is important to stress that these rises do not *per se* lead inevitably to inflation. What does lead to it is the fact that capitalists have granted themselves the power to make these rises wholly or partly nominal *post factum*, therefore cancelling them out in real terms. It is only to the extent that these rises turn from real into nominal, that they lead to inflation. To the extent to which they stay real, they are taken either out of growth of productivity or out of the rate of profit or both.

In this way, the capitalist system had seemingly found its horn of plenty, by creating a double stimulant to economic activity: “firstly, an expansion of the market for consumer goods due to the residual increase in real wages (after the subtraction of the rate of inflation), secondly an expansion of the market for producer goods through overtrading, itself a result of this inflation” (*ibid.*: 388). The latter had the important side-effect of lessening resistance to wage claims, which tendency thus promoted the restarting of the process.

However, the cornucopia was only temporary, he (*ibid.*: 388f.) observed in 1974, and, once again, all this “finds its own limit in that of the product of foreign exploitation and its vicissitudes.” The recent rise in the price of oil put in doubt the continued growth of nominal wages at a rate faster than that of the retail prices: “But if wages do not grow faster than prices, extensive extended reproduction – the only kind compatible with the motivations of overtrading, and thus relatively easier for the system – cannot be maintained. This is a critical limit. Since the system is incapable of moving into intensive extended reproduction [...], which would contradict its own rationality, there is collapse and crisis.” The gravest effects of the ‘oil crisis’, as he (1986) saw it, were not due to the mere rise in prices, however, but to the confused response to which it gave occasion.

Turning to problems concerning wages – their determination, effects, and theoretical implications, whether for the inherent contradictions of capitalism, unequal exchange, or unequal development – we enter the principal field in which Emmanuel’s themes are held together, towards which they converge, and on which the greater part of controversy has centred. It is also an area in which he left great possibilities open for historical interpretation. Much has already been said, and we cannot approach a full treatment in this section, where we will concentrate on the resolution of the discrepancy between the value of production and purchasing power, through incentives to overtrading.

The direct effect of wage variations, however unintentional or accidental they may be, on the realisation of the product was reviewed above, when considering the relative weight of each component in the value of output. In that context, the disequilibrium between income and production was reduced, although it could not be completely absorbed. Now, Emmanuel explained (*ibid.*: 371), the indirect effect of an *exogenous growth of wages* on subjective motivations and through the incentives to overtrade was less automatic and could work only if these variations could be foreseen. However, they could, by contrast, stimulate an overdraft of investments that might even overcompensate for the excess of supply over demand. All variations of supply and demand, such as a surplus on the trade balance or a budget deficit, have direct effects which are strictly proportional to their volume and at work under any circumstances. But under special circumstances, mainly to the extent in which they are sufficiently clear so as to be predictable by businessmen, they also act as incentives to overtrading, and, in his opinion (*ibid.*: 371), “nothing is as important as the variations of wages, in both theory and practice.”

In theory, because it related to “the main contradiction of capitalism”, deriving from “the fundamental contradiction between social production and private appropriation” (*loc. cit.*): “Though capitalism is the system which relies exclusively on the market in a way in which no other system does, its dynamic tends to contradict this market by compressing wages.” From outside capitalism would look like a world stood on its head. “In all other modes of production, the upstream determines the downstream”, he (*ibid.*: 372) explained in his favoured imagery of a river. First, production took place according to the productive forces available; then, the product was consumed according to the rules laid down for its distribution, and consumption was properly dependent on previous production.

Now, in the system of commodity relations this dynamics was reversed, and production could only take place as a function of prior real or expected markets:

Here everything is determined from downstream. Instead of the growth of production making growth of consumption possible, it is the previous growth of consumption which acts as a catalyst to production. Instead of it being the upper waters of the river which feed the lower reaches, it is – however absurd this may seem – the river mouth which sets the flow of its source and tributaries. And what is more, the system’s own peculiar laws of motion prevent any expansion of this mouth, so that the system continually tends to choke itself. Left to its own devices, capitalism starts to eat away its own support, to cut off the branch it is standing on. (*Loc. cit.*)

The endogenous force of inter-capitalist competition tended to reduce wages, at least relatively, while any such reduction endangered and blocked capitalism’s growth, which, in turn, would destroy the future chances of raising wages. Emmanuel seems to believe that even an absolute impoverishment might have taken place, as predicted by Marx, were it not for the wage-increase resulting from such ‘exogenous factors’ as “institutional negotiations over the division of the fruits of foreign exploitation”. This rendered possible a break of the ‘vicious cycle’, freed the system from its own inhibitions, and stimulated overtrading. The effect of this would be “immeasurably greater than that of any other stimulant”, and this, he argued, was what had actually occurred in history. The aim of the argument on unequal exchange was

precisely to demonstrate just how a rise in wage-rates became possible while retaining a high rate of profit – Emmanuel’s definition of the consumer society. Even more, it was to show how this politically enforced rise from below, simultaneously with the world wide extension of capitalism, had saved capitalism from itself, allowing it to grow greener than ever before.

In spite of frequent Marxist attacks on Emmanuel for being a bourgeois or revisionist, there can be no doubt where his political or philosophical preferences lay. Based on “the fundamental postulate of historical materialism [...] according to which it is not the degree of exploitation that renders a situation revolutionary, but the objective incapacity of the system to develop the productive forces”, Emmanuel (1976a: 84, & 69-87 *passim*) argued that for the revolution to ripen in the First World would require a re-proletarianization of the working masses. By contrast, for the Third World as a whole (and not for individual ‘miracle’ economies), “and bearing in mind the scope of present development in relation to the general level of technical knowledge today”, it was on the one hand evident that it could not catch up if forced to chose the path of capitalism, and therefore would seem ripe for socialism, but later, he (1982) confirmed that the full development potential of capitalism had not yet been reached. On the same premises Emmanuel’s policy recommendations can be understood, which he (*ibid.*: 161) defended from the accusation of being ‘reformist’: “If trying to wrench away from the existing system everything that it can contain, whilst we are within it, is reformism, then Marx could be called one of the most notorious reformists. The difference between reformism and revolution is that for the former, reform is subordinate to the maintenance of the system in good health, whereas for the latter reform is an integral part of the struggle for the system’s destruction.”<sup>76</sup>

In one of the better summaries of his thinking, centring as it does on international exploitation by the masses of the rich countries and the consequent ‘unblocking’ of the development possibilities in the centre, one of Emmanuel’s (1979a: 197, trans. J.B.) conclusive remarks indicated what might well have been the motivating force behind his whole approach: understanding the aberrant case constituted not by the underdeveloped countries, but by the *overdeveloped* ones: “It is the study of this case, which might explain why, one hundred and thirty years after the *Manifesto* and sixty years after the Bolshevik revolution, no industrial country has followed the road of socialist transformation and does not appear likely to following it in a foreseeable future”.

In the 1970s, Emmanuel also turned to the problems relating to the state, as well as to a possibly inherent contradiction in the socialist mode of production towards bureaucratisation, but his conclusions (*e.g.*, 1979b) were primarily negative, that the revolution would have to be sufficiently globally endorsed for it not to need a strong military apparatus to defend itself, or else that there would have to be yet another revolution against the state, and that, so far, there was no Marxist theory of the state. Although concerned with understanding the consumer society and well aware of the ecological impossibility of generalising that society, he did not observe the possibly similar problematic with respect to environmental disruption after the ‘forces of production’ had been ‘fully developed’. Later still, he (1988) considered the global financial market to be in need of regulation even under the conditions of capitalism, and perhaps saw the possibility of an evolving global administrative organisation as an ultimate

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<sup>76</sup> Emmanuel (1982: 161) continued: “I believe, and I have said it, that it would be illusory to think that the Third World as a whole could become a collection of USAs or Swedens. But I believe it perfectly possible to *reform* world capitalist relationships in order that the Third World may reach a level comparable to that of Portugal or Greece. Naturally, by that very fact, this would mean taking the risk that the USA and Sweden cease to be the USA and Sweden. But that does not matter very much to the Third World and, besides, it could quite well happen that such an event takes place well before the capitalist relations of production are destroyed. What is more, the impoverishment of the USAs and the Swedens, where three quarters of the planet’s industrial potential is concentrated, could bring us closer to this destruction, by however small an amount, which, for those that desire it, constitutes an extra reason for claiming these ‘reforms’.”

requirement for the ultimate success of socialism. Again, the similar problems in the environmental field were not observed.

### Preliminary summary on Emmanuel

This and the foregoing two chapters have concentrated on the originality and uniqueness of Emmanuel's contribution to political economy, rather than on the debates and alternative solutions proposed in his train. I have attempted to trace the likely background and experiences contributing to this approach. It is unfamiliar when he came to consider himself a Marxist, and in general communism did not become a strong force in Greece until organising the Resistance of the Second World War, both against the Germans and the exiled monarch supported by the British. There is much to suggest that he took great impression of events in the 1930s, whether in the Greek experience of the international depression, and the very different result in the Soviet Union, or the attempts, notable by Keynes and post-Keynesians to interpret these events. As is common for Greeks in dire times, Emmanuel went to live and work abroad, in his case the Belgian Congo. The wage differentials there between Africans and Europeans, and a corresponding absence of worker solidarity, could hardly have escaped any observer, and as an 'intermediate' southern European rather than Belgian or African, he was likely to have been all the more observant. To this was added personal experience in international trade, demonstrating the unlikelihood that the abnormal profits for which peripheral merchants were commonly accused, were anything but mythological, certainly not on a scale to compensate for the wage differential.

If the Depression was an experience common to both Emmanuel and his French colleagues, those of the Congo may well have immunised him against the predominant 'monopoly' tradition informing both French and Dependency Marxism. After the Second World War, the former were very much involved in Hegelian philosophy and political strategy, rather than with economic interpretation, something reinforced by the absence of institutional foundations outside the PCF, who produced its own economists. Bettelheim, the foremost Marxist writer on economic planning as well as on underdevelopment, was much influenced by Baran, but paid noticeably more attention to the possibility of non-equivalent exchange and, incidentally, was at the sociology rather than economics department. Apart from Denis, who was indeed an economist, although with a background corporatism rather than Marxism, no one seems to have been very interested in explaining the falling terms of trade for underdeveloped countries. The Indo-China and Algerian questions put the imperialist problem on the agenda, and the Chinese and Cuban revolutions confirmed that the prospects of socialism were greater in the Third than in the First World. However, to speak of a fundamental economic antagonism fuelled by the working classes themselves was sacrilegious. It was, at any rate, an impossible stance to adopt for a Western communist party, particularly one as large as the French and aiming for government.

Assuming an international tendency for equalising the rate of profit, Emmanuel's model of unequal exchange sought to explain precisely the anomalous terms of trade, as a consequence of an exogenous or politically induced increase in worker wages. Inspired by Marx's 'moral and historical factor' in wage-determination, this meant a revival of the classical determination from the cost-of production side, but a more realistic delinking from the classic assumption in Lewis's model of a wage-differential based on differing productivity in subsistence agriculture. Both French and international reactions were very much coloured by Bettelheim's 'theoretical comments' to Emmanuel's book, rather than as they had appeared in 1962. There he had called attention to the importance of wages also for the international division of labour and the related development-underdevelopment rift, reemployed by Emmanuel against him. Samuelson (1973, 1975, 1976, 1978) followed up his own critique of

the 'transformation problem' (1971) with an uninformed one of unequal exchange, seen as a critique of comparative advantage. The point of the latter was precisely the possible reversal of pattern of specialisation due to nothing but a politically induced, exogenous rise in wages, and had nothing to do with the event of equalising profits and opening of trade on Samuelson's mind. French reactions rehearsed, with minor modifications, points made better by Bettelheim, when they were not wholly political, relating to the indubitable worker solidarity which had to be reaffirmed, while illogically praising the economic critique of neoclassical economics on which Emmanuel's political conclusions built. Samir Amin (1970, 1973, 1974, 1976, 1977) presented himself as mediator in this debate, but his own approach, a not fully digested meshing of Emmanuelian points with his own previous ideas on productivity differentials and monopoly capitalism, was no great improvement on Bettelheim, whether when discussing the dialectics of productivity and wages, or when advancing Bettelheim's 'paradox', that when productivity differentials exceeded wage-differentials 'value' would be transferred from the rich and exploited to the poor and exploiting, as a definition of unequal exchange. A similar 'transfer-of-value' approach was involved with almost every other Marxist criticism, and it was also the point of every 'extension' of Emmanuel's theory, whether by Andersson or anyone else, and whether formulated in Marxian price of production schemas or in Sraffa's industrial equations. This makes it harder to appreciate other points of criticism which may be more relevant for the understanding of economic reality, such as the assumption of specific goods and the introduction of common sectors, attempted by Andersson (1976) and others (*e.g.*, Delarue 1973, Gibson 1977, 1980). By analogy, and because many of them have been conceived by contrasting some more ecological unit of measurement with the Marxian labour values, or presented as 'complementing' it, ecological versions of unequal exchange are in constant peril of falling into a similar 'morass' (Koont 1987: 10).

Part of the problem lies in theorising without knowing what it is, if anything, of historical change, conflict, or reality, one wishes to explain or understand. As to Emmanuel, these things should have been made clear by now. In addition to the evident historical evolution of the terms of trade and the economic logic behind international worker antagonism, it concerned more generally the, in his view, historically aberrant case constituted by the postwar, crisis-free, capitalist 'overdevelopment', in which unequal exchange had played a significant part by making possible, economically and ecologically, the institutionalised rise in wages needed to incite investments in anticipation of markets. In view of its centrality for the overdevelopment and overconsumption, with which the 1970s environmental movement was so much engaged, this should be a very relevant addition also for those political and human ecologists who wish to pass beyond a certain tame, if deserving, moralism often acting as surrogate for understanding. Quite apart from the remaining problems of 'international ecological solidarity', the political section of the environmental movement could probably do with some more reflection on inherent contradictions in a market economy such as those suggested in Emmanuel's analyses, and if correct, on what they imply for solutions in the sphere of global economic planning and political decentralisation, and the many conceivable problems and contradictions involved in any such solution.

In the remaining Chapters 9-11, we shall turn to more purely ecological theories of unequal exchange. Instead of arguing on terms of trade or labour values, these revert to some ecological or biophysical unit, such as the area-based 'ecological footprints'. In fact, if it is admitted that 'land' can function as such a unit, then the origin of ecological theories of unequal exchange can be traced at least to Cantillon (Chapter 1). The arguably most evolved 20<sup>th</sup>-century ecological version was that of Howard T. Odum. His theory of unequal exchange was an aspect and outgrowth of the ecosystem concept, of which he was an originator, as applied to human societies. We shall then turn to two traditions with commonly diverging

political affiliations. The first sprang from the (neo-)Malthusian, or 'Protestant', concern with population growth, but took account also of the overconsumption of the rich compared to available natural means. From American conservationism, it evolved into Georg Borgström's 'ghost acreage', and then, in the field of urban sociology, into 'ecological footprints'. The other originates in more Third Worldist, Latin American, or 'Catholic', tradition where population pressure on natural resources has been of neglectful importance and focus been placed directly on how the affluence of the rich could be said to cause ecological (and economic) degradation of the poor, commonly through some supposed physical 'transfer' of ecological goods and services mechanised by the mere exchange of raw materials for manufactured goods. It can largely be seen, and seems to identify itself, as an ecological outgrowth of the dependency tradition.

Unlike the theories considered so far, the theorists to be considered below have concerned themselves more explicitly with ecological unequal exchange. For the most part, they have belonged to been a branch evolving separately from the economic and historical discussions which have hitherto engaged us, although there are evident links when looking at the general political arena. At least one prominent participant in the post-Emmanuelian Marxist debates, Jan Otto Andersson, has contributed also to the ecological debates, and as we have seen Emmanuel himself put his point on worker antagonism in ecological terms already in the early 1970s. Generally speaking, the environmentalist debate has been concerned rather with contrasting their main foci on overpopulation vs. overconsumption, although none of the participants can be said to be oblivious to the problems noted by the other half. Whereas the 'populationist' stance has traditionally tended to locate the problem primarily in the Third World, those concerned with 'affluence' and 'technology' have concentrated on the West – the 'softer' and more radical searching for a different, low-input 'lifestyle', while the officially sanctioned have centred on technical efficiency, diminishing waste, and cleaning up pollution. The ones to be considered here have seen 'overpopulation' as related to affluence and relative to established political land areas, something accomplished only through an inflow from without (through fishing or trade) or from 'before' (*e.g.*, forest cover or fossil fuels) the politico-economic system. Contributions to ecological unequal exchange have thus focused on the possible connections between the poverty of the poor and the wealth of the rich either in terms of direct 'ecological' transfers or in terms of the excess load placed by the consumption of the rich on the environment in general or of the poor in particular.

The 'comparative advantage' of poor and low-wage countries in poor and labour intensive technology observed above, has an obvious ecological analogue. According to the economic logic of the system, ecologically hazardous and wasteful production will be localised in low-wage countries with less organised political resistance. In this sense, the comparative advantage of future generations is absolute. The geographical dimension of the problem implies that the 'dematerialisation' and lessened pollution hoped for, and in some instances observed, as industrial nations progress to services and higher-tech industries (the 'environmental Kuznets curve'), will not come to pass on a global scale, and may rather be the effect of such outlocalisation. This change will also be reflected in the pollution and ecoservices 'embodied' in trade, or in the ecologico-factoral terms of trade. The branch of learning concerned with this problem can safely be labelled ecological unequal exchange. As such it is very recent, and mostly concerned with attempted measurement, rather than historical interpretation or analysis of the factors behind these processes. Although fairly within the 'affluence' camp, compared with the more radical ecologists of the 1970s many seem unconcerned with changing lifestyles and much more interested in, or claim to be, the measurement of possible transfers.

This problematic to which we shall return from somewhat differing 'Protestant' and 'dependency' perspectives in Chapters 10 and 11, is only part of the story. An important

origin of ecological theories of unequal exchange is the reaction against what has been perceived as the Marxist, and perhaps classical economic, obsession with 'labour' as the origin of 'value'. Disregarding for the moment the accumulated 'art and ingenious labour' known as the capital or time factor, according to traditional mercantilist and pre-mercantilist ideas, the origin of value is rather both labour *and* land. So it is perhaps not surprising that we should find among one of the more theoretically advanced among these a theory which can largely be said to be a *land* theory of value, and in which an exchange is unequal to the extent the produce of a greater land area is exchanged for a lesser. Strictly speaking, the theory of Cantillon (Chapter 1) is not an 'ecological' theory, since among other things, he was unconcerned with non-human nature. Unfortunately, however, such concern cannot be used as a criterion for theories of ecological unequal exchange, which have often been human- and development-centred.

In the following Chapter 9, we shall turn to Howard T. Odum's theory, which in a sense attempted to include all three factors of production under a common term, 'emergy', and which was part common sense and part highly abstract ecological systems theory. Far more systematic and comprehensive than any other attempt to find a unidimensional measuring rod, it nevertheless faces certain problems common to any such measuring rod. As applied to the development-underdevelopment problem and unequal exchange, its execution has so far followed the simplistic notion linking underdevelopment with raw materials (or emergy) extraction and export, which would need to be complemented with greater understanding of the high-wage, high-consumption, feed-back mechanisms involved – an aspect of the reverse circulation of emergy and money, which would give pure purchasing power and its exogenous increase self-reinforcing tendencies such as those observed by Emmanuel and others for a market economy. How to make them manageable – without turning to inefficient communist central planning – was a concern shared by Odum, the 1930s Technocrats, and 1950s cyberneticists, and involved finding a 'prosperous way down'. The link between extraction and export of raw materials and underdevelopment figures also in the 'Protestant' camp, to be studied in the subsequent Chapter 10, which otherwise mostly revolves around poverty and overpopulation and a certain embarrassment over one's own riches and overconsumption. It becomes the central theme in the ecological dependency theorists to be studied in the final Chapter 11, sometimes vaguely linked to the criticism mentioned above of the 'environmental Kuznets curve', without any great appreciation of the historically different, although perhaps increasingly overlapping, nature of these problems. While imports of raw materials and 'ecoservices' to rich countries seem increasingly to become an historical reality, linking development and underdevelopment with respectively imports and exports of raw materials is mythical, and neither does it accord with the phenomena proposed to explain the environmental Kuznets curve. Its popularity, it would seem, is significantly due to being a rehearsal of the similar, although not identical, mercantilist stance, whose popularity in Latin America is presumably related to the circumstantial identification with both underdevelopment and raw materials exports (cf. Chapter 4).

## Chapter 9. Maximum empower to Odum's empire – the unequal exchange of 'emergy'

The most advanced modern ecological descendant of Petty's or Cantillon's attempted unidimensional measure of value – in the 'real' as distinct from the 'price' sense – is certainly the 'emergy' concept of Howard T. Odum, to which we shall now turn, and which arguably is also the most comprehensive and inclusive estimation tool of ecological unequal exchange. His work is not only the most theoretically elaborated, but also a centrepiece in the evolution of ecological science itself, notably the ecosystem concept. If Odum is more of a 'pure scientist' than other contributors to an ecological theory of unequal exchange, this does not imply that either ecology or Odum should be seen as being exempt from significant political motivations and context, although they may be less immediately visible.

The 'Age of Ecology', as Worster (1994) sees it, opened up with the Nuclear Age at the end of the Second World War. This was in two senses, and although Worster's focus has been termed 'nationalist' (MacKenzie 1997: 215), it was perhaps not so flattering for Americans after all. To McCormick (1995: 60) atmospheric nuclear testing was "the first of the truly global environmental issues", although the environmental consequences of atomic bombs did not surface on the American public's mind with Hiroshima and Nagasaki, and was "still rather out of the American focus" (Worster 1994: 345), 'counter-galvanising' against protesters (McCormick 1995: 62; cf. Golley 1993: 72) when H-bomb testing induced radiation-illness on Japanese tuna fishers in 1954. It began to become unavoidable only when, for fear of Russian spies and high overseas costs, tests moved to Nevada, and hot debris began falling over the Great Basin, and fallout blew even to Denver, Chicago, and Washington: "Here was no distant problem or an easily ignored issue; it was a danger to the elemental survival of Americans" (Worster 1994: 345f.). Radioactive rain in New York State in 1953, set off debates in the scientific community, notably Barry Commoner (1971: 49), who until then, like most, had taken air, soil, and natural surroundings for granted. Rumours began spreading in papers, scientists were mobilised, and the public reasserted its faith only with the U2-incident and Cuban missile-crisis (McCormick 1995: 62).

The American test programme was followed by the Soviet, the British (in or near Australia), and the French (in Algeria and after independence in French Polynesia), but by 1962 still covered well over half of the hundreds of detonations (McCormick 1995: 61, 64, Malm 2003: 208-20). Apart from the environmentalist interest eventually awakened, another more direct link to ecology was visible in Philip Gustafson's (quoted in Golley 1993: 73) 1966 observations on these radioactive releases: "No one would consider the deliberate release of radioactivity by weapons tests on a global scale as a means of undertaking an environmental radiation research program". This had nevertheless taken place, he admitted, with a consequent wide distribution of fission products, that now had opened up 'dramatic opportunities' for such studies, both in meteorology – "with the entire atmosphere tagged with radioactivity," allowing transport and mixing phenomena to be investigated on a global scale – and to a more limited degree oceanography. Fallout had permitted investigation of many other aspects of the environment "by novel and creative means", which only awaited expansion to hazardous chemicals such as carcinogens and pesticides. (Indeed, something similar has happened following the discovery of the ozone hole.) As Golley (*loc. cit.*) notes, before the escalation of the Vietnam War, ecologists were unconcerned by the connections with the military or military activities, seeing instead an opportunity for theoretical development: "Theory and the availability of funds together produced a vigorous research activity".

In fact, long before it became an issue for the public (including ecologists), nuclear testing had directly stimulated the growth of ecology as a scientific discipline, both regarding technical innovations and economic opportunities (Hagen 1992: 101f.). This extends even to such independent scientists such as James Lovelock, whose invention of the Electron Capture Detector had ensured him a job at NASA, where he was working when originating the Gaia-theory. Indeed, Rachel Carson, who used results gathered by said detector in awakening the world to the prospect of a birdless spring, had previously studied the ‘sea around us’ under the U.S. Bureau of Fisheries, which had been mobilised to learn more about the marine environment in case of nuclear war, and to help devise means to exploit the oceans for food, navigation, and defence (Linnér 1998: 187). An even earlier consequence of the close collaboration between environmental science and the military was the exceptionally active area of radiation ecology, by the mid-1950s organised into an ‘invisible college’ around the Atomic Energy Commission (Golley 1993: 74), and the related development of the *ecosystem* concept as used by the Odum brothers, which was to become a cornerstone for both scientific and political ecologists, and the environmental movement.<sup>77</sup>

### Odum’s context and inspirers

Included among the scientists to study the effects of the first H-bomb, then, were both Eugene Pleasants Odum and his younger brother Howard Thomas Odum (1924–2002). It is with the latter that the present chapter is concerned (when writing simply ‘Odum’ in the text below it refers to him). After two years as an undergraduate, he joined the United States Army Air Force, receiving training as a tropical meteorologist. Watching the tropical weather patterns with their constant impulses and changing conditions, he started to form concepts of energetic causality. The experience of looking at the Earth ‘top-down’ seems an evident inspiration in his approach to look at whole ecosystems, and he often said that that this initiated his interest in the energetics of systems at all scales. Centuries of scientific progress had ensued since Antonin van Leeuwenhoek looked through his microscope. Now, Odum (1971a: 9f.) suggested, in order to face environmental problems this knowledge had to be supplemented by looking through a ‘macroscope’, that had been made increasingly possible through daily maps of world-wide weather, high-flying satellites, radioactive studies, macro-economic statistical compilations, etc.

Odum studied at Yale under George Evelyn Hutchinson, the British-born pioneer in biogeochemical cycles and limnology, and under his tutoring completed his Ph.D. study on the biogeochemistry of strontium, which he found had remained at a constant level for the past forty thousand years (Odum 1951a: 373; cf. 1951b). Eugene credits Hutchinson’s ideas, transmitted as copies of class notes taken by Howard, as being a key inspiration in his using the ecosystem concept as the organising principle of his and Howard’s *Fundamentals of Ecology* (E. P. Odum 1953). Since Eugene himself was deeply involved in the lipid metabolism of birds and his only other publication dealing with an ecosystem topic from this period is his 1955 article on the Enewetak (at the time ‘Eniwetok’) atoll, co-authored with Howard, who also wrote the chapter on energy in ecological systems, it is probable, as Golley (1993: 67 & 215, n. 8) suggests, that the younger brother’s interest, stimulated by Hutchinson, led to the emphasis on biogeochemical cycles along with the ecosystem concept.

Howard began his teaching career in biology in 1950 at the University of Florida, but owing to his dissertation was recruited by the Atomic Energy Commission. Radioactive markers

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<sup>77</sup> Along with Lyssenko in Russia, the European reconstruction, and the proscription of military programs in Japan and Germany, this goes a long way towards explaining the prominence of American ecology. “Further, in Germany there was also the active hostility toward holistic thinking, which had provided a scientific base for national socialism” (Golley 1993: 75), a fear which may now have revived even in the U.S. (cf. Chase 1995).

were to become a basic tool in ecological research, and this was indeed an enormous experiment. The brothers analysed and measured the metabolism of a coral reef, which provided a marvellous example of animal collectivist work and the “emergent properties”, and ‘mutualism’ resulting from it.<sup>78</sup> Thus, ‘mutualism’ between scientific and military budgets came to stimulate the lesson of social mutualism in dependence on limited resources and energy, and it is an amusing thought that the former should arouse much less agitation than the latter among certain critics of ecologism (e.g., Chase 1995). In the 1950s, the Atomic Energy Commission organised a full scale research program at its production and test facilities, and in 1952 Eugene received one of the first contracts to set up a field laboratory, when the Savannah River atomic weapons plant was built in Georgia (Worster 1994: 364). Together with his students and associates, he began studies of old-field succession on the 300 square miles of abandoned land around the reactors (Golley 1993: 73f.). Other sponsored studies included Howard’s on the radiation effects on the tropical rainforest at El Verde, Puerto Rico, as well as the studies of coral reefs and ocean ecology at Enewetak atoll.

The Odum brothers were the sons of the influential, and in his day controversial, regional sociologist Howard Washington Odum. His impact on his sons lay not only in their turning towards science (partly to escape his towering shadow in social science) but in attempting to develop new techniques to contribute to social progress. This kind of liberal progressivism was referred to by Eugene’s wife as ‘the Odum drive’ (Craig 2001: 3), and by Peter J. Taylor (1997) as a ‘technocratic optimism’, i.e., that use of technical approaches to social issues and optimism about their success, something to which the younger brother seems to have been particularly receptive. The stated purpose of Odum senior’s *Journal of Social Forces* (1922), was to make “democracy effective in unequal places” and particularly to eliminate racial discrimination in the Southern states: “It seems necessary to define a comprehensive democracy and to work out a social organization through which such an adequate democracy may be made effective in the unequal places and to the unequal folk, at the same time that it tends to reduce constantly the ratio of inequality” (H. W. Odum, quoted in Craig 2001: 6). The concern with ecosystem energy flows, for which Howard T. was principally responsible, included societal phenomena already early on, and in the process he was to formulate an ecological concept of unequal exchange. As will be seen, it was conceived not in terms of an energy ‘theory of value’, i.e., of price, in the economists sense, but rather as part of a social reformist’s proposal to organise society on scientifically just principles on lines suggested in the Technocracy movement of the 1930s.

‘Value’ in Odum’s sense was not monetary, but rather, as seen in his 1983 commentary on predecessors, ‘useful work’: “The theory that energy could be a common denominator to measure all useful works was proposed widely with statements by [...] Boltzmann (1905), Oswald (1907, 1909), Soddy (1912, 1922, 1933), and Cottrell (1955).” Speaking of the Technocrats, he noted how their concept of energy value, in the sense of ability to do useful work, was too narrow. Their basic aims, however, appear to have been similar: “In the depression of the 1930s a national organisation, Technocracy, advocated various economic policies based on beliefs in an energy theory of value but one without energy quality or a useful role of money in stimulating energy flow” (Odum 1994 [orig. 1983]: 265). He seems to have agreed with the basic idea that human beings “convert energy drawn from outside their own bodies into social structure, and the greater the amount of energy consumed, all else being equal, the more complex the social structure.” (Coons, quoted *loc. cit.*). The problem

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<sup>78</sup> “The Pacific coral reef,” Eugene (Odum 1977: 1290) recalled, “as a kind of oasis in a desert, can stand as an object lesson for man who must now learn that mutualism between autotrophic [green plants] and heterotrophic [organisms feeding on plants, other animals, or detritus] components, and between producers and consumers in the societal realm, coupled with efficient recycling of materials and the use of energy, are the keys to maintaining prosperity in a world of limited resources.”

with an energy theory of 'value', then, was not that it was in principle misconceived, in Odum's view, but that it did not incorporate different 'qualities' of energy value. At that time, Odum spoke of energy 'quality' in terms of how much direct and indirect energy of a lower kind, such as sunlight, was 'embodied' in it, meaning how much that was socially needed to produce it under optimal conditions, and referred to as an 'energy theory of value'. This also touched upon why people tend to evaluate personally what is also energetically valuable:

An energy theory of value is based on embodied energy. If terms and flows have value because of the effects they can exert on a system, and if their abilities to act are in proportion to the energy used to develop them (after selective elimination of those that do not), the value is proportional to the embodied energy in systems emerging from selection process. The energy transformation ratio, by giving the embodied energy per unit of actual energy, provides an intensive factor for value in the way that temperature is an intensive factor for heat. Ultimately, embodied energy *may* measure value because it measures the potential for contributing effects to maximize power and ensure survival. Those who survive regard that as valuable. (*Ibid.*: 252.)

Odum saw a parallel between the 'energy' and the 'labour' theories of value, but the idea had apparently been criticised from a more neoclassical perspective, and he thus explained that he (and Hannon) "joined those proposing energy as a standard of value, whereas many regarded value as a function of effective action or a property of human free choice. Different kinds of meaning were involved" (Odum 1994 [orig. 1983]: 266). He, and other non-economists like him, were thus speaking of quasi-'real value', in the sense of the build-up of natural and societal organisation, as a measurable function of energy, whereas others were speaking in the economists' language of value as what (believing this to be demand) determined actual prices.

Speaking of Odum as a 'Technocrat', as Taylor does, is useful and enlightening in many ways, but should be nuanced by distinguishing this influence from that of his father. This is particularly so, since the latter pointed out precisely such a distinction between quantity and quality in evaluation. For Lewis Mumford, H. W. Odum, and other organically oriented 'regionalists', trying to articulate new criteria for technological development and diffusion of knowledge, the region or community, defined as an antipode to 'civilisation', was not merely historical traditions and memories, but a socio-geographic environment and a conditioning place. They were not Technocrats, and H. W. Odum criticised the overextension of instrumental rationality into American life, pointing out the bold contrast between 'super-civilisation' and culture, and the dominance of "organization over people, mass over individual, power over freedom, machines over men, quantity over quality, artificial over natural, technological over human, production over reproduction" (quoted in Jamison 2001: 63). The resemblance with Eugene Odum's plea for landscape ecology will become apparent, and though more 'technocratic', or with a greater talent for quantification of quality, it also catches better some aspects in the thinking of H. T. Odum. The inspiration from this older tradition to that holism which characterises both brothers' approach to ecology has also been pointed out (*e.g.*, Hagen 1992: 122f.).<sup>79</sup>

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<sup>79</sup> Worster (1994: 363) observed how, like their father, the Odum brothers "believed in achieving a holistic outlook on the world, not being trapped in overspecialisation; and like him, they wanted to see harmony flourish everywhere – harmony in the old divisive South, harmony in the nation, harmony between nations, harmony between humans and nature – instead of bitter, competitive struggle everywhere. Ecology appealed to the boys because it seemed to be a science that dealt with harmony, a harmony found in nature, offering a model for a more organic, cooperative human community." While H. T. associated more with engineering, Eugene leaned towards the softer sides of biology, birds in particular. He made only a grade C in his first biology course, which, however, influenced his career profoundly: "It required so much dissection of dead frogs, and my hands got so wrinkled up with formaldehyde, that I decided I was more interested in the living world" (quoted in Craige 2001: 14f.). He did his Ph.D. under Victor Shelford, who was Frederic Clements' associate on *Bio-Ecology* (1940) and the main force behind the Ecological Society of America's program to preserve natural areas.

The Technocracy movement is nevertheless important to the understanding of the ecosystem language and imagination, and particularly that of our Odum. It was founded in his childhood in the early 1930s and was immensely popular for a brief while around the transition from the Hoover to the Roosevelt administration, when it overshadowed all other solutions to the Great Depression. Partly inspired by Veblen (1921), they “proposed to replace what they called the ‘price system,’ which they saw as complex, unstable, and arbitrary, with equal allocations of nonaccumulable energy certificates. All materials and work could be measured in energy units; engineers capable of making measurements free from the distorting interests of economics and politics, would organize society better than politicians” (Taylor 1997: 213). Technological development had made the technocratic social order possible, but also necessary. On the one hand, the vast increase in energy utilisation made possible shortening the working week for all; on the other, the increasing complexity threatened disruption of the whole industrial ‘machine’: “In fact, the Great Depression and idle productive capacity proved to the Technocrats and their supporters that the organization of industry had broken down. Only a cadre of engineers using scientific principles could solve the technical problem of restarting running the industrial machine at maximum efficiency” (*ibid.*: 234). There are several similarities with contemporary Marxist interpretations, and arguments for a planned economy, but also with the tradition interpreting society in ‘organistic’ terms, striving to explain the ‘misunderstandings’ behind class struggle. The term ‘technocrat’ usually denotes someone who advocates technical approaches social problems and “believes that he can handle social complexity in a value-free manner, maintaining a distance from specific interests and political details, and that through such nondependency and disengagement he can best serve all” (*ibid.*: 215). Yet, for all their disengagement, Taylor (*loc. cit.*) observes, like that of Plato, “it is typical of social philosophies framed in terms of universal interests that their proponents hold a special place in the proposed social organization.” This ‘technocratic optimism’, as it is well termed, as to the possibilities of a value neutral approach and their own capabilities for orchestrating it, combined with the lessons of organising the war economy and prepared the way for Odum’s approach in the general post-Second World War optimism.

In October 1946, Hutchinson delivered a paper to a conference at the New York Academy of Sciences, sponsored by the Josiah Macy, Jr. Foundation. The speech, entitled “Circular Causal Systems in Ecology”, was divided into two parts, each with easily traceable links both to the biogeochemists, Goldschmidt and Vernadsky, and to the biodemography of Lotka, Volterra, and Gause. Each foreshadowed the development of ecology in the 1950s in the hands of his students: the systems ecology of Odum and the community ecology of Robert MacArthur (Hutchinson 1948, Taylor 1997: 217). The Macy conferences constituted a series of interdisciplinary meetings starting in 1946 and continuing until 1953, originally under the name of ‘Circular Causal and Feedback Mechanisms in Biological and Social Systems’, which was later shortened to ‘Cybernetics’. The subject of this particular conference was ‘teleological mechanisms’. The introduction was given by an instrumental figure in interdisciplinary ventures such as these, Lawrence Frank, who saw the spirits awaken to “one of the major transitions or upheavals in the history of ideas”, and prophesied on the amazing advances that social sciences would make when they had learnt to accept the new conceptions of circular causal processes. Gregory Bateson and Hutchinson believed that such a theory might unify the physical, biological, and social sciences, and allow the success of physics to spread to the others (Taylor 1997: 219f.). The second speaker was Norbert Wiener, the father of cybernetics, who proved to become an important influence behind the ecosystem approach by allowing nature to be understood as a machine, while at the same time acknowledging its purposive and regulatory character. Such ‘teleological mechanisms’ undid not only vitalism but also cause and effect determinism, and its language was equally applicable to any system,

permitting a unification of living and nonliving systems, and in addition social ones – indeed, soon even thermodynamics had to give way to the more abstract language of ‘information theory’ (*ibid.*: 219, 221).

The Third speaker was Hutchinson, for whom the divergent currents within ecology and between the two sections of his paper, had a common foundation in that the conditions under which groups of organisms existed were systems of circular causal paths, which were self-correcting within limits. Were the limits exceeded, violent oscillations would drive some elements of the system (the destabilising components) to extinction, and a new balance and a new system would be restored without them (Hutchinson 1948: 221). The fourth and concluding speaker, the initiator and chairman of the conference, Warren McCulloch, struck an even more dramatic note on the same tune, in a self-confessedly utopian vision that “man should learn to construct for the whole world a society with sufficient inverse feedback to prevent another and perhaps last holocaust.” This vision of a cybernetic social science illustrates an important aspect in the transformation from community organisms to feedback systems, Taylor (1997: 222f.) explains: “Freedom from holocaust, and from other social upheavals, might be achieved through the construction of an all-encompassing system of feedback. A systems approach to understanding nature moved easily into a systems approach for engineering society.”

Although Odum, who had been invited by Hutchinson to participate, was not impressed by the discussions, he nevertheless shared the basic vision of teleological mechanisms, and in his dissertation described ecology as part of the study of mechanisms of steady states in all kinds of systems, *i.e.*, Wiener’s definition of cybernetics, and, according to Taylor (*ibid.*: 225), took it upon himself to answer the question, unanswered by the conference, of who was to do the social engineering: the systems ecologist.

All sciences need and borrow metaphors from somewhere, including among themselves, and are often influenced in more than superficial ways. The progressive conservationist understanding of nature had an immense influence on the future science of ecology, and found its way also into the holistic ecosystem, or even cybernetic, approach of the Odums. Although many people wanted to make conservation ‘applied ecology’, Worster (1994: 312) maintains,

it is less commonly realized that ecology, conversely, became “theoretical conservation.” That is, the science came to reflect the agronomic attitude towards nature that progressive conservationists preached. How else are we to interpret the prominence of “productivity,” “efficiency,” “yield,” and “crop” in the New Ecology’s vocabulary? In turn, the New Ecology provided at last the precise guidelines and analytical tools required to farm intensively all the earth’s resources.

The ‘ecosystem’ concept was a further transformation of ecological language. The word was first used by the self-described dilettante Arthur Tansley in a direct attempt to convert the holistic, neo-Lamarckian organicism of Frederic Clements, into more timely mechanist, quasi-organismal currency. Although a long-time defender of Clements’ ideas, with time and extended support (by men such as John Phillips and Jan Smuts) some features, political collectivist implications of, and illegitimate deductions from it, became more aggravating to this friend of Herbert Spencer and Bertrand Russell (Hagen 1992: 79-86). Via the work of Hutchinson, the ecosystem became, with Odum, conceived as a fully cybernetic machine. Like in the approach of the neo-Malthusians, theory set out from demography, in this case more specifically the approach found in Lotka, which strove to link population with its surroundings by interpreting them conjointly as biophysical evolutionary processes.

Along with Hutchinson, H. W. and E. P. Odum, Alfred J. Lotka is the most important intellectual inspiration of H. T.’s approach. Lotka had a cosmopolitan background and was trained to become a physical chemist. For much of his life he worked in industry and government, doing unrecognised scientific work in his spare time. In 1922, he proposed that

natural selection acts to preserve and increase the numbers of those organisms that maximise the total flux through their system, as long as they managed to stay within all the constraints of that system: “in the struggle for existence, the advantage must go to those organisms whose energy-capturing devices are most efficient in directing available energies into channels favourable to the preservation of the species” (Lotka 1922: 147). The initial influence on ecologists of his *magnum opus*, *Elements of Physical Biology* (1925) is uncertain (it sold reasonably well for a book of its kind), but its reprint in 1956, became an ecological classic that was widely quoted in the 1960s and 1970s. Lotka himself saw his audience as physicists and chemists, complaining that the main response had come from biologists, and expressing disappointment that – generally favourable – reviewers failed to “hit the spot” and were unable to understand what the book was about (Kingsland 1995: 47). In the meantime Lotka had begun to devote himself completely to mathematical demography, where he attained a high reputation and is remembered for the so called Lotka–Volterra equations. Golley (1993: 58 & 216, n. 13) claims to have found no reference to Lotka in the principal ecological literature of the formative years, and only one by H. T. Odum from the 1950s to the mid-1960s, to Lotka’s 1925 book. However, it appeared at least both in Odum’s thesis on the biogeochemistry of strontium (1951a) and the important essay on “time’s speed regulator” (1955). Furthermore, in the 1940s Hutchinson was familiar with Lotka’s population biology and referred to it in addition to Gause and Volterra, in his first writing showing an interest in mathematical formulations (cf. Kingsland 1995: 179).

Like Lotka and Hutchinson, Odum made no distinction between living and non-living processes, observing, *e.g.*, how Lotka’s ‘stability principle’ ensured that “nature is as a whole in a steady state or is in the most stable form possible and constitutes one big entity” (Odum 1951a: 8). While Hutchinson and many other ecologists referred only to Lotka’s mathematical models, Odum had, in Taylor’s (1997: 225) words, “grasped the intent of Lotka’s title, namely the analogy of physical biology with physical chemistry”, for example when referring to organisms as “ecocatalysts”, able to “lower the free energy of activation” of each step in a cycle so that the system would reach a different equilibrium than it would without them (Odum 1951a: 325). The same year, Odum (1951b: 407) published a short article emphasising the ‘stability’ of the strontium cycle, which together with the fact that it included both living and non-living components, was sufficient for him to call it an ecosystem driven by radiant energy (cf. Taylor 1997: 226).

“While other systems ecologists would come to measure variously biomass, population sizes, energy, or essential elements such as nitrogen”, Taylor (*ibid.*: 230) remarks, “Odum converted everything to energy.” Or at least he did so after having studied the strontium cycle. Because all organisms require energy, this ‘currency’ had a special status, and so the first edition of *Fundamentals* suggested that theoretical generalisation in the field would “take the form of biological additions to the thermodynamic principles of physical chemistry” (cf. *loc. cit.*). Influence from Lotka on what came to be Odum’s proposal for a forth law of thermodynamics is evident already from his Ph.D. dissertation (Tilley 2004: 121, cf. Odum 1951a: 6ff., 373). Thus, in 1955, Odum referred to Lotka’s 1922 ‘law of maximum energy’ for biological systems. What was most important to survival was a large energetic output in the form of growth, reproduction, and maintenance, and that organisms with a high output per body-size would win out in the struggle for existence. Noting this, Odum and the physicist R.C. Pinkerton (1955: 332) proposed the following variation: “Under the appropriate conditions, maximum power output is the criterion for the survival of many kinds of systems, both living and non-living. In other words, we are taking ‘survival of the fittest’ to mean persistence of those forms which can command the greatest useful energy per unit time (power output).” They underlined that natural systems tended to operate at that efficiency which produced maximum power output, and that this was always lower than maximum

efficiency, implying that they would tend to a 'pulsing' rather than static form – incidentally similar to Emmanuel's (Chapter 8) characterisation of a market economy, where, in view of this rather ironically, it was seen as the 'natural' system stood on its head. This maximum power output theorem became a central tenet and theme of Odum's energy theory, essential to definitions and estimations of 'energy quality' or 'emergy' (cf. Hall 1995: xiii). Having been formulated by Lotka in 1922, the idea had roots in the 19<sup>th</sup> century, and was later referred to by Odum (1960: 1) as the fourth law of thermodynamics. Since the second law of thermodynamics, the entropy law, is often called "time's arrow", because it constrains processes to go in only one direction, it was not inappropriate to call this fourth "time's speed regulator", because it helped to understand the rate at which processes will occur.

Their principle that forms 'commanding the greatest useful energy per unit time', *i.e.*, maximum power output, was suggestive for observations on succession and climax societies, and largely evolved in concert with them. The Clementsian concept of climax community evolved, via Tansley, into its modern form with Whittaker (1953).<sup>80</sup> Some of the principal studies on succession were performed by E. P. Odum and his group at the 300 square miles of abandoned land at the Savannah River Plant, undergoing succession all at once. The large size made possible observations which had formerly been blurred by the speed of invading species. After initially high values, primary production established itself at a constant rate, and the ratio of the terminal standing crop of vegetation to the plant production declined. Golley (1993: 103) had continued the study when the herbaceous vegetation changed to perennial grass, finding the same pattern, but with different numerical values: "There was, it appeared, some connection between the number of plant species and the constancy of production. As the vegetation form shifted, a steady state in structural and functional parameters was gradually established and maintained until the next shift in structural form. Presumably, the process would continue until the climax was reached." Noticing these kinds of observations between plant species richness, or species diversity, and productivity, MacArthur (1955) concluded that the stability of the system was related to the number of possible ways for energy to pass through the ecosystem. H. T. Odum and others studied simple ecosystems that develop in closed containers, found self-organisation and constructed models with which to compare forests, lakes, rivers, reefs, and oceans. Systems seeded with many available species rapidly evolved an organisation of production, consumption, and recycling, that used more and more of the available energy as self-organisation proceeded (Odum & Johnson 1955: 128ff, Odum & Hoskin 1957: 115ff.). Odum & Pinkerton (1955: 342) observed that in a growing community there is a net increase corresponding to 'output power' (which is much less than primary production, since most of this goes into maintenance of the primary producers themselves as well as other organisms): "When the community has passed through its ecological stages of succession and has reached that steady state described by ecologists as the climax, there is no net output and all the energy goes into maintenance, at least theoretically. [...] Under these competitive conditions the primary producers, the plants, which are best adapted may be the types that can as a group give the greatest power output in the form of growth." According to their argument this should occur "when the adjustment of

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<sup>80</sup> "1) The Climax is a steady state of community productivity, structure and population, with the dynamic balance of its populations determined in relation to its site. 2) The balance among populations shifts with change in environment, so that climax vegetation is a pattern of populations corresponding to the pattern of environmental gradients, and more or less diverse according to diversity of environments and kinds of populations in the pattern. 3) Since whatever affects populations may affect climax populations, this is determined by, or in relation to, all "factors" of the mature ecosystem – properties of each of the species involved, climate, soil, and other aspects of site, biotic interrelations, floristic and faunistic availability, chances of dispersal and interaction, etc. There is no absolute climax for any area, and climax composition has meaning only relative to position along environmental gradients and to other factors" (Whittaker 1953: 61; cf. Golley 1993: 100f.).

thermodynamic force-ratio of the plants, not of the whole community,  $R$ , is 50 per cent”, meaning that the community of maximum possible size would thus be supported.

For two climax communities which have similar rates of respiration per unit mass of biological material, the ratios of community standing crops to primary plant productivity should be similar. Thus there is reason to expect productivity and standing crop mass of biological material (biomass) to have a definite relationship under climax conditions. Communities which do not have the maximum biomass would pass through successive generations until they achieved this condition. (*Loc. cit.*: 342.)

The conclusion to this was the oft noted generalisation that harvestable crops on a sustained basis can be expected only from communities of a successional, *i.e.*, in the early stages of succession, rather than climax type.

In an important article from 1963, Ramón Margalef documented the bioenergetic basis for succession and extended the concept with analogies to selection. The “keeper of organisation” of the ecosystem was the ratio of primary production to total biomass, which lowered with succession towards maturity. This could be seen in a richer and more complex structure, more complete use of food, greater proportion of animals, more steps through which energy flowed, and a decrease of energy flow per unit of biomass.<sup>81</sup> Species diversity was observed to peak in the early or middle stages of succession, declining again in the climax, although other trends could also be found.

In what came to be an environmentalist classic, E. P. Odum (1969) summarised these observations on succession into a “strategy of ecosystem development”. It voiced the ecological textbook concept of growth and succession towards a mature, steady-state climax (with overshoot). Seemingly contradictory experience from the eutrophication of lakes, implied instead the need for landscape ecological studies of the entire drainage- or catchment-unit, and he regretted that the “obvious logic” of this proposal had not caught on in the proposed International Biological Program (*ibid.*: 263; cf. Golley 1993: 143-151 and H. T. Odum 1967a: 416). Succession was defined as an orderly, directional and predictable process of community development, resulting from modification, within limits, of the physical environment by the community, that “culminates in a stabilized ecosystem in which maximum biomass (or high information content) and symbiotic function between organisms are maintained per unit of available energy flow” (E. P. Odum 1969: 262). Thus, “the ‘strategy’ of succession as a short-term process is basically the same as the ‘strategy’ of long-term evolutionary development – namely, increased control of, or homeostasis with, the physical environment in the sense of achieving maximum protection from perturbations” (*loc. cit.*). As concluded by H. T. Odum & Pinkerton (1955), he pointed out that this strategy to achieve a ‘maximum support of complex biomass structure’ often conflicted with man’s goal of ‘maximum production’, to obtain the highest possible yield.

In line with the lessons from the Enewetak atoll, the net result of the former was “symbiosis, nutrient conservation, stability, a decrease in entropy, and an increase in information”, and the strategy, as said, “directed toward achieving as large and diverse an organic structure as is possible within the limits set by the available energy input and the prevailing physical conditions of existence (soil, water, climate, and so on)” (E. P. Odum 1969: 266). Biotic control of grazing, population density and nutrient cycling often provided the chief positive

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<sup>81</sup> “Links between the elements of an ecosystem can be substituted by other links that work with higher efficiency, requiring a change in the elements and often an increase in number of elements and connections. The new situation now has an excess of potential energy. This can be used in developing the ecosystem further, for instance, by adding biomass after driving more matter into the system. A more complex state, with a reduced waste of energy, allows maintenance of the same biomass with a lower supply of energy – or a higher biomass with the same supply of energy – and replaces any previous state” (Margalef 1963a: 137ff.; cf. 1963b).

feedback mechanisms that contributed to stability in a mature system by preventing overshoots and destructive oscillations (*loc cit.*).<sup>82</sup> Man's attempts to obtain the highest possible "production" from the landscape, disregarded other services of gas-exchange, water-purification, nutrient-cycling, and other protective functions, done to man and the Earth in common. Driven to its extreme, it was "suicidal": "the landscape is not just a supply depot but is also the *oikos* – the home – in which we must live", and the safest and most pleasant was certainly one of "a mixture of communities of different ecological ages." For the lack of governmental ecosystem understanding and analysis, "there is no effective mechanism whereby negative feedback signals can be received and acted on before there has been serious overshoot", and those organisations rising to the urban-rural challenge had not become operational (*ibid.*: 266f.). Although he had many suggestions, E. P. Odum went beyond this mere regulatory approach, realising, with Hardin (1968: 1247), that there was no technical solution to the problem of population and pollution, that a mere moral education pleading to our consciousness, was not enough, and that if a solution was to be achieved it could only be through moral and legal means of "mutual coercion, mutually agreed upon by the majority of the people affected."

H. T. Odum's extension of his ecosystem theories to the societal level began in earnest only in the 1970s, and for the time being he was more engaged in technical solutions. After returning to the University of North Carolina in 1966, he began his first explorations into ecological engineering, studying how constructed marine ponds self-organised under the influence of nutrient rich effluent waters from the city's waste treatment plant. He spent nearly a decade researching into wetland systems for wastewater treatment. In 1971, he returned to the University of Florida, and initiated his program in Systems Ecology, where his ideas matured into a generalised systems approach, and the concept of 'energy quality' or 'embodied energy' emerged (Odum 1973, 1974, 1976), or, as it was later to be called, 'energy memory' or 'emergy'.

## Odum turns to society and energy qualities

In his influential book, *Environment, Power, Society*, Odum (1971a: 85f.) recounted the story of how the energy input of 'dilute' sunlight falling on leaves and plankton, through photosynthesis could be 'stored', and 'concentrated': "The stored energy of organic matter produced over a broad surface at a slow rate is then collected and concentrated by the consumer systems of animals and of tree twigs and limbs. The cost of the concentrating work is paid for from some of the collected food." Through the decrease of total power in available form, the energy 'concentration' increased: "The protein content and other aspects of quality of the organic matter increase with the concentrating process. By combination the trend in nutritional quality is toward chemical diversification and toward the more exact composition

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<sup>82</sup> The idea that biodiversity increased stability was initially supported by observations, had an intuitive ring about it, and theoretical support in MacArthur's (1955: 534) conclusion: "The amount of choice which the energy has in following paths up through the food web is a measure of the stability of the community." The source of the idea was given as Odum & Odum's *Fundamentals* (1953). When examined at a later workshop found wanting: no universal pattern holds (Golley 1993: 99). Nevertheless, the idea caught on in the environmental movement. E. P. Odum (1969: 265) had pointed out that biochemical diversity had been much less studied than diversity of species, so that few generalisations were possible, but that "it seems safe to say that, as succession progresses, organic extrametabolites probably serve increasingly important functions as regulators which stabilize the growth and composition of the ecosystem. Such metabolites may, in fact, be extremely important in preventing populations from overshooting the equilibrium density, thus in reducing oscillations as the system develops stability." The idea has received further theoretical support in Lovelock's homeostatic "Daisyworld"-models, which follow in straight line from Lotka and the ecosystem concept of the Odums.

of the body structures of complex higher animals, containing proteins, vitamins, and so forth.” He (*ibid.*: 115) also observed: “Beginning in the last century, man began to develop an entirely new basis for power with the use of coal, oil, and other stored-energy sources to supplement solar energy. Concentrated inputs of power whose accumulation had been the work of billions of acres of solar energy, became available for manipulation by man.”

According to Ulgiati & Brown (2004: 201), this latter passage was the first time Odum touched upon the idea that different forms of energy had different ‘qualities’. (Incidentally, speaking of fossil fuels as ‘acres’ of solar energy, he certainly preceded Catton 1982 [orig. 1980] in assuming an area-based common standard, although the idea is perhaps not so grand in itself; on the ‘subterranean forest’ cf. Sieferle 2001.) Apart from the contrast with preindustrial society, there were also suggestive concerns in food science itself, which in the 1960s was very much concerned with the alleged worsening food quality and lack of protein, believed at the time to be a major factor in malnutrition (Djurfeldt 2001: 29), that was captured in Borgström sensational exposure (in English in 1965) of this so called “calorie swindle”. The ambitions of the Green Revolution were probably of more direct importance for Odum. Beginning in about 1966, he referred to “energy of one kind” as the common denominator with the name “energy cost”, and in a presentation to the President’s Advisory Committee on World Food Supply on the ‘energetics of food production’, he referred to the enormous energy subsidies involved in the Green Revolution, that opened for delusions regarding the capacities of science to develop means for feeding growing populations and in improving on a photosynthesis which had been optimised by millions (indeed billions) of years of natural selection (Odum 1967b; cf. Odum 1995: 318, Brown & Ulgiati 2004: 202).

The chapter in his 1971 book on the power basis for man, compared different types of energy and energy support systems, ‘net yield’, and spoke of how man in the United States “spends large quantities of high-grade potential energy in his support system, also converging the output of many acres of solar energy to support each man” (Odum 1971a: 38). Early in the 1970s, in response to the interest raised by the sharp advance in energy price, he also testified in Congress that alternative energy sources should be evaluated as net energy, not just gross, which prompted the introduction in 1975 of a federal law requiring just such analysis (although it apparently tends to be little used). A compressed presentation of his ideas appeared in *Ambio* (1973), where the ‘net energy’ concept is explained: “*The true value of energy to society is the net energy, which is that after the costs of getting and concentrating that energy are subtracted*”. Here he argued that not only ‘soft’ alternative energy sources, but also nuclear energy would only barely bring positive yields. Even though the quantity of solar energy was more than enough, its ‘quality’ was too low, its energy too diluted, and would never be a substitute for coal or oil. The ability to do work for man depended both on the quantity and the quality of the energy, and could be measured by the amount of energy of a lower grade required to develop the higher grade (cf. also Zucchetto 2004). A prize speech held in Paris in 1975, on “Energy Quality and Carrying Capacity of the Earth”, contained a table of ‘Energy Quality Factors’, which spelled out how many kilocalories of sunlight energy that were necessary to make a kilocalorie of a higher quality energy. He also explained the related energy hierarchy principle that energy quality was measured by the energy used in the transformations from one type of energy to the next (Odum 1976). If it is not too self-evident, it should perhaps be pointed out that the principle did not work ‘backwards’, so to speak, making mere waste what defines quality.

Brown & Ulgiati (2004: 203) see an inextricable connection between ‘net energy’ and ‘energy quality’, “since the ‘true costs of getting and concentrating energy’ included not only high quality fossil fuel inputs but also human services and environmental inputs and these inputs required ‘quality corrections’.” Odum’s energy quality concept was not so well received, and the scientific community seemed intent on defining ‘net energy’ strictly as the

fossil fuel energy required per fossil energy delivered. Ten years later this was to become known as the Energy Return on Investment (EROI). From the mid 1970s onwards, Odum himself was by contrast increasingly focused on developing his theory of energy quality and its definition. He thus came up with the concept of ‘embodied energy’, introduced in *Energy Basis for Man and Nature*, co-authored with his wife, Elisabeth C., who helped to make it the more readable text first published in 1976 (Odum & Odum 1981; E. C. Odum, pers. comm.).

The book was divided into three parts: the first on how flows of energy build and operate systems introduced energy principles and the flows of energy in the environment; the second discussed different energy systems supporting humanity in industrial and pre-industrial societies; the final part, on the energy crises, examined possibilities for the future. I shall here concentrate on the aspects concerning energy qualities and trade.

The chapter on energy and money established that the money cycle is an example of a cycle driven by and dependent on the steady inflow of energy, but flowing in the opposite direction from the usual (non-monetary) cycles of matter and the flow of energy. In Cleveland’s opinion, the counter-current flow of energy and money was one of Odum’s two most important contributions to biophysical economics, the other being his concept of energy quality:

He pointed out that wherever a dollar flow existed in the economy, there was a requirement for an energy flow in the opposite direction. Money is used to buy goods and services, of necessity derived from energy. Each purchase operates through the economy as a feedback, stimulating more energy to [be] drawn from the ground and into the economy to produce additional goods and services. Money circulates in a closed loop, whereas low-entropy energy moves in from the outside, is used for economic tasks, and then leaves the economic system as degraded heat. Odum also observed that the large natural energy flows of solar radiation, water, wind etc. that are essential for life, have no associated dollar flows. The cost of using these energy flows do not, therefore, enter into economic transactions directly, often leading to their misuse or the mismanagement of life-sustaining environmental services. (Cleveland 1987: 59.)

The Odums’ wish to correct the misdirected signals due to the dependence on money as feedback mechanism is clear already from this summary.

They then involved themselves in the debate on mercantilist or Keynesian policies: “When money goes out of one industry as purchases it must come back in with sales – if the business is to continue. A *balance of payments* is required for each part of the economic system. Many ideas about economics have to do with stimulating or retarding the circulation of money in order to stimulate the production of real value. But the real basis of the economic system is *outside* the money circle” (Odum & Odum 1981: 45f.). The federal government of the United States attempted to stimulate the economy by increasing the amount of circulating money, and they apparently succeeded in that it caused more to be spent, thereby allowing some new projects to be started, and spurring some growth. As long as there was unused energy to be tapped, “adding money stimulated growth and caused new energy to be drawn into the economy”; the inflationary decrease in value of people’s savings was like a tax, converted into new governmental projects which stimulated the economy to grow (*ibid.*: 46ff.). The success of a policy of governmental spending would depend on the rate of inflowing energy. They believed that whereas in the depression of the 1930s there was abundant available energy, in the ‘oil crisis’ of the 1970s the problem was instead a shortage, and therefore increasing money would not stimulate the inflow of energy (*ibid.*: 50f.).

Systems had internal storages of structure, referred to as capital assets, that included buildings, people, food stocks, information, culture, education, memories, “and all other things that we regard as useful, valuable, and subject to depreciation” (*ibid.*: 51f.). These constituted assets to a self-organising feedback system, from which the means to continue old

activities, pump in more energy, and start new activities were drawn. Accumulation occurred when inflow exceeded usage, depreciation, and other outflows, but already maintenance required a continual inflow to compensate for the unavoidable depreciation (*e.g.*, friction, entropy, memory loss).

Since money was exchangeable only between people, not between the parts of a natural ecosystem, it could not be used as a measure of value for most of the energy involved in developing resources. Money could measure only the work of the fisherman, not of the estuary. It circulated to pay only for the feedback from the main economy to the primary producer. “Money is inadequate as a measure of value, since much of the valuable work upon which the biosphere depends is done by ecological systems, atmospheric systems, and geological systems that do not involve money” (*ibid.*: 55f.). Price did not indicate how valuable the environmental input was to the economy, and as illustrated by virgin sources, tended to be small when the embodied energy was large: “When the inflow from the environment is greatest, contributing most to the economy, the price may be the least, since the source is so rich that little is fed back to process it” (*ibid.*: 55). Instead, the only way to calculate the ‘real value’ of an external input to the economy was with some kind of energy evaluation: “Evaluating externalities for their ultimate value to the economy is done by evaluating embodied energy inflow” (*ibid.*: 56).

The authors explained different kinds of energies, and particularly their varying quality and concentration. Energies which differed in quality differed in their ability to do work, and it took more energy of one kind to upgrade it into another kind. The total energy required for a product was now called the *embodied energy* in that product, and should include not only fuels but also the energy flows of materials and work needed for a system and its operation (*ibid.*: 26). Embodied energy was the energy required to generate a flow, the total energy that supported and maintained a high-quality process such as a human being or his society, expressed in calorie equivalents of one type of energy: “It is the energy which has already passed through many transformation processes, most being dispersed into used form while transforming the remaining energy into a high-quality form” (*ibid.*: 44f.). An individual human being used perhaps 2,500 kcal of food per day, making about one million a year, but this was much less than the embodied energy, which was his share in the “country’s”, or rather the world’s, whole energy budget, including the work of generators, farm machinery, vegetation, industry, and so on.<sup>83</sup>

Before going into international energy (or embodied energy) flows, something should be said of the different energy (or embodied energy) assets or storages of nations. Whereas most nations had substantial solar energy, they differed with respect to high-quality energies (fuels and developed assets). The four principle categories identified by the authors were nations (1) with both developed assets and sufficient domestic supply of fuels and critical raw materials; (2) with developed assets, but lacking in fuels and raw materials; (3) lacking in developed assets, but with more fuels and raw materials than they use; and finally (4) without either developed assets or sufficient fuels and raw materials (*ibid.*: 213). This tetrad, which of course could be applied to any geographical level, may seem simplified to the extreme, but when compared to the popular grouping among later theoreticians of ecological unequal exchange into only categories (2) and (3), it is certainly to be preferred. To it, the authors also attached somewhat cut-and-dried development patterns: category (1) “soon” moves to (2) and “ultimately” to (4), whereas (3) “seem to be moving” into (1) (such as in the case of the United States).

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<sup>83</sup> The concept is simple enough and in the second edition (Odum & Odum 1981: 47) was illustrated by a cartoon, ‘Beetle Bailey’, by Mort Walker. ‘Sukhatme’s rule’, so called, had recently established the physiological minimum to cover necessary energy and protein intake at 2,200 kcal a day, corresponding to ca. 600gr of cereal (Djurfedlt 2001: 28).

The ability and necessity to trade was obviously influenced by internal energy resources. Neglecting other influences on prices, or perhaps *ceteris paribus*, the more energy sources a country had within its borders, the cheaper it could sell its goods and services, the more of the market it captured, and the larger its volume of trade. But the thing that matters was whether the energy stimulus received was greater than the energy required to generate the exports (*ibid.*: 214).

To illustrate the ‘embodied energy in trade’ the Odums considered a country exchanging fuels, minerals, and raw materials, embodying more energy, for finished products, embodying less, where payments were in balance. In this case the money received for the raw materials would not buy the same amount of embodied energy in finished goods, and the economy of the country buying the raw materials would be stimulated. In this way the Odums found support for what amounted to a policy import substitution, and one which is recognisable from the earliest mercantilists onwards. By selling raw materials a country sent its embodied energy away, got less economic activity (than if processing at home), and less total purchasing power. The important balance of trade was not that in money, but in embodied energy: “When a country get more embodied energy either from within its borders or through trade, its money represents more embodied energy and becomes more valuable (it buys more). The vitality of the economy depends on the balance of embodied energy, not the balance of money payments” (*ibid.*: 216). Unfortunately, they did not consider problems of terms of trade explicitly, although this is what their example with a balanced trade in money terms and imbalanced in embodied energy terms amounts to. If prices of a country’s goods are raised, *e.g.*, following a wage-increase, this would also shift the embodied-energy terms of trade.

Exchange does not necessarily imply that one party loses and the other gains, since the complex forms of production that support human beings can be maximised by bringing together the various outputs of energy-specialised regions, in an energy version of comparative costs: “Diversity of energy flows can generate additional energy. Exchange and world trade can increase flows of energy by eliminating special shortages in some areas.” (*ibid.*: 214) This, which must surely complicate the concept, or at least the calculations, of ‘embodied energy’, happened if the energy gained to the overall system exceeded the energy required in the transportation and in the administration of the exchange. The added inflow of fossil fuels historically accelerated transportation and facilitated world trade, thus favouring organising activities on a large scale. Whether in this case gains had made up for losses was perhaps less certain, and so the authors (*ibid.*: 214f.) concluded that if “the energy required for swapping and transportation is higher than the gain to be made by the exchange, then supplying the necessity locally is better.”

Adding some systematisation, and denoting gain (+), loss (–), and equal gains and losses (=), in the trade between two countries (A, B) there are  $3^2 = 9$  possible outcomes, but as A and B are interchangeable denotations we narrow it down to the following:

- |   |              |
|---|--------------|
| (1) Mutual gain   | A (+), B (+) |
| (2) Gain to the one and loss to the other                   | A (+), B (–) |
| (3) Gain to the one and equal gains and losses to the other | A (+), B (=) |
| (4) Equal gains and losses to both                          | A (=), B (=) |
| (5) Loss to the one and equal gains and losses to the other | A (–), B (=) |
| (6) Mutual loss   | A (–), B (–) |

In all but the fourth, which is by definition balanced, there are conceivable inequalities of exchange. In the case of mutual gain, as in conventional economic theory, the gain to the one could be greater than that to the other. Should there be mutual loss, the same unequal partition

is of course possible. Finally, the gain to the one need not equal the loss to the other, so that even in this case could there be overall gain or loss to the system.

In 1983, the concept of *emergy* was introduced, on the suggestion of a visiting scholar from Australia, David Scienceman. From 1967 to 1984 Odum had used the names ‘energy cost’ and ‘embodied energy’ to put different kinds of energy on the same basis. Now, the term ‘embodied energy’ had also caught on with others, but was in their usage not really including *all* energy inputs, nor was it used to imply quality. Since it had proved ambiguous, in 1982, Odum switched to ‘embodied solar calories’, denoting the quality factors transformation ratios, and then to ‘emergy’, standing for ‘energy memory’ or ‘emergent property of energy use’ (Odum 1988a: 1139, *n.* 11), and defined as follows:

EMERGY is the available energy of one kind previously used up directly and indirectly to make a service or a product. (*E.g.*, Odum 1996: 7.)

In Brown’s (2003: 296; cf. Brown & Ulgiati 2004: 201) words this is probably the “most criticized”, “most creative and least understood concept”, in all of Odum’s body of work – a “powerful mixture of common sense, ecological energetics, and thermodynamics”. On his visit, Scienceman had also suggested the terms ‘emjoules’ and ‘emcalories’, to distinguish emergy units from units of available energy, while the expression ‘transformation ratio’ gave way to ‘transformity’. With use and discussion at weekly ‘systems seminars’ at the University of Florida, concepts, methodology, and language were refined and added to (Brown & Ulgiati 2004: 203f.). Odum (1994 [orig. 1983]) had just published a textbook in systems ecology, in which his system’s language, the energy circuit language, was fully explained and the kinetics and mathematical substructure given. These developments have made the whole emergy and systems-ecological construct unsurpassed in width, well-ordered structure, inclusiveness, and potential usefulness, but unfortunately also turned it into a specialist language which, though well-defined, is difficult to communicate to others, without turning them into ‘Odumologists’, and may ultimately be what breeds the suspicion of technocracy.

In 1987 and 1988 Odum gave coherent presentations of his transformity and emergy concepts. Transformity, the energy of one type required per unit of another, was used as an energy scaling factor for the hierarchies of the universe. Insight into such transformation ratios came from the ecological energetics of food chains or webs. Every time energy was transformed, as it flowed through the typical web-like design of an ecosystem, most of the available energy was degraded and dispersed as a necessary part of generating a smaller amount of energy of another type. At each stage, energy is necessarily degraded and the energy flow decreased. The latter was defined as of higher quality because it required more resources to maintain, making ‘quality’, one might say, consumer biased. This higher quality, but lesser quantity energy fed back as controls, reinforcing the production process. The released by-product materials recycle back into the production process. Ecosystems, and possibly all systems, were organised in hierarchies, Odum (1988a: 1133) argued, because this design maximised useful energy processing. Since ecosystem designs with greater energy use displaced other transient conditions, the trial and reinforcement process of self-organisation continued (provided the species and genetic variation was available) until the state was reached that maximised power, *i.e.*, the rate of useful transformation of available energy, for that resource condition. By implication, the same was true of social systems.

Because of the necessary losses in transforming solar energy – let us say, into a graduate student or a pile of excellent birchwood of equal weight – it is incorrect, Odum would say, to use energy (or exergy) as a measure of the work they perform when energy from more than one part of the transformation hierarchy is involved. It is, for example, already recognised that it takes 4 J from coal to make 1 J of electricity. So, even though the pile of birchwood ultimately produces more heat at combustion than does the graduate student, some probably

feel that this would somehow be wasteful, perhaps, as Odum would have it, because to produce any graduate student would require a much greater amount of solar energy, perhaps even in the form of birchwood. But then again, others would not, and prefer to use the more common measure of 'exergy', or 'available energy', in which such higher quality differences in the ability to do work are not included (cf. Spreng 1988, Slessor 1993, Ayres 1998, Hornborg 1998).<sup>84</sup>

In the more complete Crafoord presentation, transformity is explained as follows:

Extending food chain concepts to thermodynamics generally, we defined a new quantity, the *transformity*, which is the amount of energy of one type required to generate another type (in real competitive conditions of optimum loading for maximum power). (Odum 1988b: 27.)

The parenthesis, with its liberal economic implications, is important also since it reminds us that not just any old hierarchy is good enough, which is perhaps not always apparent from Odum's writings or examples. When not taken from nature, he seems to have found them in the social worlds he was most familiar with, the military<sup>85</sup> and Academia<sup>86</sup> where 'competitive conditions of optimum loading for maximum power' can hardly be guaranteed, and thus correct transformities and energy values not be established. Indeed, they may equally well be ruled by the 'injelitance' (*i.e.*, by individuals with unusually high combinations of incompetence and jealousy) observed in Parkinson's (1957: 95ff.) law. Odum (1988b: 73) appears himself to have experienced some such grievance: "I deeply regret any threats to the careers of others I might have caused by advancing theory faster than is customarily credible in science". All in all, no hierarchy or component part of it can *per se* be justified by the principle of maximum power.

Odum furthermore suggested that the 'Maximum Power Principle' should more correctly be the 'Maximum Empower Principle', on the rationale that maximising power would favour high power, low transformity processes, which, he believed, would not prevail in competition with more complex systems of low power but high transformity. By now, just as climax and overshoot seemed at long last to enter sociology (Catton 1982), Odum (1988a: 1134) followed instead the 'pulsing' paradigm as the most general one in nature. He computer-simulated and

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<sup>84</sup> Unlike energy, 'exergy' is not a conserved variable, but can be lost or gained, stored and accumulated; exergy inflows and outflows to and from any system are definable and measurable. In Ayres (1998: 192f.) description: "Exergy is defined as the potential work that can be extracted from a system by reversible processes as the system equilibrates with its surroundings. It is, in fact, the 'useful' part of energy and is what most people mean when they use the term 'energy' carelessly (as in economics). There are four components of exergy. They are: (i) *kinetic* exergy associated with relative motion; (ii) *potential field* exergy associated with gravitational or electromagnetic field differentials; (iii) *physical* exergy (from pressure or temperature differentials), and (iv) *chemical* exergy (arising from differences in chemical composition). [...] In considering mass flows into and out of economic (*i.e.* industrial) processes the first three components of exergy can be safely neglected." Of course, Ayres does not consider exergy to be the *only* factor of production, and so neither a unidimensional measure of value.

<sup>85</sup> Apart from food chains and the self-organising aquariums he studied in the 1950s, his favourite example from human societies is probably that of a military hierarchy: soldiers report to corporals, who report to sergeants, who report to lieutenants, etc., while control goes in the opposite direction (*e.g.*, Odum 1988b: 22f.). But did this guarantee 'quality' of decisions, energy or other? How about the guerrilla warfare of the Vietnam War? A U.S. pilot is reported to have said: "Well, it is a little exaggerated. We're applying a \$18,000,000-solution to a \$2-problem. But, still, one of the little mothers *was* firing at us" (McLuhan & Fiore 1968: 97). In fact, Brown (1974, 1977), one of Odum's associates, did make an evaluation on 'embodied energy' lines of the Vietnam War. If Odum's close affinities with the military made the example present itself immediately, he appears to have become more sceptical as a result of the war in Vietnam.

<sup>86</sup> In an evaluation of whether it would be better for a university president with some unallocated money to spend it on a cogeneration plant to save utility costs, or for academic purposes, Odum admitted that the answer "requires the difficult, still unfinished EMERGY evaluation of the academic feedback contribution of the university in providing high-transformity information to operate the whole state system" (Odum 1996: 235).

visualised how, in reality, a pulsing pattern tended to maximise long-range performance. Waves of consumption alternated with waves of production, convergence with divergence, at a frequency depending on turnover times, a timing correlated with size and hierarchical position, and an impact on other hierarchical levels that was, in his view, greater the higher up the pulsing occurred.

### Some points of criticism

Before proceeding with Odum's 'emergy' theory of unequal exchange, we shall look at some of the criticism which has been levered at it, both from ecology and economics, notably on its limited scope, in spite of its all-inclusive ambition. An attempted systematic critique of Odum's ecological theory has been forwarded by Månsson & McGlade (1993). Referring to it as 'Odumania', they (*ibid.*: 589f.) criticised what they took to be his five key conjectures: (1) "All significant aspects of ecosystems can be captured by the single concept, energy; (2) "The formalism of an energy circuit language is sufficient for a holistic approach to be developed"; (3) "Systems evolve so that the "power" is maximized, i.e., according to the maximum power principle"; (4) "Hierarchical structures, systems boundaries and compartments can always be deduced and taxonomically resolved"; (5) "Ecological succession is due to the maximum power principle applied to ecosystems", culminating "in stabilized systems with maximum biomass and symbiotic function between organisms per unit of available energy flow". Trying to respond to each of them, Patten (1993: 598) also replied that the technical points raised by Månsson & McGlade did not touch the heart of Odum's real contribution, which lay in ecological organisation rather than ecological energetics. Just as Darwin's discredited 'pangenes' were not essential to his evolutionary paradigm, Odum's energetics was not essential to his own holistic one.

The first point of criticism hinged on his taking 'energy' as an appropriate 'currency' or numeraire with which to describe system function and evolution. They pointed out shortcomings in Odum's use of the term, but unfortunately had little understanding of the term *emergy*, which actually plays that pivotal role in Odum's system, and which is not subject to the same kind of criticism that they level against the currency of energy or exergy. Emergy and transformity appeared only in the conclusion and were brushed aside (Månsson & McGlade 1993: 593) as "inoperational since the actual quantities are almost entirely arbitrary [and] cannot even in principle be established for a non-climax (non-stationary, nonequilibrium) system; they are wholly dependent on the maximum power principle". While this charge was denied by Patten (1993: 599f.), Månsson & McGlade nevertheless have a point in that even the emergy language is reductionist (cf. 1993: 584, 587 on niches and its multidimensional spaces, and below on 'matter'). Patten (1993: 599) on the other hand countered that the reductionism was only apparent, and that energy equivalents were used as "markers or tracers to discern the connective networks [...] within his system", for which purpose others may prefer other substances, "complex multicommodity storages and flows", or simply "meals". They did "not have to explain everything about ecosystems to be useful for what it does explain", and "to unravel certain design features of ecosystems". The thrust of his theory was not *energy* organisation but simply *organisation* of complex systems.

The second point referred to the both excessive and too simplistic formalism implied in the energy circuit language, and was also related to the implied reductionism, since there were many things which could not be said or shown in this language (Månsson & McGlade 1993: 590). It is at least easy to agree that it is not very pretty, and is unlikely ever to become communicable to other than those already inclined towards reductionism and systems theory. Patten (1993: 600) agreed that Odum's language and models followed the lead of engineering and assumed linearity, but argued that his flaw was rather his belief that it could replace

mathematics. The third point referred to the vagueness and implications of applying Lotka's 'maximum power principle', against Lotka's own advice, as a principle of evolution. Again, Odum himself had already reformulated it as a 'maximum empower principle', which of course is not to say that there may not be problems with it. Noting that for Odum the principle's applicability referred to an 'optimal design' criterion for ecosystems, a concept not invented in Lotka's time, Patten (1993: 600) challenged the relevance of Lotka's reservations and pointed out that they would have been evident to any field ecologist. The fourth point referred to problems of compartmentalising complexity, when ecosystems may not even be decomposable (Månsson & McGlade 1993: 590). According to Patten (1993: 601) it was just yet another, in this case a fanciful and erroneous, idea of a creative mind, but which was not essential and could easily be ignored. The fifth point (Månsson & McGlade 1993: 591) referred to the relation between the successional oscillation prevailing in natural systems and Odum's proposed maximum (em)power principle. This was indeed Odum's conclusion, increasingly speaking of a 'pulsing' paradigm to replace that of succession towards a climax society. As Månsson & McGlade point out "for the oscillatory mode the relevant entity is not the instantaneous power flow, but the time-average over one period" (*loc. cit.*). However, they interpret this as a "fundamental flaw in the maximum power principle in the context of oscillating systems", arguing that from an evolutionary standpoint "virtually any configuration is admissible", which makes it difficult to assess empirically (*ibid.*: 591f.). Patten (1993: 601) claimed unable to evaluate this treatment, but pointed out that the maximum (em)power principle was no more tautological than the concept of evolution as a result of natural selection, and that the aim of science itself was to discover such principles.

The most substantial point probably concerned the exclusive reliance on energy derivatives, to the neglect of other niche-components such as matter. Månsson & McGlade (1993: 587) pointed out, whereas thermodynamics establishes "that exergy is needed to extract materials from the environment and to transform them [...] no general relationship between material scarcity and exergy can be found". Apart from energy flows, material flows and chemical change were important aspects of thermodynamics that impinges on ecology (cf. Hutchinson 1948, Smerage 1976, Waring 1989). At least so far as ecology and economics is concerned, matter basically obeys similar conservation laws as energy, is reasonably straightforward to measure, and can be used to define ecosystem boundaries, providing "more than 90 relevant balance relations for ecological systems" (Månsson & McGlade 1993: 587). Essential elements can become limiting factors (cf. Liebig's 'law of the minimum', Martinez-Alier 1987). In Patten's (1993: 601) formulation, "Odum retards the full development of his theory by his insistence that it be expressed in energy terms, unnecessarily narrowing its domain of applicability." Odum's tendency to look only at derivatives of energy, thus made him neglect other problems, notably of *matter*.

Among economists, the same criticism had been advanced by another follower of Lotka, Georgescu-Roegen (*e.g.*, 1982: 20f.), who saw it as a species of the 'energetic dogma'.<sup>87</sup> While sometimes proclaiming: "There is no such thing as net energy, any more than there is net matter. We can speak only of *accessible matter* and *accessible energy*" (*idem* 1976: xvii), this was also rephrased positively. Thus, Odum's idea of *net energy* as the sole criterion of economic efficiency, neglected the equally justifiable efficiency relating to *net matter*. Georgescu-Roegen (*e.g.*, 1982: 14f.) argued that, in principle, matter followed wholly analogous laws to the thermodynamic laws of energy, the first, principle of ever-presence, stating that no mechanical work could be obtained without either energy or matter, the second, entropic principle, that no mechanical work could be obtained without some additional energy and matter being degraded into unavailable form, and the third, non-

<sup>87</sup> It was related to the confusion of 'mass', *m*, with 'matter' in the formula  $E=mc^2$ , which transformation, furthermore, in all essentials worked only from *m* to *E*, not the other way around.

recyclability principle, that no thermodynamic system can be completely purified of unavailable energy and no material substance of its contaminants. An entropy formula for matter implying measurement was difficult to conceive, he admitted, because, whereas energy was homogenous, matter was intrinsically highly heterogeneous (*ibid.*: 17).

The emphasis on matter in society was part of Ayres & Kneese (1969) approach, and has been taken up from the 1990s onwards by the Viennese ‘social metabolist’ school (*e.g.*, Fischer-Kowalski 1998, Fischer-Kowalski & Hüttler 1999; cf. Haberl 2001a-b), but unfortunately, in spite of this essential and illuminating heterogeneity, it has so far mostly aggregated matter into the simple and rather unmetabolic category of ‘weight’, rather than to the specific functions of various materials. This is illuminating, for example, with respect to the transformations from hunter-gatherer societies, to agrarian, and then industrial societies (Fischer-Kowalski & Haberl 1993, Fischer-Kowalski *et al.* 2003), as well as to transport (*e.g.*, Fischer-Kowalski 2004), but on the other hand already fairly common in the economics of international trade (cf. Chapter 11). The addition of estimations of ‘human appropriation of net primary productivity’, in line with certain area based indicators (cf. Chapter 10), and the relation with biodiversity are important complementing additions (cf. Haberl *et al.* 2004). For all practical purposes, as had been pointed out by Cloud (1971), availability of metals followed Georgescu-Roegen’s matter-analogy of the entropy law: “The important moral [...] is that for the complete description of macroscopic phenomena we must keep track of what happens also to matter, not only of what happens to energy” (Georgescu-Roegen 1982: 19).

Since energy-related concepts, both etymologically and in essence, refer to the ability to do work (to ‘labour’), Georgescu-Roegen (*ibid.*: 34) was right to see his point that “matter matters” captured by Petty (1662: 28), which he (favourably) misquoted as: “Hands [are] the Father, as Lands are the Mother and Womb of Wealth”. This, as should be reminded, was still only “[i]f one looks at the economic process through the eyes of a physicist”, and it would be mistaken to believe that this “dual basis of economic value” was, in principle, any less reductionist than one based on merely one of them. Georgescu-Roegen (1982: 35) was rare in his clarity on this issue – while reminding of Cantillon above – when pointing out that the “true product of the economic process is not a material flow of waste, but a physiological flux: the enjoyment of life”, without which we did not yet move in the economic domain.<sup>88</sup>

Calculating visible and ‘hidden’ material flows as an aggregation of weight can be done, but is perhaps not as meaningful as a corresponding calculation of visible and hidden energy flows. In calculating energy, the level of solar insolation to the Earth can be taken as baseline, and was so taken by Odum (although towards the end of his life he began using background radiation). This meant that the transformity in the biosphere, expressed as solar emjoules per joule, ranged from one for solar insolation to trillions for categories of shared information. One could thus construct a coherent, and as Odum (1988a: 1132) saw it, “scientifically based value system for human service, environmental mitigation, foreign trade equity, public policy alternatives, and economic vitality.” It is Odum the reformer who speaks, not Odum the economist. Had he believed that the economy really followed his system of valuation, there would have been no need for reformation. Comparing energy value

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<sup>88</sup> Even this is an incomplete view of the human ‘niche’, and while waiting for something better, economists and historians could do better by rehearsing Aristotle’s fourfold ‘causality’ (*e.g.*, *Metaphysics*, 1013a f), *i.e.*, the ultimate foundations to which any thing *owed* its existence, to which it stood in a debt (of gratitude). These were not only the *matter (hyle)* of which a thing was made, descending back to the womb of the Earth, but also its *form (eidos)*, or paradigm, which he tended to perceive in a rather Platonic way, but for which artists have had greater sensibility. Thus, included was also the *creator*, artist, or manufacturer himself (the ‘hands’ in G-R’s misquotation above), whose effort effectuated the piece. Finally, unlike much of the alienated drudgery of the industrial era, the Greeks also perceived the ultimate *aims (telos)* towards which a thing was owed its existence, hierarchically interlinked with other such aims and revived in ceremonies (cf. current publicity and advertising celebrating Sale).

to monetary value, he (1988a: 1136f.) thus concluded that money “cannot be used directly to measure environmental contributions to the public good, since money is only paid to people for their services, not to the environmental service generating resources.” Quite the contrary: “Price is often inverse to the contribution of a resource, because it contributes most to the economy when it is easily available, requiring few services for delivery.”

The book *Environmental Accounting: Emergy and Environmental Decision Making* (1996) was Odum’s most developed, inclusive and coherent presentation of the emergy approach. His thoughts on the relation of money and emergy seems to have caused some confusion among interpreters and critics over the years, but were here spelt out, again, in no uncertain terms. Since money was paid only to people, and never to the environment, money and market values cannot be used to evaluate the ‘real wealth’ contributed from the environment. When natural resources were abundant, little work was required, costs were small, and prices low. This was when the net contribution of real wealth to the economy was the greatest, and everyone had abundant resources and high standards of living. When, by contrast, resources were scarce, obtaining costs were higher, causing higher prices, through mechanisms of supply and demand. This was also when there was little net contribution of natural resource to the economy, real wealth scarce, and standards of living were low. “Market prices are not proportional to the contribution that resources make to the economy;” he (1996: 60) explained, “prices are low when EMERGY contributions are greatest”. In bold print, the following general principle was then formulated:

Market values are inverse to real-wealth contributions from the environment and cannot be used to evaluate environmental contributions or environmental impact. (*Loc. cit.*)

It is curious that, two years later, Hornborg (1998: 131; also 2001: 42), in arguing for reverting from emergy to exergy as a unit of measure, could present the following criticism: “The concept of exergy can give us a completely different perspective on the relationship between energy and trade than can Odum’s concept of emergy. Briefly, if emergy and price are positively correlated, exergy and price are not. In fact, there is a specific sense in which they are *negatively* correlated”. This inverse correlation of resource input and price was instead presented as his own contribution: “One way to assess the occurrence of unequal exchange may be to look at the direction of net flows energy and materials (concrete, productive potential), but *without* falling into the trap of equating productive potential with economic value. On the contrary, it can be analytically demonstrated that unequal exchange emerges from a kind of inverse relation between productive potential and economic value.” (Hornborg 1998: 127).

This ‘analytical demonstration’ is merely a rehearsal of Patrick Geddes approach as reported in Martinez-Alier (1987: 94f.; cf. 2006), stating that as processing proceeds, prices must go up (having bought or acquired the raw materials at one price and then added the cost of repairs, wages, rents, taxes, and profits) whereas the exergy of the raw materials must go down, this being the law of the universe according to thermodynamics. Martinez-Alier, too, believed this demonstration to be a useful one with respect to ‘unequal exchange’ between raw-materials and manufactures-exporting countries: “In an ecological economics theory of unequal exchange, one could say that the more of the original exergy [available energy or ‘productive potential’ in the exported raw materials] has been dissipated in producing the final products or services (in the metropolis), the higher the prices of these products or services will be”. Thus, they agree, “market prices are the means by which world system centres extract exergy from the peripheries”, though Martinez-Alier (2003: 15) wants to add that military power may sometimes lend a helping hand. Unfortunately for this theory as applied to the real world, manufacturing countries – and manufacturing itself – also involves adding exergy (or emergy), and the true problem is rather one of the ratio between added monetary value and

exergy/emergy ('value'), *i.e.*, an 'ecological distribution conflict' as Martinez-Alier is aware in other contexts. As has been pointed out by, *e.g.*, Andersson (2006) there is not, as Hornborg and (sometimes) Martinez-Alier believe, any necessary/analytically demonstrated link between such non-equivalent exchange and 'disjunctive' exchange, in the sense of the subsequent developmental *effects*. Indeed, there cannot be, as it is already refuted by historical experience (cf. Chapter 11).

Of course, as evidenced above, Odum did not equate emergy, or 'productive potential' with economic value, and though positive correlation is possible, it is not necessary, for the same reasons that stored or accumulated exergy is not necessarily positively correlated with price.<sup>89</sup> Some of the misunderstanding and misrepresentation of Odum's ideas can be traced to Robert Costanza who in 1980 and 1981 analysed the relationship between the direct and indirect energy used to produce a good or a service in the U.S. economy. Costanza found a strong correlation between the 'embodied energy' of a good and its dollar value. Unlike Odum, and accordingly not referring to him for this particular theory, Costanza (1980: 1223) thus proposed an embodied energy theory of value also *in the economic sense*, maintaining that the monetary value of any good or service to humans was ultimately related to the quantity of energy directly and indirectly used up in its production. In Costanza's neoclassically biased theory, a perfectly functioning free market would, Cleveland (1987: 60) reviews, "through a complex evolutionary process, arrive at prices proportional to embodied energy content. Because the market is not perfect, however, embodied energy calculations can pinpoint problems and value nonmarketed goods and services (*i.e.*, externalities)."

As noted by Cleveland (*ibid.*: 59), economists have often reacted strongly against many of Odum's theories, particularly his so called 'theory of value' which proved unpalatable to neoclassical economists. "Unfortunately, the debate between Odum and his colleagues and economists has been divisive to the degree that many of Odum's unique and instructive insights into economic-ecological interactions have been rejected or ignored." This is partly because of Odum's limited experience in political economy, and partly, one may suspect, of limited originality – as political economists – of those of his followers with more of such experience (apart, of course, from the originality of trying to unite Odum and ecological theory with economics). Contrary to Cleveland and Costanza, I would suggest that neoclassical economics is probably not the one best vehicle for such a unit, and so far the same has been true of Marxist economics, where the not always enlightening debate on 'value' in monetary and 'labour' terms has preset the path of interpretation.

Discussions mixing ordinary economic language with Odum's emergy meaning risk misleading the reader. Speaking of 'value added' he noted that for human services this was often 'expressed' in terms of the money paid for the added services. Although confusion on this point is not uncommon, as may be divined from the Marxian transformation problem, 'value' in this case refers exclusively to what is added to the *price* of the final product, and the value 'added' by a factor is the same as the *price* of that factor. In this economic sense, it really has nothing to do with the extent to which anything of 'real' value is added. Odum was concerned with these factor prices only to the extent they differ from emergy, and thus concluded that since human services were not the only emergy inflows, emergy evaluation was required to 'complete' the monetary evaluation. At each stage in production there were

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<sup>89</sup> Cf. on storage and entropy: "To build *and maintain* the storage of available resources, environmental work has to be done, requiring energy use and transformation" (Odum 1996: 7; emphasis added). Or (*ibid.*: 10): "When inflows and outflows balance, a system is said to be in a [...] steady state (storage constant)". "The solar EMERGY stored is that required to make the storage, in spite of the depreciation going on. Degraded energy going down the heat sink pathway is not available to do work, and thus has no EMERGY." If the production process is stopped, "the storage decreases as its depreciation processes continue [...]. The energy storage decreases, and with it the stored EMERGY is lost."

additional inputs of energy from fuels, electricity, goods and services, which all corresponded to a counter-current of money. While this money evaluation did not correspond to the energy evaluation, 'real' energy 'value' was nevertheless *added* in this process. Thus, the chain of economic processing "increases the transformity of the products" as they move through it: "Transformity increases in ecological and economic energy transformation chains" (Odum 1996: 62). In this sense, it is true that energy increases through the chain of production. But this is only by actually adding energy on the way, and although it would differ *quantitatively*, it is in this respect not *qualitatively* different from an argument in terms of energy or exergy.

Odum has no discussion of price formation. The price for any particular product or service within an economy depends, he (*ibid.*: 55) believed, "on its cost, local scarcity, and the willingness of people to pay". As a non-economist, he had an uncomplicated and unsophisticated perception of the problems of relating these aspects to one another. He thus gave no indication of whether 'costs' (inputs, wages, rents, profits, etc.) determined long-term equilibrium of relative prices, while the 'willingness to pay' (the level of demand) had to adopt to these prices and in that sense (co-)determine the relative 'scarcity' of goods, or if the fluctuations of demand and scarcity determined the respective long-term level of wages, etc., or if he had in mind some other intricate and as yet unexplained feedback system between them. The possibility of 'costs', basically wages and consequently the ability, if not 'willingness', to pay, being institutionally set by political and social forces, was not considered, and nothing was said to enlighten on the relative international mobility of factors. Much that would have been essential to the understanding of possible feedback mechanisms, notably in the international sphere, was therefore left out of analysis.<sup>90</sup>

## Emergy inequalities and exodus from industrialism

As in the earlier writings on embodied energy and international trade, the benefit from a foreign sale, purchase, or trade depended on the 'emergy exchange ratio', the emergy received divided by the emergy sent. For a sale, whether national or international, the ratio of emergy benefit to the purchaser was equal to the emergy of the product divided by the emergy of the money paid. The emergy of the product was equal to the energy flow times its transformity (with the sun as baseline expressed in solar emjoules/Joule), while the emergy of the money required an estimation of the emergy per unit of money (*ibid.*: 61). Here international differences, and unanalysed, prospectively social or subterranean forces, were at play.

Before confronting the relation between different currencies one must understand what this relation means for any single currency. The relation of a particular currency to emergy is explained about as follows: What the money circulating in a particular economy buys depends on the solar emergy production and the amount of money in circulation. The "buying power

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<sup>90</sup> The feedbacks considered were all between the environment and the economy, *e.g.*, two systems (each with a predetermined level of what is considered 'good' or 'bad' prices, etc.), one lacking environmental reinforcement and the other including it. Thus, Odum (1996: 62-65) wrote the following: "In the environmental-economic interface [...] products are sold, and if the prices are good, money accumulates and buys more inputs to harvest more of the environmental product (wood, fish, crops, and so forth). The economic process is mathematically autocatalytic and tends to accelerate and grow. As the environmental product gets scarce, prices rise, which encourages those using the products to go after more. By pulling down the environmental stocks that are part of the production process, the environmental producers are diminished and tend to be replaced by their competitors." This non-sustainable economy could be improved by environmental reinforcement (feedback) from the economic system: "Agriculture tends to be sustainable, because the economy and the farmers feed back goods, services, fertilizers, and seeds to reinforce and encourage the environmental system that is in economic use." This includes a "special flow of money to pay for the feedbacks to reinforce the environmental production process", which on the other hand tends to be omitted when economic competition is severe, "causing environmental collapse of the environmental basis, and thus of the economic production as well."

of money on the average depends on how much real wealth there is to buy. Therefore the buying power of money within an economy may be calculated by dividing EMERGY use by the money circulation to obtain the EMERGY/money ratio” (*ibid.*: 55). Thus, if more money was circulated for the same energy flow, or if less was produced for the same money, there was ‘inflation’, or a general price rise in energy terms. A rural or, even more, tribal economy, Odum explained, had a higher ratio because more wealth went directly from the environment to the human consumer without money being paid. As economic development and urbanism increased and more money circulated the energy/money ratio tended to go down. For comparisons between states, Odum drew up tables of international energy/money ratios (cf. Table 17). This only means the ratio between the annual energy use of a nation and its gross national product (GNP). It also implies that an energy-evaluation would give a different perspective on the actual gains in welfare with economic development: “A high EMERGY/person ratio suggests a high standard of living, given in more general terms than income, which does not include the unpaid, direct wealth to people from the environment of from public information. A person living a subsistence life in a rural setting may have higher EMERGY than a person who buys most of the things in a city” (Odum 1996: 203). This is one of those commonplace experiences that tend to disappear in the general picture of progress. F. J. Fisher (1957: 3) formulated it well for the 16<sup>th</sup> and 17<sup>th</sup> centuries: “it is one of the eternal verities of history that as societies become wealthy they are no longer able to afford pleasures that were well within their reach when they were poor.”

Table 17. *National and per capita energy use, energy/money ratio, energy self-sufficiency, and trade benefit (sej = solar emjoules; data from 1980-1993).*

	Annual Energy Use ( $\cdot 10^{20}$ sej/yr)	Annual Per Capita Energy Use ( $\cdot 10^{15}$ sej/ person/yr)	Gross National Product ( $\cdot 10^9$ \$US/yr)	Energy/ Money Ratio ( $\cdot 10^{12}$ sej/yr)	Energy from Within (%)	Energy Benefit Ratio (energy inflow $\cdot$ yr <sup>-</sup> / energy outflow $\cdot$ yr <sup>-</sup> )
Ecuador	964	11	11.1	8.7	94	0.119
Liberia	465	26	1.34	34.5	92	0.151
Soviet Union	43,150	16	1,300	3.4	97	0.23
China	71,900	7	376	8.7	98	0.28
Australia	8,850	59	139	6.4	92	0.39
Poland	3,305	10	54.9	6.0	66	0.65
New Zealand	791	26	26	3.0	60	0.76
Dominica	7	13	0.075	14.9	69	0.84
Brazil	17,820	15	214	8.4	91	0.98
India	6,750	1	106	6.4	88	1.45
Taiwan	1,340	8			24	1.89
U.S.A.	83,200	29	2,600	3.2	77	2.2
Spain	2,090	6	139	1.6	24	2.3
Switzerland	733	12	102	0.7	19	3.2
Japan	15,300	12	1,020	1.5	31	4.2
West Germany	17,500	28	715	2.5	10	4.2
Netherlands	3,702	26	16.5	2.2	23	4.3
World	232,000	4	11,600	2.0		

Source: Odum 1996: 201, 206, 217. Individual values corrected; alternative value for world energy use 202,400  $\cdot 10^{20}$  sej/yr, while sum total of individual countries adds up to 277,837  $\cdot 10^{20}$  sej/yr.

Looking at the world as a whole, Odum (1996: 210) found what he considered to be a rural-urban division in the world, where the latter are the highly developed, predominantly urban centres in the global hierarchy. As on the national scene, the rural areas tended to supply much more energy than was in the buying power of the money paid: “Generally, a country

loses wealth if it sells environmental raw products because the EMERGY of nature's work to make them is high, whereas the money received is only for some services to process them. Thus, developed nations tend to receive more EMERGY than they give in exchange." But of course a country did not merely receive money, it also received goods and services, and here suppliers of raw materials gave more than they received in exchange. By contrast, "the sales of finished, manufactured, high-technology, and military products have higher prices, so that the EMERGY of the money paid is more comparable with the EMERGY of the products sold" (*loc. cit.*). As stated here it was precisely the price differential that mattered, or rather what we may call the 'emergy terms of trade', for whose changes over the course of history one could prospectively find an explanation had such estimations been undertaken. Now, in international exchange one had also to take into account the above EMERGY/money ratios as converted to a common dollar basis, where an unequal exchange appeared: "the currency of rural countries has higher EMERGY/\$ ratios so that a dollar buys more real wealth than in urban countries" (*loc. cit.*). This turned out to involve dramatic inequities where every circulating dollar transferred four times more real wealth to the United States than was received by resource countries, while on the other hand a dollar circulating between these and Japan transferred twice as much to Japan. So it would seem that, according to Odum, market prices were the means by which world system centres extract *emergy* from their peripheries.

Thus, Odum (*ibid.*: 210f.) summarised: "When an environmental product is sold from a rural state to a more developed economy, there is a large net EMERGY benefit to the developed buyer for two reasons: (1) the EMERGY of environmental products is higher than that in the money paid for the processing services; and (2) the EMERGY/money ratio is much greater in the rural state supplying the product than in the purchasing economy." With his preferred identity between rural exporter of primary products and 'underdeveloped', and taking the example of exports of salmon, Odum then found that in this case Alaska "behaves like an underdeveloped country." If this definition were valid, then other such examples in Table 17, are New Zealand and Australia, the latter which, unfortunately for this characterisation, also heads by far the list of emergy consumption per capita, where New Zealand comes in fourth place, shared with the ultra-urban Netherlands, who tops the list of gainers from unequal emergy trade, and underdeveloped Liberia, thanks to her huge emergy/money ratio. On finding this Odum recommended New Zealand to stop exporting aluminium ingots to Japan and instead to start producing the final products for export, "thus creating jobs in New Zealand." Odum, unperturbed by his examples to the contrary, instead noted how 'countries such as' the Netherlands and West Germany got four times more emergy than they were returning in exchange: "Little wonder that these countries have a high standard of living and that the countries supplying the commodities have a low standard" (*ibid.*: 213).

Odum did not say much on prices of goods in this discussion, though what his argument amounts to is saying that the price of rural, or 'underdeveloped', goods are generally lower per unit of emergy. Of course, if there were other factors involved in prices than merely the type of good, and in development/underdevelopment than merely the import/export of emergy, then perhaps the outliers above could be brought in line. Here, the classification from Odum & Odum (1981) reviewed above would have been useful, but this was touched upon merely in relation to emergy self-sufficiency, which tended to coincide with large countries. More interesting was the general observation on free-trade in a capitalist economy:

Allowing individual businessmen to maximize their profits in monetary terms often imbalances EMERGY trade equity. The dollar value of profits may be small compared with the emdollar value and public value and public gross economic product given away to other countries. Free trade tends to result in unequal EMERGY exchange in favor of developed countries. Equity in trade can be achieved by treaty, adjusting imports and exports to balance EMERGY. If the EMERGY trade

balance is uneven, the difference can be made up in education, military, or technology transfers duly evaluated for their EMERGY contributions. In this way, balances between nations can be equalled while still allowing countries to be at different levels in the urban-rural hierarchy and national specialization. (Odum 1996: 218.)

As to political solutions, Odum was no revolutionary, and there was no indication that he considered it to require a planned economy. He strove for another, more 'revisionary' path, which apparently nevertheless included, unexplained how, the abolition of 'economic evaluation', and which he called the 'prosperous way down':

The world's rate of fuel consumption has apparently reached its maximum, and the renewable resources available are decreasing each year due to population increase and environmental encroachment. On an EMERGY basis the world's standard of living is already coming down. Already there are erratic contractions, arbitrary downsizings, and population-resource disasters. Much uncertainty and malaise can be avoided if EMERGY evaluations can be substituted for economic evaluation. If people can regain their commonsense view of real wealth, which EMERGY evaluation gives them, policies can be implemented for selective, slow, and deliberate, and prosperous descent. (*Ibid.*: 287.)

More will be said on the 'population-resource' crisis in the following Chapter 10. How to prepare for descent was the subject of his subsequent and last book.

In his final decade Odum increasingly focused on the pulsing dynamic behaviour of systems, as we have noted, suggesting that this maximised empower. In *A Prosperous Way Down* (2001), again co-authored by Elisabeth C. Odum, who contributed mostly to the books later parts (E. C. Odum pers comm.), the whole of Odum's scientific work on the pulsing of ecosystem dynamics, on emergy yield ratios and maximum empower, and on the long-run importance of the university and sharing of information, converged towards a preparatory readiness for the necessities of the future. The writers (*ibid.*: 82-7) recognised a pulsating four step cycle, or succession, of societies, a neo-thermodynamic 'general systems' approach, obviously related to 'equilibrium' or 'homeostatic' models applied to ecosystem theory. It has earlier parallels in business cycle economics (*e.g.*, Mitchell 1927, Schumpeter 1939), but also in civilisation history, such as Oswald Spengler (1919-20), himself modelling after organism life cycle, Toynbee (1934-1961), or Innis (1950). The first was the obvious growth phase, on abundant available resources, with sharp increases in a system's population, structure and assets, based on low-efficiency and high-competition. The second was the climax and transition, when the system reached the maximum size allowed by the available resources, increased efficiency, developed collaborative competition patterns, and prepared for descent by storing information.<sup>91</sup> This can be compared with the vibrating moment of crisis. The third was the descent, the 'depression', with adaptations to less resources available, a decrease in population and assets, an increase in recycling patterns, and a transmission of information in a way that minimised losses: "Minerva's Owl begins its flight only in the gathering dusk...", as Hegel (quoted in Innis 1951: 3) wrote in reference to the crystallisation of culture in the period that saw the decline and fall of Grecian civilisation. The fourth was the 'recovery' phase of low-energy restoration, no growth, consumption smaller than accumulation, and

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<sup>91</sup> Odum (1988b: 62) had already observed: "With information in great excess there is rapid self-organizational evolution of means for information selection, storage, and recopying. The central question is which information is worth duplicating to become shared information and what are its limits.

In the process of trial and error with new information technologies the waste can be rationalized as the necessary requirements for finding what is essential. [...] Cultures that forego the potential of the media to generate large scale power and efficiency are likely to be displaced."

storage of resources for a new cycle ahead. Unsurprisingly, present human society was found in the second, climax and transition phase facing descent.

The authors (*ibid.*: 77) argue that it “appears to be a general principle that pulsing systems prevail in the long run, perhaps because they generate more productivity, empower, and performance than steady states or those that boom and bust.” Contrary to the image of growth towards a steady state they explain: “Pulsing prevails because operations that pulse transform more energy than those at steady state” (*ibid.*: 79). Maximisation of the available resource basis to maintain prosperity requires different strategies in different phases: fast competition in times of growth, efficiency in times of climax, decrease of population and assets in times of descent, and low-growth attitudes in times of restoration: “Successful economies are those that can adjust their periods of growth to pulses in their resource basis” (*ibid.*: 80). Although there was only “a limited range of transformities that are best managed by money and markets” (*ibid.*: 103), their ambition is to reform free-market capitalism in the face of downscaling, not to abolish it: “As a mechanism for feedback-reinforcing growth, free market capitalism has dominated recent times of growth and succession, but its role may be different and less important during times of levelling and descent” (*ibid.*: 104). Worldwide television had sensitised people to the uneven distribution of wealth: “Some developed countries have fifty times more emergy use per person than some overpopulated nations.” While there were huge wastes in developed countries, in others there was not enough to sustain productivity:

Maximum empower theory predicts that if an excess of poorly used people is not maximizing global productivity, major reorganization will occur. [...] Policies that cause dysfunctional curves of distribution (too many rich or too many poor) may be energetically unsustainable, which eventually makes them politically unsustainable as people change public opinion to fit need (*ibid.*: 130).

The aim was to find policies for transition and decent in which dangerous and revolutionary upheavals would be victorious, with a plea for understanding: “Policies based on understanding could be the difference between soft landing and a crash” (*ibid.*: 131). It was suggested that “the global system as a whole maximizes its performance when exchanges are equitable”, since this allowed every nation to “contribute at its potential best and not be drained by another” (*ibid.*: 138). In reality, contrary to economic theory, fair prices were illusory, first, because market prices underestimated the real wealth of raw materials: “As a consequence, the trade inequality between underdeveloped nations supplying raw products and the developed nations buying the products is huge” (*ibid.*: 139). However, another reason was the lesser payment for labour in ‘rural’ areas, extending the phenomenon even to labour-intensive products. The argument did not involve any political determination of wages, however, only a restatement that rural nations with subsistence crops, fishing and collection of wood for family use, “can charge less for their labor because they are supported partly by unpaid environmental inputs. The services they sell include the hidden emergy contributions of the free commodities they use. A dollar of rural service represents more emergy than a dollar of urban service” (*ibid.*: 140).

There is no complete delinking in the authors’ analysis between raw-materials and underdevelopment, but it is implicitly complemented with the high- and low-wage dichotomy, producing low terms of trade (in terms of emergy) for the latter. Rather, what is absent is an understanding of wage-formation as anything other than a mere subsistence phenomenon, in spite of the observation of differences in emergy consumption of one to fifty. Strictly speaking, the argument could be reformulated with reference only to wage-levels, and this is partly the point of the emergy exchange ratio. Reformulating a review by Ulgiati (2004: 249) it can be said that when a developed country imports from a less-developed country, their prices are low in terms of emergy *because labour costs are generally low* in these countries, whether goods are primary or secondary. Very much like Manoilescu (1931), Odum

explained it by its 'rural' character assuring it lower wages, not thinking of the evident counter-examples. In emergy terms there was an additional factor in exporting primary resources and importing secondary or tertiary. Money was in turn used to purchase emergy from developed countries, but since money paid for labour and labour costs were high, a smaller amount of real wealth, whether in the form of primary or manufactured goods, went to the less-developed country. Free market policies intensified trade inequities, with benefits going only to the already-developed nations, and the long term stability of the global system becoming threatened. The identification of developed countries with exports of manufactures and of underdeveloped with exports of primary goods is both empirically fallacious, and not necessary for an argument as presented directly in terms of labour costs, although complementary. Such an argument is not at all evident from the Odums' own formulations, but opens up new prospects for complementing his theory with some economic logic, *e.g.*, that of Emmanuel.

As with most ecologists, there appears to be grave underestimation of the pervasiveness of the logic of a capitalist and market economy, as seen in phrases such as the following: "Nearly six billion people are in denial, and for leaders to speak of no growth is viewed as political suicide" (*ibid.*: 9). The belief that there is some purely *mental* blocking hindering the whole world to see the ecological light, in spite of its constant reiteration for decades on end, is widespread. It implies that more *information* on the environmental impact of the economy, preferably as handed out by ecosystem scientists, would somehow alter the functioning of the economic system itself, or worse, that when duly informed people can simply start acting against this economic logic. There may indeed be mental blockings, but I would argue that they probably have more to do with understanding this logic and the collective lack of imagination, ideas and time to reflect upon how to construct some other system – upon which to rejoice.

We have traced the origins of Odum's ecosystem approach and how the ecological unequal exchange on the societal plane grew out of this approach. The historical context in which this theory became possible involves significantly the nuclear arms race, but also, *e.g.*, flight and cybernetics, which were significantly related to war activities. On the political plane, Odum had liaisons with the energy approach of the 'Technocrats' in the 1930s, and their postwar offspring, but also with that of his father. This background helps to understand the wish to replace the malfunctioning 'price system', whose monetary feedback signals cannot include the goods (available energy, raw materials, emergy) supplied 'freely' by nature, with a more general and ecological system, accounting in 'emergy'. On the societal plane, such distorted signals of a money economy included unequal exchange of emergy, *e.g.*, between raw materials and manufactures, high- and low cost areas (urbanised and rural, high- and low wage). Like many others in the ecological movement, Odum was more interested in explaining how to organise society 'correctly', in his case according to emergy, than in historically interpreting and understanding the political economic and socio-political causes of distortions. Like those of other ecologist reformers, his proposed solutions thereby seems politically naïve, or 'technocratic', and incomprehensive of the political, social and economic stakes involved, *e.g.*, in the change from 'accounting' in money to accounting in emergy. This would seem to require a bit more international revolution, planning and agreement than can be suspected from speaking merely of 'ecological consciousness' and ditto 'taxes'. As to ecological accounting methods, Odum's is thus far more advanced than any of his contemporary and later colleagues in this field, because of his long-standing involvement with the problems of different energy 'qualities', not only in the direct but also the 'indirect' flows of materials and available energy. What has so far received little recognition is that emergy is an 'emergent property' aspect of the system as a whole, not a mere adding up of available

energy costs. Any true innovation in technology or social organisation ‘mutates’ the whole system and, in essence, changes the emergy ‘content’ of all its constituent parts. Much resembling the evolutionary vision of Lotka, in Odum’s terminology, the *general* system which is most ‘sustainable’ is that in which ‘empower’ is maximised. Such evolutionary progress, should it so qualify, is not predetermined, but should it be achieved it would improve the evolutionary sustainability of the system and its constituent parts. Turning from Odum’s highly sophisticated theory to those of his contemporaries and latecomers will perhaps seem an anticlimax from the theoretical point of view. Hopefully, it will reveal more of the political affiliations, and thereby problems, often involved in the game of relating society to ecology. First, we turn to what we, partly for convenience, shall term the ‘Protestant’ (or population–affluence) line, and then to the ‘Catholic’ (or dependency) tradition.

# Chapter 10. Ecological Protestantism in an overpopulated affluent society

The English so-called ‘neo-Malthusians’ of the 19<sup>th</sup> and early 20<sup>th</sup> century, discussed poverty as a result of population increase, and tried with little success to convince the working classes and abhorred socialist reformers of the benefits obtainable from family planning, moral restraint and, more shockingly, contraceptives, which implied precisely the opposite (Micklewright 1961). Keynes contributed to reviving the link between population issues and political economy in an international context. In 1919 he resigned as the British representative at the Paris Peace Conference because of his dissatisfaction with “the whole policy of the Conference towards the economic problems of Europe” (Keynes 1920, Preface). The conferees, he believed, could not, or chose not to, understand the precarious nature of the war-mangled European civilisation, whose instability derived from a population explosion in Germany, Austria-Hungary, and Russia. The whole European economy survived only because of the forbearance of the working mass of the people from seizing a larger share of agricultural and industrial produce, leaving more for capitalist investment. In addition, imports of cheap cereal grains from the New World were critical to the viability of this highly populated system, as was the revitalisation of German industrial skill and organisation (*ibid.*: 12-26, 252-98). A few years later, as noted by Perkins (1997: 122), he wondered whether the material progress achieved in the 19<sup>th</sup> century was a temporary aberration, to be replaced by a harsh Malthusian reality, although, by 1930, focus had altered somewhat to counter the “bad attack of economic pessimism” (Keynes 1933: 358). Forgetting the Indian experience of his youth, as Arndt (1973: 17f.) supposes, he (1933: 361, 365f.) gazed into the future economic possibilities of our grandchildren, projecting that by then, “assuming no important wars and no important increase in population, the *economic problem* may be solved, or at least within sight of solution”. The economic problem was not to be considered “*the permanent problem of the human race.*”

Whereas Keynes and others emphasised population issues in terms of political economy, another strand of neo-Malthusianism drew on images of naturally limited ecological systems. This tradition tended to a more catastrophic vision of population exceeding food supply, leading to a collapse of civilisation or war, and was often linked to studies in human genetics and eugenics (Perkins 1997: 122ff.). One of the first of the scientific demographers, Warren S. Thompson, argued that “postwar possibilities for peace in eastern Asia depended on the United States’ recognizing the pressure put on the natural resource base by the large populations of China and Japan” (*ibid.*: 124). Through the work of Thompson and others, and with much help from the Rockefeller foundation, demography emerged during the 1930s and 1940s as a respected science, and by 1945, American demography was becoming integrated in strategic thinking.

## Cold-War neo-Malthusianism

The neo-Malthusian population argument constituted a core argument in the Cold War imagery of a ‘population–resource crisis’ threatening to turn the poor peoples of the world towards communism. In line with interwar imagination, providing for political stability in Europe and elsewhere, and decent living standards for poor countries, was considered one of the most important means to hold communism at bay. “In the late 1940s, U.S. officials feared that revolutionary upheaval and xenophobic nationalism might turn Third World countries

against the West, drive them into the Soviet camp, and jeopardize efforts to recreate a viable international economy” (Leffler 1992: 9). During the 20<sup>th</sup> century, famines have become less common than in most of human history, and largely linked to ‘abnormal’ social conditions of war. The Bengal famine in India in 1943, the same year as a shortage in Mexico, influenced policy for years. The vulnerability suffered by the United Kingdom during the Second World War, and its dependence on North American imports also underlined the possibilities of international aid. But initially, pessimistic predictions of food shortage in postwar Continental Europe had no great influence in the United States.

“In 1943, the same group of ‘nutrition fanatics’ who had stirred the League of Nations in the 1930s to investigate the world nutrition conditions induced President Roosevelt to call the Hot Springs Conference on Food and Agriculture” (Arndt 1973: 25). In 1944, leading experts on food supply gathered in Vancouver to plan the food situation in the expected peace. Also in 1944, the Bretton Woods Conference created the International Monetary Fund (IMF) and the International Board on Research and Development (IBRD), an International Labour Conference redefined the social objectives of economic policy for the postwar world, and a charter for the United Nations was agreed upon, which in the final version included among its objectives the promotion of “higher standards of living, full employment, and conditions of economic and social progress and development” (*loc. cit.*). On the day that Japan capitulated, invitations were sent to 44 countries to participate in the first conference of the Food and Agriculture Organization (FAO), the first permanent new organisation of the United Nations, one of whose goal’s were to make food problems a common concern. In 1946, FAO published its first *World Food Survey* covering 70 countries, or about 90 percent of world population, describing the poor nutritional state in Asia, Africa and Latin America, and concluding that at least half of the world’s population did not receive adequate nourishment (Linnér 1998: 15f.).

The transformation of national security concerns from the national to the international and global scene, can also be seen in progressive conservationism growing into ecological neo-Malthusianism. Two books in 1948, added to the substance of the argument that population growth could threaten ecological resources and to collapse American civilisation: William Vogt’s *Road to Survival* and Fairfield Osborn’s *Our Plundered Planet*, which in turn greatly influenced Georg Borgström (1912–1990). Osborn and Vogt shared material and references with each other, corresponded with ecologists Paul Sears, Charles Elton, and G. E. Hutchinson, and relied heavily on the later Leopold, who supplied them with recent ecological thinking.

Between 1939 and 1942, Vogt worked for the Guano Commission in Lima, Peru, where his interest in population and scarce resources was aroused, and from 1943 to 1949, was head of the conservation section of the Pan-American Union (an organisation made up of 21 American countries working for economic and social cooperation). Radical conservationists though they may have been, “the geopolitical concerns of the United States in fact created a platform even for critical scientists like Vogt” (Linnér 2003: 44). This is evidenced by the UN conference at Lake Success and an alternative conference organised through UNESCO and IUPN, mostly concerned with ecology followed by education. In March 1947, Osborn invited both Vogt and Leopold to plan the foundation of the Conservation Foundation, on whose advisory council all of the above came to serve (*ibid.*: 120f.). As its president, Osborn had the opportunity to participate in the preparatory stages of the conference, where he argued strongly for the conservation approach, and for the vital importance that it also dealt with the problem of overpopulation. Like Keynes, and unlike Malthus, both Osborn and Vogt were basically optimistic about the role allotted to science, reason and planning to preserve humankind from the apocalypse, so long as it could lead to diminution of the population growth rate. As to the Truman Doctrine in March 1947, Osborn was sceptical: “As far as ‘investment for democracy’ in Greece is concerned, nature holds the trump card.” The efforts

would be fruitless without handling population growth and soil erosion (quotation in Linnér 1998: 38).

The authors were socially connected, both to each other and to the Rockefeller Foundation. Osborn was born into a well-to-do New York family, and the Osborns and the Rockefellers met socially. Vogt was at the time an associate director of the division for science and education at the Office of the Coordinator of Inter-American Affairs, headed by Nelson Rockefeller. The *Road to Survival* was read by the Rockefeller Foundation's new president, Chester Barnard, as a challenge to its efforts in agricultural research, and thus stimulated further efforts to articulate a coherent theory to justify programs such as that in Mexico. It was only then that foundation officers began incorporating population issues into their thinking. Warren Weaver and others involved in the MAP, produced a report on "The World Food Problem" in 1951, which was one of the most complete expressions of the so called 'population-national security theory'. It was based on the understanding that global tensions stemmed from "the conflict between population growth and unequally divided and inadequate resources":

The problem of food has become one of the world's most acute and pressing problems; and directly or indirectly it is the cause of much of the world's present tension and unrest [...]. Agitators from Communist countries are making the most of the situation. The time is now ripe, in places possibly over-ripe, for sharing some of our technical knowledge with these people. Appropriate action now may help them to attain by evolution the improvements, including those in agriculture, which otherwise may have to come by revolution." (ACAA 1951: 3-7; cf. Perkins 1997: 138.)

The report was instrumental in leading the Rockefeller Foundation to start its vastly expanded assistance program in 1952, with the Indian Agricultural Program. Its programs were an important model for subsequent even larger efforts sponsored by the U.S. government. For the U.S. government, involvement in these questions began in earnest with President Truman's inauguration speech in 1949, whose Point Four called upon the government to lend technical assistance in agriculture and other fields to the poorer nations of the world, and eventually evolved into the U.S. Agency for International Development. During Truman's administration, the United Nations became "an important medium through which to deal with the natural resource situation" (Linnér 2003: 23).

Vogt (*e.g.*, 1947: 483ff.) placed his hope in that an international effort at scientific planning and education should bring society into balance with nature, and was naturally enthusiastic about the plans for an international scientific natural resource conference. His *Road to Survival* (1948a) was a huge success in many languages (Linnér 2003: 37). If Osborn was relatively positive to free enterprise, Vogt was more negative. In reviewing Osborn's book he took particular notice of those parts reminding of the role of the Spanish capitalist wool producers (the *Mesta*) in wrecking their country, those pointing out that "nature gives no blank endorsement to the profit motive", and those recommending world-wide planning. Vogt (1948b: 510) had only one serious quarrel with the book: "Mr. Osborn repeatedly refers to excessive populations but does not suggest doing anything about checking their increase." According to Linnér (2003: 36f.), he "profoundly endorsed a planned economy on natural resource issues." Both authors "pointed out the grave consequences that would follow through the devastation of the earth's natural resources and the ever-increasing world population", but since the free market economy was to blame for the impending catastrophe, to Vogt this meant certainty that humankind "must change from a profit-based economy to an all-embracing Pinchot-style approach based on maximum sustained yield."

Quite contrary to the argument of Friedrich Hayek in *The Road to Serfdom* (1944), the only road to survival was "an adjustment of the economic system to the laws of nature", and "a revolution in the sense of a profound change of fundamental ideas" (Linnér 2003: 36f.). The

free market economy was largely to blame: “For free enterprise must bear a large share of the responsibility for devastated forests, vanishing wildlife, crippled ranges, a gulled continent, and roaring flood crests. Free enterprise – divorced from biophysical understanding and social responsibility” (Vogt 1948a: 133). In pointing to the basic contradiction between industrial capitalism and the global health of the environment, Vogt even spoke of the necessity of a ‘revolution’, but in ‘Kropotkin’s sense’ as a transformation in humanity’s perception of its interaction with nature – a favourite environmentalist idea, but hardly a Bolshevik and bloody one. “Drastic measures are inescapable. Above everything else we must reorganize our thinking. If we are to escape the crash we must abandon every thought of living unto ourselves” (Vogt 1948a: 285).

The central issue to deal with was population control, without which the struggle was necessarily lost. He criticised the Point Four plans as a ‘Santa Claus Complex’, and in the 1950s insisted that aid should only be given to countries with birth control programmes. For this he was accused of being a fascist and a racist – and he was undoubtedly coloured by eugenics – although, as Linnér (2003: 44) points out, the aims of the resource–security theory was precisely to avoid authoritarian regimes, whether communist or fascist. Vogt (1960) replied, pointing to certain passages (1948a: 80, 284), that these critics of his suggested reductions in Latin American, African, and Asian birth rates, had missed the central point on limited and shrinking resources and carrying capacity.

Furthermore (like Whelpton 1939), Vogt clearly perceived that even the United States was *already* overpopulated in terms of its impact upon the environment, particularly through the rising vogue of cars:

We are an importing nation; and every day we waste hundreds of millions of gallons [of gasoline] [...]. Our tensions find outlets in [...] traveling at high speeds that reduce the efficiency of our cars. We build into automobiles more power and greater gas consumption than we need. We use the press and the radio to push sales of more cars. We drive them hundreds of millions of miles a year in pursuit of futility. With the exhaustion of our own oil wells in sight, we send our Navy into the Mediterranean, show our teeth to the U.S.S.R., insist on access to Asiatic oil – and continue to throw it away at home. (Vogt 1948a: 68.)

Vogt did not have to choose between criticising excess population growth and excess consumption. More interesting is perhaps the familiar ‘Protestant’ ring in both of these aspects – a hostility towards excessive and uncontrolled ‘pleasure’ abroad, and a certain embarrassment over the form it took at home (cf. Schama 1987). By contrast, in Catholic, Latin American countries, the question of population control has never been popular, and emphasis has always been on their ‘dependent’ and victimised position through the exportation of raw materials – the open veins of Christ incorporated.

Religious connotations (which are no sins in themselves), are also very strong in the work of another neo-Malthusian son of Protestantism, Borgström, who was even the son of a priest. Along with so much else in Swedish culture, and partly through his acquaintance with Vogt, Borgström’s initial proximity to ‘German’ ecologism with its concern for the home district and preservation of local culture (it was strong also in Norway), transformed after the Second World War into its more American variant. For both Vogt and Borgström it was a visit to Latin America that raised their eyes to the problems of overpopulation and the misuse of natural resources. But as Vogt had emphasised, foreshadowing Borgström, there were even already “too many Americans”. The American continent was probably overpopulated, assuming what one wanted to call an ‘American’ standard of living, especially since the United States as part of its self-defence had to contribute to feeding the rest of the world (Vogt 1948a, 1950: 148).

As Bramwell (1989) has observed, the environmental movement of the 1960s and 1970s was particularly concentrated to 'Protestant' areas. This is probably partly because of the types of problems involved. The ecologism she saw arising as a new political category implied a union of the older, more 'spiritual' engagement with nature and close ties to one's native place, and the newer, scientific 'energy' tradition. By implication, then, 'Catholic' ecologism would have less of a 'spiritual' bond to nature (but cf. the mystic anthropologist Teilhard de Chardin, although a Jesuit), presumably because one has not been forced to do without saints, and because the heathendom which Christianity was obliged to overcome had already been secularised under the Romans (cf. Berger 1969). On the other hand (and neglecting Russian ecologism), Bramwell seems to have forgotten the distinctly, and indubitably Protestant alarm at population growth and unease about the excess in which one lives, which, so far as it concerns imports, could also be seen as 'mercantilist' and in a sense predates Protestantism. The relative unconcern about population in the 'Southern' environmental tradition has been noted, *e.g.*, by McCormick (1995).

In general, the environmentalist debate appears to have turned more 'American' after the war, abandoning British imperial ecology (Anker 2001) and German rural-mystic 'ecologism' (Bramwell 1989), instead focusing on population (Linnér 2001), becoming distinctly non-Communist and pro-scientific. This change is reflected in Borgström's 're-education', as he himself termed it, and also in the penchant for quantitative indicators in later environmentalism. As new media allowed the internationalisation of the American conservationist debate, it also opened up new prospects for synthesizing popularisers with an Old-Testamentally tinge, such as Borgström. The food-scientist Borgström nevertheless differs from many other/later ecologists in that his primary interest was in food *quality*, as well as equity. This is the reason he advanced his concept of 'ghost acreage', which was adopted in modified form, *e.g.*, as an 'ecological footprint'.

### Georg Borgström's ghostly planet and Hartvig Sætra's three-tense imperialism

In the summer of 1953, Borgström began a series of radio lectures on population growth, resource depletion and the hazards of technology, which created a great stir, even adding stimulus to the poet and future Nobel Laureate Harry Martinsson, whose *Aniara* introduced the simile of the industrial world as a spaceship. Borgström was called the 'dark voice' and 'alarm clock' (whether with Wägner's [1941] eco-feminist book in mind is uncertain) from Gothenburg. His radio speeches was accompanied by the publication of *Jorden – vårt öde* ('The Earth – Our Destiny', Borgström 1953; on Martinsson's similar concerns at the time, see Sandelin 1989: 83 & 85), and in articles and speeches questioning food packaging and the use of chemicals in food production. All through the autumn his warnings was to reappear in newspapers, radio, and university lectures. By then, the response had become much more inimical, and especially his pessimistic prospects for the future and scepticism towards science and technology aroused hostility. In revised form, Borgström's radio speeches and articles from the 1950s and early 1960s were to constitute the groundwork for his book *Mat för miljarderna* (1962) the English version of which was to make him internationally renowned: *The Hungry Planet. The Modern World at the Edge of Famine*, 1965.

Borgström was not immediately appreciated in his role as an awkward public scientist, and he was presently, in 1955, removed from his position as head of the Swedish Institute for Food Preservation Research, which was supported by the state and the food industry. Influential representatives of the food industry compelled him to resign, and when the offer came he instead accepted a position as professor of Food Technology at Michigan State University, U.S.A. There he continued his role as a public scientist, writing on food and environmental problems, and providing important stimulus to the international and

Scandinavian environmental debate. This was perhaps good fortune for Borgström, since the acceptance in the United States gave entrance also in his home country. In an interview in one of Sweden's largest newspapers in 1967, Borgström regarded the exceptional reception of *The Hungry Planet* in 1965 as a turning point. The American Library Association elected it one of the 50 most important books of the year, and it appeared in numerous translations (Linnér 2003: 156). It was an important stepping stone in transferring the American neo-Malthusian conservation debate to a European, or at least Scandinavian audience. In the budding Swedish and Scandinavian environmentalism from the second half of the 1960s, after this legitimisation, he was hailed as the man who "created modern environmental debate in Sweden", "the Swedish Cassandra Voice" (Edberg 1966: 141), after whom, according to the Norwegian eco-socialist Hartvig Sætra "all politics has changed" (quoted in Linnér 1998: 13f.; cf. Palmstierna 1967: 49, Ehrensvärd 1971: 42, on further reception see Linnér 2003: 191). The central figure of Swedish environmentalism in the 1970s, Björn Gillberg (1973: 27), saw himself as continuing Borgström's work, not only regarding food quality but also in the role of a public scientist. Borgström developed, extended, and popularised his critical perspective in a series of books (1962, 1964, 1966, 1969), but we will base our presentation mostly on (various editions of) his 1962 book, parts of which had great similarities to his 1953 work but, significantly for our purpose, introduced the concepts of 'population equivalents' and 'ghost acreages' (*spökarealer*), which provide important notions for a certain conception of ecological unequal exchange.

In *The Hungry Planet*, he (1965: xv) set out to correct abstract money evaluations, which could not exhibit "the real costs unaccounted for", "measured in terms of board feet of forests, cubic feet of water, acres of arable land, and tons of minerals", and "in absolute figures as represented in wasteland, eroded soils, polluted waters, eradicated plants and exterminated animals, and in desiccated, waterlogged lands or swamplands". Advancements of traditional computations of population density which measured inhabitants only against tilled acreage were insufficient and would have to be revised. European countries were maintained by the use of pasture land, fisheries providing food and feed, and transoceanic acreages for feeding. To the food scientist Borgström, even density calculations taking this into account would be deficient, owing to the fact that nutritional standards did not enter the picture, notably the protein standard.

A conceptual framework for these problems was worked out in the five initial chapters: the first chapter introduced the concept of livestock population equivalents and some of its applications; the second emphasised the worsening food quality, and not so magnificent yield increase when not only calories but proteins were taken into account, underlining the importance of fishing yields, or 'fish acreages'; the third continued the protein theme as the true basis of the hunger gap between privileged and poor nations, advocating nutritional equalisation; the fourth traced mankind's biological budget further to the plant kingdom and photosynthesis; the fifth complemented the traditional land acreage used in his population equivalents, with the previous fish acreage and an additional trade acreage, into the concept of 'ghost acreage'.<sup>92</sup>

The human sector in living nature was much larger than population figures; for example, the total weight of all three and a quarter billion human beings were 180 million metric tons, but adding livestock total weight went up to over 925 million metric tons, or an equivalent of 15 billion people. Going farther, the concept of 'population equivalents' was based on the idea of measuring the food consumption of livestock in terms of human intake (*ibid.*: 7f.). On top of its feeding burden of 195 million people, the United States in 1960 had to provide

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<sup>92</sup> Subsequent chapters resemble his 1953 book, covering the most important regions of the world. These are followed by discussions of the sea, synthetic nutrients, fresh water and pollution, and the book's final chapters delivers a criticism of the technocratic civilisation and its officiating optimists.

nourishment for livestock, which in terms of protein consumption corresponded to something in the order of 1,300 million people (cf. Borgström 1972: 10ff. his Tables 4 & 5, Fig. 3). The point of these calculations was to polemicize against optimistic economists, agricultural scientists, and geographers, who claimed that the world had a potential to sustain 12, 15, or 20 billion people. World total livestock added almost four times the population equivalents of human beings, and the world population of 3.5 billion people corresponded to 17 billion population equivalents, 7.3 billion of which were attributable to cattle, followed in order by man, hogs, sheep, buffalo, poultry, horses, mules and asses, goats, and camels. (Ruminants, eating food non-digestible to man, were close to 10 million and non-ruminants excluding man 3.7.) On this standard and according to the 1967 values, China was still the most populated country in the world, followed by India, the Soviet Union, the United States, and Brazil, together making up half of the world's population equivalents (and somewhat more of the actual population) (*ibid.*: 22).

Looking at ratios between livestock and people some clarifying patterns appeared. Asian and Pacific ratios were on the lower end. Japan was less overpopulated than might be imagined from its actual population. Africa, and Europe lay close to world average, with Western Europe (as defined) in general lying below it, Scandinavia and Eastern Europe above it, on the same level as the Soviet Union and Anglo-America. New Zealand, Australia, and Argentina played in a league of their own, and to a lesser degree Brazil and Mexico. The high ratios in Latin America, together with the 200 million malnourished and underfed, reflected their outmoded pastoral agriculture, inherited from colonial times and organised for feudal purposes, later canalised into substantial meat deliveries to the world market, and not for the feeding of the masses (Borgström 1965: 9, 1972: 11f.).

Borgström (1965: 13, 1972: 14) proceeded to create a new concept of population density, "based on the relationship between the total living mass within the human sector and the disposable acreage of tilled land, pastures, and available water", for a given geographical region. To illustrate his point, he constructed tables of population equivalents per acres tilled land and pastures, and acres per population equivalents, of a kind that has become fashionable within ecological footprint calculations. In 1967, world population equivalents per acre were 1.6, and acres per population equivalent 0.628 (*idem* 1972: 16). These measurements of population equivalents had still "not accounted for all the living things that man controls and earmarks for his existence", notably wild animals and plants, and the "multibillion armies of bacteria and fungi in the soil", nor for that matter of the produce of the sea (*idem* 1965: 12). To remedy this shortcoming, he tried to set up "the biological budget of mankind". Man was already the most numerous among the large mammals. The numbers of other, wild species could be counted in thousands or tens of thousands, and the only animal which could compete with humans was the rat, living in man's shadow.

Although population equivalents indicated that of the calories consumed by humanity only a fifth originated directly from primary production, this did not mean that consumption could be as radically increased with a totally vegetarian diet. (World food intake as a whole was already almost vegetarian, while some nations in the luxury class indulged in tertiary consumption, feeding their livestock animal products.) Not only was this because of nutritional requirements, a popular theme at the time with exaggerated claims about protein needs and consequent malnutrition (Djurfeldt 2001: 29), but also simply because the human gastric system cannot assimilate most of the calories built into plants, such as lignin and cellulose. This underlined the importance of ruminants, whose extra stomach made these accessible, and in addition allowed them to produce invaluable proteins. Their capability to synthesise protein, make use of cellulose, and graze lands which would otherwise not be utilised, had vastly expanded the human biosphere (Borgström 1965: 58f, 1972: 64). No

wonder, then, that the biomass of ruminants was almost three times that of man himself and more than two-and-a half times that of the other non-ruminants together.

If man himself, according to plant physiologists, appropriated only one percent of primary productivity, including livestock would make it five or six. Accounting for the human biosphere also had to include that fifth of crops going to feed insects, fungi, and pests, even before harvest. However, even 'normal' microbial activity maintaining the soils and the long food chains and cycles at sea would have to be sustained. One pound of cod, for example, needed 50,000 pounds or more of primary products. Taking this into account made the toll at least ten percent of total photosynthetic produce, to which should still be added extraction from forests for fuel, lumber, and paper. With losses, this amounted to a minimum human share of 7 or 8 percent, but more probably at 20 percent of total photosynthesis, slightly more for terrestrial systems, slightly less for aquatic (*idem* 1965: 59ff., 1972: 64ff.; Borgström's sources gave an ocean primary production double that of land, whereas more recent estimations put them on about equal levels).

If humanity already appropriated a fifth of the Earth's primary production, what should one say of those proposing to solve the problem of undernourishment by the world as a whole emulating the agriculturally productive Denmark or Holland? Well, in the case of the net-importer Holland "the earth would need to acquire a food- and feed-producing satellite larger in size [...] than the present globe", and "35-fold their present catch to provide the human household with a corresponding amount of fish as feed" (Borgström 1972: 28f.). Much computation had been based on a fallacious reasoning in terms of calories, Borgström (1965: 26f., 1972: 29) argued, as if man could live on sugar alone: "It should be obvious, even to the layman, that apart from the intolerable monotony of such a diet, it would inevitably lead to a nutritional catastrophe." In fact, much of the increase in agricultural yields, he (1965: 27-37, 1972: 30-41) maintained, had been a deception where calories had replaced quality, notably in the sense of declining relative protein content; protein shortage was the most serious threat to human nutrition, and the true dividing line between the privileged and the undernourished. However, from 1970 onwards it was convincingly argued by others that providing for a sufficient calorific intake in terms of grain, ca. 600g/day, would also provide all or most of the necessary proteins (cf. Djurfeldt 2001: 29ff.). The important point about cattle could be said to lie rather in the assembling or concentrating work they perform, as suggested by Odum's concepts.

In calories, fish did not account for more than two or three percent of man's consumption, Borgström (1965: 31f., 1972: 35) continued, and this was true even of the Japanese. A more adequate picture was obtained by asking: "How many acres in each particular country would need to be tilled and devoted to an intensive production of feeding-stuffs in order to produce an amount of protein equal to that provided by fish?" Comparing with milk would give minimum figures and was therefore preferable. This estimate, referred to as the '*fish acreage*' of a country, he (1965: 71, 1972: 74f.) arrived at by calculating "the acreage necessary to produce in the most acreage-saving way for each country an amount of animal protein equivalent to what presently is obtained through fisheries and with present techniques in the agricultural production of this very country". It revealed to what an extent a region relied on ocean resources. On this standard, 3.8 extra Japans would be needed in the mid-1960s, in terms of vicarious tilled land, to supply the same amount of animal protein; two and a half Netherlands would be needed, and their old mercantilist opponent the United Kingdom would need a supplementary two thirds; more than one and a half Norway and almost one and a half Taiwan. The United States could make do only 6.1 percent, but agricultural Denmark and even such an enormous country as China would need about an extra third (*idem* 1972: 35f.). (It should be noted that proportions were always in relation to tilled land, not the entire surface.) Another estimate was what proportion of the population that could be totally

provided with animal protein through products of the sea. Unsurprisingly, Japan again led with three fourths, followed by many Asiatic (often island) states, Ghana and Portugal. The exemplary agricultural states Denmark and the Netherlands could both supply a third of their populations (*ibid.*: 38).

Fish acreage was the first element in the inclusive concept, which he (1965: 71, 1972: 75) calls '*ghost acreage*': "This is the computed, non-visible acreage which a country would require as a supplement to its present visible agricultural acreage in the form of tilled land in order to be able to feed itself." As can be seen, this definition assumed that each country was actually meeting the needs of its inhabitants. He returned to this problem later on, and so shall we. It also means that if part of the tilled acreage is taken up by grazing lands or pastures, the calculated ghost acreage would be correspondingly larger.

Thus introduced, the concept of vicarious productive land, or non-visible acreage, was easily extended to include other elements. The second, referred to as the '*trade acreage*', was calculated as "the acreage, in terms of tilled land, required to produce, also with present techniques, the agricultural products constituting the *net importation*" (1965: 71, 1972: 75). He criticised traditional trade balance sheets based on metric tons or monetary values, as less realistic when estimating the food balance and feeding capacity of a country. First, weight varied with water content, rendering simple adding-up of various foods absurd as nutritional estimates. Second, due to production regulations, quota limitations, subsidies, tariffs, taxes, and subvention purchases – and possibly other things – food prices both on the world market and in individual countries rarely reflected "true production costs", nor were monetary appraisals acceptable from a nutritional point of view. "As a contribution to a discussion along new and more meaningful guidelines," Borgström (1965: 72, 1972: 75f.) explained, "I have therefore introduced this acreage concept." Having not, even by 1972, taken in the so called '*Sukhatmes rule*' of 1970 on sufficient calorie intake, he underlined protein:

In the first place, this was done to place protein in its key role in human feeding. Protein raised through soils is in general the most acreage-demanding constituent. Besides, protein content and value have hardly ever been the prime yardstick in determining prices, although in so many cases it holds the first line in determining the nutritional value to man and to livestock. (*Loc. cit.*)

As befitted a food scientist, it was thus a *quantitative* indicator taking account of food *quality*.

Regions would have to be reasonably topographically homogenous to yield reliable estimates, and to avoid some such complications trade acreages were computed separately for individual countries. Thus, one acre in the United States did not mean the same thing as one acre in Scandinavia. Trade acreages comprised all categories of agricultural products (the nutritive value as well as their demand on acreage), including non-food items such as fibres or tobacco, as they affected the acreages available for food and feed. For products supplementing domestic production this could be handled, but with complementary goods (*e.g.*, for imports of tropical goods to temperate regions) often no reasonable yield figures would be valid for the importing country. In these cases world averages had to be used. This procedure seems nevertheless already to be superior to that used in many ecological footprint analyses, basing all estimations on world averages. Indicating a possible stimulation to Odum (cf. Chapter 9), Borgström (1965: 75, 1972: 78) also claimed to be in the process of "devising methods whereby the use of commercial fertilizers and the energy inputs are computed in corresponding terms and added to the ghost acreages." Although bringing in energy inputs would bring the concept closer to ecological footprints, contrary to these, trade and ghost acreages are still wholly nutritional concepts. As such they might be less inclusive, but at the same time more tangible, phantoms though they may be.

Trade acreages showed countries to be either net exporters or net importers. Among the former were the many great agricultural exporters also according to conventional

measurements: larger neo-European countries, such as the United States, Argentina, Australia, Canada, Brazil, New Zealand, South Africa (not wholly neo-European of course), and Mexico, some European countries such as Spain and Denmark, and Nigeria. Among the net importers were notably most (West) European countries (with the U.K. topping the list) and Japan, but also large countries such as the Soviet Union, China, India, and Pakistan, some Latin American countries such as Peru and Venezuela, and Egypt (Borgström 1972: 76-83, his Fig. 17 & 18, Tab. 14 & 15). This is not what those would expect, who believe the dividing line to be drawn between developed and underdeveloped regions. Although this was not underlined by Borgström, the great divide appears to lie preferably *within* the temperate region, between Europe and neo-Europe. He instead pointed to cases such as the Japanese and Dutch, whose success in feeding their populations had sometimes been held out as miraculous. Today, they are by contrast the most popular examples among ecologically minded trade analysts, having perhaps become so heroic as to inhibit understanding of the Europe/neo-Europe divide. Neither can the success of the ecological footprint in the Netherlands be a coincidence.<sup>93</sup> Looking at total ghost acreages, Borgström did point out that European countries (and Japan) were the great beneficiaries of the world. He contrasted these not with net exporters, as one would have expected, but with “the plight of the billions”, which, then, must be caused by something else. Whatever this ‘else’ might be, he (1972: 86) placed his argument in the Cold War ‘resource-security’ framework, when speaking of the sinister result of postwar fumbling in trying to narrow the gap by employing world trade and ocean fisheries. New models were needed to communicate the sufferings of the poor, if world peace was to be maintained.

As was noticed above, Borgström’s definition of ghost acreage assumed that needs were actually met. Dietary surveys had demonstrated the existence of extensive undernourishment and nutritional deficiencies, he explained, which were primarily protein shortage. He (1965: 80f., 1972: 86) therefore introduced yet another concept, ‘*nutritional acreage*’, of which I have seen no following, but which lies nearest to the heart of his ideal of ‘*nutritional equity*’. By nutritional equity was meant “the additional acreage required to satisfy nutritional minimum needs but still taking into consideration the dietary habits prevailing in each country.” It is, thus, not a measurement of what it would take to give Brazilians a United States’ diet, but more realistically (*loc. cit.*): “How many more acres of beans or how much additional pasture would be needed to give the undernourished in the country a minimal diet without changing its relative composition?” An alternative method was “to calculate how large an acreage, or alternately how large an increase in yield, would be required, under present production conditions, to attain a defined, acceptable nutritional level.” (*idem* 1972: 87, cf. 1965: 81) Various combinations of different acreages were obviously possible.

Borgström’s ghost acreages unwittingly recanted some of Cantillon’s economics, and may have stimulated Odum’s initial studies on hidden (fossil) energy flows in agriculture. More importantly, however, they anticipated and inspired many later environmental accounting methods, particularly area-based ones. Thus, William Catton Jr. (1982) provided one link and, in line with Borgström’s efforts to include energy, extended them to include fossil acreage. Garrett Hardin (1993) spoke of ‘ghost acres’, further distinguishing between different kinds of land acres, and William Rees (1992) introduced the much debated concept of ecological footprint. Dividing Borgström’s original statement and these followers is the great surge of

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<sup>93</sup> Adding tilled land to total ghost acreage one gets the total acreage consumed in a country. The ratio of tilled land to this total acreage, Borgström calls the agricultural self-sufficiency. Thus, a country that is an equally large net exporter of agricultural products as it consumes fish, will have a self-sufficiency of 100 percent. Only five countries in Borgström’s charts and figures (2<sup>nd</sup> ed.) live up to or exceed this criterion: Argentina, Canada, Eire, the United States, and Denmark. This casts some doubts on the usefulness of this part of the argument. There is also the obvious objection that, from time immemorial, humans have eaten fish.

the environmental movement in the 1970s, and the rise of ecological theory to prominence. Borgström was primarily a food scientist, and there are few references to ecology as such in his early works. His primary interest was neither to preserve ecosystems for their own sake, nor to establish some unidimensional environmental impact assessment, but to raise food levels and particularly quality to some commonsense decent level. In his qualitative discrimination between calories and proteins, he differs from the above followers, but resembles H. T. Odum, who on the other hand lacked most of his brother's or Borgström's skills for popular presentation.

In Linnér's (2003: 182) estimation, Borgström's political program was basically the same from the 1950s onwards, though with an increasing accent on population control: "With this shifting emphasis, the antidotes for coming to terms with the population-resource crisis presented in *The Earth – Our Destiny* are elaborated in his books from the 1960s and 1970s – especially the need for a moral appraisal, for worldwide cooperative planning and distribution of resources, and for population control." In addition, the perspective of most neo-Malthusians broadened to include several other environmental issues. The second edition of Borgström's *Too Many* in 1971 was concluded by a new chapter on man's general collision course with nature, presenting the leading problems of devastation of forest land and waste of fresh-water, nuclear waste, oil discharge, and contamination of water in general. But the main environmental problem always remained that of population. The conservationist neo-Malthusian political program to resolve the problems, as embraced by Borgström, has been aptly summarised by Linnér (2003:182f.) in five points:

- 1) "A *new ecologically based education*, which makes the citizens of the world aware of how the Earth's resources are being depleted".
- 2) "A *new economic world order*, which takes into account nutrition and public health", where "[w]ithdrawal of resources has to be accounted for, not just seen as productivity", and the "guiding star must be better utilisation of resources", and "long-term agreement to redistribute and supply their protein need to all humans."
- 3) "A *new technology*, [...] designed in consideration of the interplay of nature", freeing humanity from specialisation and misguided grand-scale projects, and instead prioritising "primary human needs: food, clothing, housing, and education."
- 4) "A *global development programme* for strategic planning of the world's common resources. Political leaders, conscious of their responsibilities need to 'retake the reins and get the world to cooperate', under the aegis of a de-Westernised United Nations, and conceived as a world, or global, household.
- 5) Finally, and essential for the achievement of all the other points, there was voluntary or, if necessary, compulsory *population control*, so that the Earth's carrying capacity would not be exceeded.

Although, as time went on, Borgström began to lose faith in the possibilities of politicians and democratic decision-making to achieve the necessary control, and again to place more faith in scientists, his approach to the 'population-resource crisis' was much softer than many neo-Malthusians, such as Hardin. Thus, Borgström (1969: 49) pointed out that the "present economic order in the world leads to richer countries getting richer and the poor poorer", which scared a reviewer in the leading conservative newspaper in Sweden for its Marxist message, though he excused these nasty remarks as merely another example of his well-known bias towards exaggeration (cf. Linnér 2001: 181). Borgström, unperturbed, went on proclaiming the need for radical action or else the captain's bridge would remain empty on our industrial and developmental circumnavigation on the brink of disaster, and the battle against population growth would be lost. He proclaimed the necessity, in the *short* run, of "a restructuring of world trade and a massive assault on waste and spoliation", while in the long run population must be brought under control. The time was no longer five minutes to twelve

– it was five minutes *past* twelve (Borgström 1971: 10, cf. 258). Although important, and a necessary step in the short run, mere redistribution was not enough; the basic problem was not that the world was underdeveloped, but that it was *overdeveloped*. This, at any rate, must be said to be a very un-Marxist attitude, although, as we have seen (Chapters 7-8) the term itself was used by Emmanuel to describe the well-off countries.

Nevertheless, Borgström was perhaps the most important direct inspiration behind Hartvig Sætra's eco-political socialism (1977, orig. 1971). Along with the Norwegian 'populist' Ottar Brox, the 'eco-philosopher' Sigmund Kvaløy, the 'deep ecologist' Arne Næss, and Eric Damman, pleading for us to take the future in our own hands, the 'eco-socialist' Sætra is a central pillar of Norwegian ecologism. According to Næss (1981: 275), all the main points of his own 'ecosophy' was expressed in the work of Sætra, which furthermore predated by a couple of decades the surge of English language attempts to synthesise the newly won ecologist perspective with Marxism. More radical than Hans Magnus Enzensberger in Germany, Sætra's ecological Marxism sprung partly from the same traditionally strong regional ties in Norway (explainable by the country's geography) that had guided Brox's populism and proved useful for the Resistance against the Germans during the war – thus, not suspected of crypto-Nazism. Borgström was particularly appreciated for his demonstration of the 'protein imperialism' (Sætra 1977: 57-60). Although not specifically mentioning the debate on unequal exchange, Sætra's writings on capitalism and the imperialist exploitation in three tenses – past, present, and future – has a freshness which at least to the present author is more rewarding than many later writings on the subject of ecology in relation to Marxism and unequal exchange. It also included a discussion of the terms of trade and the exploitation of raw materials from an eco-Marxist perspective. Had he been less of a developmentalist, Emmanuel, who had nothing to suggest by way of political program for well-off countries, could have benefited greatly from Sætra's discussion.

Sætra's primary objection against the standard ecologism of his day, such as expressed in the *Blueprint for Survival* (Editors of *The Ecologist* 1972), lay not in the ends or suggested measures, but in supposing that they could be achieved without winding up capitalism and its institutionalised love of profit (Sætra 1977: 75f.). On the other hand, merely achieving a socialist society did not guarantee any ecological sense whatsoever; socialism was necessary, but not sufficient to create a society which could survive (*ibid.*: 92). Societal or collective ownership of the means of production was no guarantee against excessive extraction: "A revolution must therefore not only be directed against the power of capital, but also against the techno-structure, the consumption pattern, and extraction." (*ibid.*: 1178, trans. J.B.) To those who charged him with abandoning Marxism altogether, Sætra replied that he had always considered himself to stand in critical proximity to Marx, but was glad to abandon the label if it were unthinkable that it could be combined with sensible ecopolitics. On the other hand, he (1977: 101) countered: "It has never been the intention of the founding father that the Marxist front should be a giant transcription bureau or an orthodox priesthood."

His objections against traditional Marxism were many, starting already with the neglect of the complicated relation between the *forces* of production (a combination of means of production, the general technological and scientific level, and the people carrying out the process of production) and the *conditions* of production (climate, geology, raw materials, bioproductivity, etc.). Together with the *relations* of production (social property relations, division of labour, distribution of income, etc., *i.e.*, 'the class struggle') the three constituted the *mode* of production, which in turn constituted the *base* of society, on which the *superstructure* rested. In both Marx and the Marxists, the conditions of production were generally seen as a limitless resource, a nature which both could and should be conquered, at least under multirational socialism. From an ecological and eco-political point of view, nature (the conditions of production) played a much more central part in the base than traditional

Marxism had ever allowed. The ecological crisis had definitely demonstrated that the relation between the means and conditions of production fraught with conflict, which threatened to become more important than the opposition between the means and relations of production, which in the standard story was what brought about revolution of the mode of production (*ibid.*: 90f.). Apparently, it seemed as if the ‘final battle’ was not necessarily between workers and capitalism after all.

Traditional Marxists believed that with the coming of socialism the fetters on the forces of production would be undone, along with the absolute or relative poverty of the masses. With the success of capitalism in raising the levels of consumption, the political struggle from this angle became something like an auction where the highest bidder was right. The outcome of this battle certainly did not bode well for socialism if the evidence of existing socialism had anything to say. Sætra, on the other hand, had no such ambition for his eco-socialism. A distinction had to be made between optimality and ‘maximality’, where the former instead of maximum output and consumption meant “balanced and sensible use of resources”, or, very much in line with Odum’s later ‘maximum empower’, “consumption of resources in such a way as to get greatest possible effect in the long run”. Marx’s disgust with Malthus and his downplaying of population increase, had laid the ground for the embarrassing unanimity between the Pope and Marxism-Leninism that humanity without any danger could replenish the Earth (*ibid.*: 97ff.).

He distinguished between extractive and reproductive forms of production, in a way resembling Boulding’s (1966) ‘cowboy’ vs. ‘spaceship’ economies, only also applicable to socialism. The former was primarily based on the consumption of resource funds, overtaxing of ecological cycles, and irreversible changes weakening the environment or wrecking the productive potential of renewable resources. The latter was based on indefinitely renewable resources and on the labour necessary to optimise this usage or to repair previous damage done to the environment and the foundations of production. Norwegian and other fisheries over the past 50 years was a good example of the former, as was coffee production, the American ‘dust bowl’, and Khrushchev’s agriculture in Turkestan (Sætra 1977: 104f., 107ff.). It was becoming ever harder to find examples of reproductive forms of production, or spaceship economies. They existed only in tribal societies on the edges of civilisation, and closer by one had to revert to the old peasant economy, where, as praised in folklore and poetry, the principle ruled that ‘the farm should be passed on in the same state as the peasant himself received it’ (*ibid.*: 110ff.). The spaceship economy, or the old peasant economy, founded on clannishness and reverence for nature, provided the rationale of the new society to be built. The prospects for success depended on three conditions: (1) on the ability to clarify the gravity of the situation, (2) on the care for the future and on how low into the future people were willing to extend their family feeling, and (3) on the readiness for the necessary settlement of accounts with capitalism and imperialism, which must accompany an eco-political revolution. The strategy would require defining a reasonable global minimum standard in per capita resource consumption, and to estimate a socially necessary extraction. Everything beyond this standard must be combated both within capitalist and socialist societies, Sætra pointed out, making it in his view a struggle *within* the system under socialism, and *against* the system under capitalism (*ibid.*: 113).

From his ecological perspective, Sætra wanted to widen the concepts of exploitation and imperialism. Discussing the value of goods (confusing it with ‘exchange value’),<sup>94</sup> he noted

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<sup>94</sup> Like many Marxists, and probably every ecological critic of the labour theory of value to be considered in this text, Sætra has no conception of ‘value’ as an economic tool (the long-run equilibrium price towards which actual market prices are thought to tend), and instead interprets it in the sense of what is ‘really’ valuable to man and society. In the first case, ‘value’ is a tool to understand how a capitalist economy actually functions; in the second it is a statement on how society ought to appreciate things. Both kinds of debates are economically

that profits could be raised by lowering costs of production, either through automation, rationalisation, imperialism of raw materials, and by withdrawing from ecological rehabilitation cost, social costs, and future costs. The more interesting aspect here is his tripartition of the meaning of exploitation and imperialism, into past, present and future (*ibid.*: 126f.).

(1) To the *imperialism in the past tense* belonged automation, since machines, like all capital, was the product of previous labour, ‘congealed sweat’. (Since Sætra has just criticised Marxists for thinking labour to be the sole creator of ‘value’ this statement reads as somewhat inconsistent).

(2) The *imperialism in the present tense, i.e.*, exploitation of the contemporary proletariat, contained both *environmental* imperialism and *raw materials* imperialism. The environmental imperialism involved the degeneration of the working environment (through rationalisation, time and motion studies, and other attempts to speed up the pace), withdrawal from social costs at fusions, shutdowns, and dismissals, resulting from rationalisations, commuting, pollution of built-up areas, traffic, noise, and ‘urban’ health problems, in a both physical and mental sense. The imperialism of raw materials meant giving too low a compensation to people in raw materials producing areas.

(3) The *imperialism in the future tense* involved the environmental costs left for future generations to pay and the deprivation of their resource base through extraction (in the above sense as distinct from reproduction). Thus, extraction was not merely exploitation of ‘Mother Earth’, but of future generations, which was why the ‘antennae’ of family feeling or clannishness was so important.

At the time, said Sætra, the imperialism in the future tense was great enough so as to share its booty with the whole population of the rich countries, making it a gigantic ‘people’s imperialism’, where the larger part of the people – ‘involuntarily’, as Sætra had it – as consumers were drawn into an economic and resource exploitation, partly of raw materials-producing underdeveloped countries, partly, and mostly, of future generations. The exploitation of the working classes in developed countries was primarily of the environmental kind, not economic like it had been and, as seen from the global and future scale, their consumption of goods and resources was partly an overconsumption (*ibid.*: 128). While the workers had for the most part not asked for this excessive extractive personal consumption, Sætra (*ibid.*: 129, trans. J.B.) nevertheless believed that it would be starry-eyed to think that “man is by nature non-extractive”, or that he had merely been “misled and bribed by capital”. Like everyone else, workers had to decide upon a responsible attitude towards resources. Furthermore, this resolution must *precede* the revolutionary transformation of society and preferably *reinforce* the struggle against capitalism. The socialist struggle in the rich countries could not be directed only against the international ‘monopolies’, he (*ibid.*: 146f.) reminded, but must also include a struggle against their own levels of consumption and the exploitation of the resource stock. This was not what Leninist Marxism wanted, but it was central to the ‘populist’ or eco-political Marxism. Resources were clearly too small to support a long-run global welfare state by elephantiasising economic development, however much Social Democrats might wish this, and the Marxist-Leninist revolutionary path to the same goal was obviously equally utopian.

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relevant but mixing them in a single concept leads to endless confusion. Since extraction depletes sources (forests, minerals, oil, biodiversity, etc.) that are (at least potentially) useful to society but which have not been created by labour, Sætra (1977: 122ff.) criticised Marxism and the labour theory of value for neglecting the intrinsic ‘value’ of resources. Considering the labour theory of value as an interpretative tool, the criticism is irrelevant (which is not to say that the theory is correct), and as a statement on the general appreciation of nature among Marxists and politicians it amounts to the same thing as saying what he already has, that the conditions of production are not sufficiently integrated in Marxist theory and consciousness.

He was also critical of the idea of ‘relative impoverishment’, which was less dangerous in Marx’s day or in present day underdeveloped countries, but which confused Marxists in rich countries into absurdities and dangerous group egotism, at the expense of classical socialist ideals of solidarity, and misdirected political devotion to raise the standard of consumption in rich countries. In a material and general sense as applied to the working population (though the unemployed and outcasts may be another matter), the word ‘impoverishment’ was without any meaning, no matter how many more cars the wealthiest may put in their garage (*ibid.*: 134f.). The true impoverishment in these countries was not economic but appeared in the form of *alienation* from meaningful and creative tasks (*ibid.*: 140ff.).

By contrast, in the underdeveloped countries one could find absolute impoverishment, subject as they were to both protein and raw-materials imperialism. The goods from primary production were disadvantaged because of the mere workings of the capitalist market laws, he maintained, although the mechanisms are not very clear from his account.<sup>95</sup> At one point he invoked Frank’s (1967) satellite-metropolis scheme. Satellites engaged in primary production, sub-metropolises in secondary, whereas tertiary production was concentrated in the metropolises themselves, and there was somehow a constant flow of goods and profits towards the centre, accompanied by the most educated workers (*ibid.*: 158-68, esp. 161). The solution to these problems on a global scale required a dominating block of socialist states with an internationally binding eco-political program. Such a program would have to include a biologically defensible nutritional standard, an international production and autarky goal for agriculture and fisheries, which must not involve short-sighted overtaxing of nature, and a thoroughgoing international equalisation of income. The basis for a supra-state organisation should be: (1) optimisation of reproductive resource use, and reduction of extractive production; (2) protectionism to substantiate the former point and be directed towards ecological balance in a wide sense; (3) equalisation of living conditions, something which also required a balanced ecology.

## From ghost acreages to ecological footprints

The concern over rising populations and declining resources reached a peak in the late 1960s, with popular books such as Borgström’s *Hungry Planet*, Philip Appleman’s *The Silent Explosion* (1965), William and Paul Paddock’s *Famine – 1975* (1967), Arthur Hopcraft’s *Born to Hunger* (1968), Paul Ehrlich’s *The Population Bomb* (1968), and Garrett Hardin’s (1968) most well-known article, “The Tragedy of the Commons”. In addition there was a small avalanche of food experts, demographers and environmentalists who predicted the coming of mass starvation. Like Borgström, Ehrlich had also been influenced by reading Osborn and Vogt, and when his book surpassed even Rachel Carson’s *Silent Spring* (1962) as a national bestseller, he became a leading voice in the choir singing ‘people pollute’. Ehrlich argued that the ‘quality of life’, which depended on a healthy environment, would inevitably

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<sup>95</sup> There is really no economic analysis in his work. However, one basic element, Sætra believed, was the different rates of circulation in the respective ecosystems. Ecological areas with high rates of circulation were all in the rich countries or in their puppet states, which made agricultural yields higher than average. His argument seems to have been that in a capitalist economy this inevitably created an extra rent, or a corresponding exploitation of those marginal areas whose ecologies supported only lower yields. In industry, labour and capital tended to flee such low-productive sectors until earnings returned, but such mobility of capital and labour was not possible in primary sectors, *i.e.*, agriculture, since peasant populations were domiciled on their land, and shutting down their unprofitable production involved painful readjustments, such as depopulation, elimination of cultural patterns and social life, and people mostly ended up in urban slums. To resolve the situation, international transfers of income were needed. He also reported how the a decline of demand for products of monocultural agriculture such as cocoa, attempts are made to increase output instead of diminishing them, so that the terms of trade decline into a vicious circle (*ibid.*: 143ff.).

decline were population growth not hampered. He founded the Zero Population Growth Movement, which contended that it was already too late for voluntary measures to be effective (Pepper 1989: 20, 100, Linnér 2003: 170ff.). In Hardin's (1968) more hard boiled approach, compulsory legislation and population control was necessary to end 'the tragedy of the commons'. This consisted in the fact that the relative profits of individuals who broke the commonly agreed-upon rules of survival would oblige the rest to follow, which would ultimately wreak havoc upon all. The argument was basically one of those used for socialist planning, against the capitalist system of individual producers, only the freedom which had to be curbed according to Hardin was that of progeniture, not of enterprise. An editorial in *Science* (Hardin 1971) argued that in an imperfect world territories had to be defended if they and American 'dignity' were not to be extinguished by a fast-breeding 'race'. His proposal for a 'lifeboat ethic' (1974), *i.e.*, to shut out countries such as India, who refused to enforce programs for population control, from aid and letting them drown in their own overpopulation, did perhaps not inevitably follow from it, but whether it did or not, it may certainly still be an ingredient in international diplomacy.

The suggestions in Hardin's editorial, that zero-growth of birth rate should be enforced by compulsory legislation and egotistic wealthy seclusion, provoked the sensibilities of many environmentalists, notably Barry Commoner (1971: 114) who referred to it as the new barbarism of the lifeboat ethic. Commoner instead displayed a tendency characterising many more leftward or liberal environmentalists during the 1970s, laying greater stress on social relationships and maldistribution. He charged that the principal problem was not population growth but modern technology, in the hands of multinational corporations, and the economic order of capitalism and colonialism. The dispute on the relative impact of population and pollution continued. To Ehrlich (1968: 66f.) the problem was, by contrast, *too many* cars, factories, detergents, pesticides, carbon dioxide, etc., and too little freshwater, etc., all of which could be traced to *too many people*; from the fact that the present environment was deteriorating, he and Anne Ehrlich concluded that "*the planet Earth as a whole, is overpopulated*" (quoted in Linnér 2003: 173f.; cf. Pepper 1989: 20f.).

The final outcome of the argument, so far as accounting methods are concerned, was the attempt by Ehrlich & Holdren (1971, Holdren & Ehrlich 1974), to assess the respective categories of environmental in the so-called "Ehrlich equation" – the identity  $I = PAT$ , relating the environmental *impact* to *population*, *affluence*, and *technology* (*i.e.*, pollution). Later studies have preferred to speak of consumption rather than affluence, yielding the equation  $I = PCT$ , where the latter two terms could be expressed as respectively GDP per capita and impact per unit of GDP (Ekins & Jacobs 1995, Raskin 1995, Amalric 1995, Dietz & Rosa 1994, Rothman 1998). Although sometimes criticised and revised, according to Rothman (*ibid.*: 182), "the IPAT relationship provides a basic reference for considering the impacts of human activity on the environment." In a famous study from 1986, Vitousek *et al.* (1986) estimated the contemporary "human appropriation of the products of photosynthesis" to have reached 40% of net terrestrial biomass production.

Environmental impact assessment has grown into a large industry over the years, but it seems as if concern over population growth has all but disappeared from debate today. Hardin is of course unperturbed, and continues to speak of what he calls the population taboos, but he has also contributed more directly to Borgström's concept of 'ghost acres' (Hardin 1993: 121-33), introducing further distinctions between cropland, pastureland, woodland, and other land. Nothing is said of Borgström's (1962, 1965) fish and trade acreages, nor of Catton's (1982) fossil acreage. How much space do human beings use? he asked. Taking the example of the United States, his estimate simply assumed – "Without too much error", he maintained – that imports and exports were in balance. For an advocate of life-boat ethics this must certainly be a reassuring thought. Unfortunately, he did not present a shred of evidence that it was so, but

perhaps being aware of the United States' net agricultural exports, and since he was only looking at the *land*, could probably assume no great bias. Nevertheless, his point in bringing in ghost acres was to enhance discernment of possible overpopulation, which he felt was commonly *better* among the poor peasants of the world:

The essential life of an educated urban dweller, from birth to death, is lived out on ghost acreage. Urbanites, lamentably unconscious of this support base most of the time, live a life of illusion. This does not make for ecologically realistic thinking; illiterate farmers of the poorest countries are often closer to ecological realities than are the most sophisticated city dwellers. Unfortunately urbanities, in most countries and in most times, control both the media and the political system.

[...] Since he is deficient in meaningful experiences with the sources of his being, the urbanite must have reality brought home to him through the intellectual gimmick of "ghost acreage." Without some appreciation of the breadth of their dependency on the outside world, city-dwellers are apt to adopt political plans that erode the foundations on which their survival depends. Urbanization may, in the end, prove a fatal disease. (Hardin 1993: 123.)

Yet the argument admitted by Hardin for urbanites could, admittedly to a very much lesser degree than for the citizens of Manhattan, be true for whole countries, as indeed it is. Hardin did not want to mix with fossil acreages, nor 'pollution acreages' or the like, and this could perhaps be considered good sense, since it does not imply comparing apples with fossilized pears, by trying to apply a single area-based unit of measurement. Thus, he (1993: 123) simply concluded that "when the energy now available in the concentrated forms of oil and coal has to be supplied by the more diffuse source of solar energy, the ghost acres per citizen will have to increase considerably." If Hardin chose to specify the various components of 'land acreage' to illuminate the dependence of an urban population on the carrying capacity of the surrounding land, Borgström, by contrast, had not really included 'land' at all in the 'phantom' acreage of a nation, consisting instead of the two components 'fish' and 'trade', expressed as land acreage over and above their actual arable lands.

The Earth as a whole could have no trade acreage, and in the 1970s the sea was being harvested in greater than sustainable yields, in addition to pollution. Instead of cutting down on their fish crops, nations became even more competitive, somewhat in line with Hardin's tragedy of the commons, and some were compelled to express their claims in the form of territoriality. The three-mile limit of national sovereignty became a twelve-mile limit, and various nations extended their fishing claims unilaterally out to fifty, a hundred or, like the United States on 1 March, 1977, two hundred miles, the talk of which had already occasioned large manifestations in the fish-acreage dependent Japan. These and similar conflicts between the United States and Peru, Great Britain and Iceland, compelled the United Nations to begin rewriting the law of the sea so as to institutionalise such marine claim-staking.

These conflicts had been noticed in 1980 by Catton (1982: 40), who remembered Borgström's ideas of a phantom carrying capacity and invisible acreage. The oil crises had made another dependence all the more apparent (*ibid.*: 47), so Catton had no problem adding this third component to the previous trade and fish acreages: the "fossil acreage". This consisted of 'imports' of photosynthetically gathered solar energy from the past in the form of coal, petroleum, and natural gas. "As an island in space, the world could not rely on imports from *elsewhere*; nevertheless, it was already heavily dependent upon imports from *elsewhen*. That we were importing from the past becomes clear when we logically extend Borgstrom's [sic] ghost acreage concept to include [...] import of energy from prehistoric sources. Man's use of fossil fuels has been another instance of reliance on phantom carrying capacity." He calculated it as "the number of additional acres of farmland that would have been needed to grow organic fuels with equivalent energy content" (*ibid.*: 41). The original reliance on renewable, although similarly overexploited, wood, was abandoned in favour of fossil fuels,

mistaken, according to Catton, by peoples and nations for an opportunity to permanently transcend the limits set by finite supplies of organic fuel. The increasing global dependence on fossil fuels for energy over the last full century is well illustrated in Table 18.

Table 18. Total commercial and non-commercial world energy sources, 1875-1995 (%).

	1875	1900	1925	1950	1975	1995
Wood	60	39	26	21	13	10
Coal	38	58	61	44	27	17
Oil	2	2	10	25	40	40
Natural gas	1	1	2	8	15	23
Other sources	<1	<1	1	2	5	10

Source: Porter & Sheppard 1998: 227.

In view of the current scale of international trade, it is readily perceived from these figures that *no* contemporary country can be considered ‘sustainable’ in the strict sense of the term, since they all require support by fossil acreage, either in its own production or in that of its imports. Catton estimated that to produce alcohol corresponding to the 1970 US per capita fossil energy consumption, equivalent to 58 barrels of oil, would take 20 acres of good farmland producing corn, whereas with half of US total area used as farmland in 1970 there was only 5 acres per capita available. Thus, he (1982: 46f.) concluded that the actual population of the United States had already overshot its carrying capacity measured by the energy-producing capability of visible American acreage, and that to “achieve genuine self-sufficiency in energy by 1980, assuming a 1970 way of life but depending on visible acreage only, the population of this nation would have to level off no later than 1880.”

In the midst of the second oil crisis (1979-80), Catton (*ibid.*: 47) apparently believed the rise of oil prices to be in a reflection of “the increasing difficulty of obtaining the fuels”. Those “opinion leaders” who sought “political explanations for the erosion of freedom”, were merely “neglecting the ecological pressure causing it.” Such minds, he explained, “insisted on remaining blind to a reality far more significant than its surface political manifestations.” Rather than even trying to provide an historically plausible explanation, he seems to have involved himself in ‘wishful’ thinking that the crisis was at hand – the situation certainly had nothing in common with that in the fisheries. And it must be admitted that the rise in oil prices was timely for the environmentally engaged who – now apparently believing that the market mechanism really worked – had been proclaiming for decades that resources were scarce and must be economised on.<sup>96</sup>

However this may be, if harvesting of fish exceeded the replacement rate this made itself fairly quickly felt to human experience. By contrast, Catton (*ibid.*: 52) explained, the extraction of fossil fuels exceeded the replacement rate by about 10,000 to 1, although new discoveries made it look otherwise. Furthermore: “to become *completely* free from dependence on prehistoric energy (without reducing population or per capita energy consumption), modern man would require an increase in contemporary carrying capacity equivalent to ten earths each of whose surfaces was forested, tilled, fished, and harvested to the current extent of our planet.”

<sup>96</sup> It is even possible the environmental debates could have contributed to the raising of prices by raising the eyes of producers and preparing consumers with a justifying logic to the new claims. Nothing is said by Catton on the high degree of monopolisation, or of the fact that OPEC’s efforts naturally were supported by US producers. If there is any truth in Catton’s interpretation it is that the production rate *in the United States* was less than the discovery rate. Another is that the ‘far more significant’ reality could make itself felt partly through the uniquely central place which oil occupies in current industrial society. The negative effects on economic growth can nevertheless not be attributed to the price rises *per se*, but perhaps to the reaction against them.

By the early 1990s, following the Brundtland report in 1987, there appears to have been a vogue for alternative but similar accounting methods under slightly varying names or originality of content, by now reputedly numbering some 600. Their timing may also be related to the preparations for the 20 years jubilee of the Stockholm Conference, *i.e.*, the Rio Conference 1992, the Conference itself, or simply the greater ado among politicians. Part of the reason is certainly the actual or felt possibilities for increased funding, as well as attention, and the hope to stake a claim in dire competition. Thus, we have 'environmental space' (Hille 1998) and 'environmental memory', on the line of Odum's 'energy memory', while in Latin America the concept of 'environmental debt' appeared, to which we shall return in Chapter 11. Writing on the possibilities of making Canada 'sustainable', J. MacNeil (1992) spoke of "shadow ecologies", in line with Borgström's 'shadow acreage', while another Canadian, the urban geographer William Rees (1992), and his Swiss student Mathis Wackernagel (Rees & Wackernagel 1993), introduced the concept of 'ecological footprints'.

However, they were not primarily in competition with each other, and many can be seen as a counterpart to the rejuvenation of the idea from the Stockholm Conference, that increased economic growth and development was actually *good* for the environment. This, at first and perhaps third sight, bizarre conclusion sometimes goes under the name of the 'environmental Kuznets curve' (EKC), or inverted-U curve. The hypothesis was proposed as an analogy to the pattern found by Kuznets between changes in income inequality as economic development progressed: in the early stages of development, environmental pressure rises faster than income growth, then slows down, and after reaching a turning point finally declines. An important contribution arguing on these lines was Shafik & Bandyopadhyay (1992). It served as the basis for the 1992 World Bank development report (IBRD 1992: 308), concluding that resource prices and policy changes were the principal causes explaining trend reversals. Others arguing on similar lines were Selden & Song (1994) and Grossman & Krueger (1995), the former pair proposing four theoretical arguments in favour of this relationship: (1) positive income elasticities for environmental quality, that is the environment is considered as a 'normal' good, for which there is a proportionately rising preference with higher income; (2) structural changes in production and consumption associated with higher incomes; (3) increasing information on environmental consequences of economic activities as income rises, presuming an influence of this information on either consumer preference, producer morality, or public policy; (4) more international trade and more open political systems with rising levels of income. It was also argued that developed countries have greater capacity to remedy environmental problems in response to consumer demand, and that higher turnover rates of production technologies would speed up obsolescence of older and dirtier ones. According to Bruyn (1997) and Berkhout's (1998) analysis of the material flow data of Adriaanse *et al.* (1997), there was a general delinking of economic welfare (GDP/cap.) and material throughput from the 1970s onwards (cf. discussion in Cleveland & Ruth 1998). Other relationships were also proposed, for example an N-shaped curve initially showing features of the EKC, environmental pressure then rising again as technological efficiency in resource use and other opportunities were exhausted (Bruyn *et al.* 1998: 161f.; Kaufman *et al.* 1998 even found a U-shaped curve for SO<sub>2</sub>).

The second argument finds a strong explanatory case in the changing sectoral composition of production. As income levels increase, the dominant sector shifts from agriculture to industry and then to services (Table 19). The first shift is likely to result in increased environmental impact, and the second in a reduction. In a production-centred evaluation this could result in an EKC.

Table 19. *Historical shares of employment by sector, 1820-1992.*

	USA			UK			Japan		
	Fisheries	Industry	Services	Fisheries	Industry	Services	Fisheries	Industry	Services
1820	70,0	15,0	15,0	37,6	32,9	29,5			
1870	50,0	24,4	25,6	22,7	42,3	35,0	70,1		
1890	38,3	23,9	37,8	16,1	43,2	40,7	69,0		
1913	27,5	29,7	42,8	11,7	44,1	44,2	60,1	17,5	22,4
1929	21,1	29,4	49,5	7,7	45,2	47,1	50,3	20,9	28,8
1938	17,9	31,2	50,9	5,9	44,1	50,1	45,2	24,1	30,7
1950	12,9	33,6	53,5	5,1	44,9	50,0	48,3	22,6	29,1
1973	4,1	31,2	64,7	2,9	40,3	56,8	13,4	37,2	49,4
1992	2,8	23,3	74,0	2,2	26,2	71,6	6,4	34,6	59,0

Source: Maddison 1995: 253.

The overall conclusion of general studies on the empirical basis of the EKC-hypothesis is that some environmental indicators, such as urban sanitation and air quality, access to clean water, certain pollutants, do indeed conform more or less to the suggested pattern, as do some studies of social metabolism, showing that the 'direct material input' (DMI) of several developed economies stagnated or declined in the 1970s, GDP continuing to rise somewhat. Since DMI does not include imported goods, hidden flows, or even wastes, it was not the relevant metric of environmental impact even within the methodology of societal metabolism itself. Other indicators, such as CO<sub>2</sub> emissions and municipal waste per capita, showed continued worsening as incomes rose (Ekins 1997, Stern *et al.* 1996, Forrest 1995; cf. Rothman 1998: 178f.). Even if the hypothesis were true, the irreversible environmental devastation before income induced reversal was achieved in developing countries could be assumed or calculated to be considerable (Rothman 1998: 179, and references therein).

Justified warnings have been raised against downplaying environmental concerns as transitional phenomena which growth in due course will resolve. Arrow *et al.* (1995: 520f.) pointed out the partial evidence focusing on pollutant emissions and concentrations, and the corresponding lack of linking with ecosystem resilience, carrying capacity, resource depletion and environmental sustainability in general. They cautioned that economic growth was "no substitute" for environmental policy. Ayres (1995: 97ff.) considered this an understatement and the view that growth was good for the environment as "false and pernicious nonsense". In an overview and critique of previous studies, Stern *et al.* (1996) pertinently observed that the relatively high income levels at which pollution turned were not achievable for the majority of the world population and that translocation of polluting industries from developed to developing countries might offer an effective explanation for the observed EKC. Criticism was also levelled at the ahistorical methodology of trying to relate trend reversals to income levels, while surprisingly ignoring, in the case of carbon dioxide, the historical shock effect of the 'oil crises' of 1973 and 1979, resulting in policy changes and transition to other energy sources.<sup>97</sup> The empirical data and the statistical models were questioned, and it was suggested that the environmental problems showing an EKC were those nearby in time and space,

<sup>97</sup> Unruth & Moomaw (1998: 228) found a simultaneous trend reversal for 16 OECD-countries at widely different income levels in the above mentioned years. They also noted that the EKC-hypothesis depends on data from the late 1970s and even 80s, when downward trends for many important pollutants were already on the decline. If this decline was partly due to public environmental concern with the growth-maniac ideology of the exuberant decades up to 1973, it would be ironic that it then be used, in the form of EKC, in arguing for renewed growth-mania.

preferably where abatement costs were low in terms of money or life-style, the EKC thus not being valid for global problems (e.g. Rothman 1998: 178, Bruyn *et al.* 1998: 164).

Although examples to the contrary are not difficult to find (e.g., Panayotou 1993, Beckerman 1992), even in studies favouring the EKC-hypothesis, the relationship was not taken for granted. Shafik & Bandyopadhyay (1992: 23), for example, did think it possible to “grow out of” certain environmental problems, but maintained that “there is nothing automatic about doing so.” Grossman & Krueger (1995: 371f.) tried to caution against this reading of their findings, and believe an “induced policy response” of stricter environmental laws and standards driven by citizens’ demands to have provided the strongest link between rising income and lower pollution. As Torras & Boyce (1998: 148) observed, in this they echoed Kuznets’ (1955) original call for a shift from market economics to political and social economy. Torras & Boyce (1998: 158) agree with Grossman & Krueger (1995, 1996) that “citizens’ demand and ‘vigilance and advocacy’ are often critical in introducing policies and technological changes which reduce pollution,” this vigilance, however, not being a mere function of average income, but also of income distribution, literacy and rights. In line with the remark of Stern *et al.* (1996) above, Muradian *et al.* (2002: 60 & 64) considered “environmental load displacement” to be a possible factor in de-coupling growth and environmental degradation, and an environmental aspect of unequal exchange. Thus, increasing local political pressure to protect the environmental ‘public good’ can lead to relocation of pollution-intensive production. Writing on unequal exchange of ecological footprints, Andersson & Lindroth (2001) specifically argued against the conception of the environmental Kuznets curve.

On this line Rothman (1998: 177f.) argued for consumption-based approaches, concluding that “consumption-based measures, such as CO<sub>2</sub> emissions and municipal waste, for which impacts are relatively easy to externalize or costly to control, show no tendency to decline with increasing per capita income,” and that “what appear to be improvements in environmental quality may in reality be indicators of increased ability of consumers in wealthy nations to distance themselves from the environmental degradation associated with their consumption.” If reductions so far have primarily been “due to a composition effect, whereby countries tend to increase the energy and pollution intensity of their imports”, the currently developing countries may not be able to replicate this feat.

Several writers expressed doubts about adopting a production-based approach in evaluating environmental impact. Duchin (1998) argued that most environmental degradation could be traced to the behaviour of consumers, either directly, through garbage disposal or the use of cars, or indirectly through the production undertaken to satisfy them (cf. Daly 1996, Rees 2002, 2003). The EKC attributed changes in environmental impact to changing composition. If the shift in production patterns was not accompanied by a shift in consumption patterns, Ekins (1997) observed, then environmental effects due to the composition effect were being displaced from one country to another, rather than reduced, and accordingly this means of reducing environmental impacts would not be available to the latest-developing countries, since there were no countries left to which environmentally intensive activities could be located. Thus, in Rothman’s (1998: 182) view a relevant measurement of environmental impact would have to be consumption centred.

Building on the work of Borgström (1962), Catton (1982), and Vitousek *et al.* (1986), Rees (1992) and Rees & Wackernagel (1993) made the concept of ‘appropriated carrying capacity’ popular as ‘ecological footprints’. Theirs have turned out to be one of the more successful consumption centred approaches, at least in terms of publicity. Rees as a Canadian urban geographer could be assumed to have been familiar with the ‘metropolitanism’ of the Chicago school of sociology, and its Canadian staple-thesis next cousin (cf. Careless 1954). Observations regarding the material dependence of cities on the produce of the countryside

must be as old as cities themselves. They were integrated in mercantilist thought as well as Smith, and reappeared in the ‘metabolism’ between nature and society in Marx. That the concept ecological footprint was soon adopted in the Netherlands, may have something to do with being the archetypal city-state, living in a very concrete sense beyond its geographical ‘endowment’ of land, in addition to having for centuries disputed with the English over fishing rights.

Compared to corresponding concepts adopted in Spain or Latin America, such as the ‘environmental debt’, the imagery was adopted rather to the wealthy consumer society, and not at all to Third World, or Latin American, debt and development. The ‘Southern’ line of environmentalism, which came to dominate the United Nations from the 1970s, is more bent on emphasising how much economic ‘catching up’ remains to be done, and its Latin American branch is particularly concerned with exports pouring out as raw materials, while the economic debt is contrasted with the ecological debt in CO<sub>2</sub> emissions, the rights to which are hotly debated and may well become economically important. Both traditions are concerned with the overconsumption and guilt of the wealthy, notably in the form of CO<sub>2</sub>, but their languages are different and directed at different audiences. Both have been linked to ecological unequal exchange in one form or another. We shall consider footprints here and environmental debt in Chapter 11. In ecological footprints the traditional population component is stronger – man in himself is seen as a consumer – and the consequent ‘appropriation’ of the Earth’s total biocapacity, consequences for non-human nature, other species and nature as a whole, more underlined. Rees, in particular, appears to share beliefs with the early radical ecologism of the 1960s and 1970s. The perspective of ecological footprints is global, and the ambition now is to become an accounting method.

The starting point was the recognition that the level of consumption of a geographically delimited population, notably a city, often exceeded the available productive area:

as a result of high population densities, the rapid rise in *per capita* energy and material consumption, and the growing dependence on trade (all of which are facilitated by technology), *the ecological locations of human settlements no longer coincide with their geographic locations*. Modern cities and industrial regions are dependent for survival and growth on a vast and increasingly global hinterland of ecologically productive landscapes. (Wackernagel & Rees 1996: 29.)

The concept was an inversion of ‘carrying capacity’, which was usually defined as the maximum population of a species sustainable in a certain habitat for an indefinite period without permanently diminishing the productivity of this habitat. Calculating the carrying capacity for a human population was made more difficult since the ecological burden of an area varied with income, technological level, material expectations etc., and by the fact that no area was isolated from the rest of the world. A difficulty for the concept of carrying capacity was that our exogenous, industrial metabolism was much greater than our endogenous, biological metabolism. Starting “from the assumption that every category of energy and material consumption and waste discharge requires the productive or absorptive capacity of a finite area of land or water”, the ecological footprint of a population was arrived at by summing up “the land requirements for all categories of consumption and waste discharge by a defined population”.

The aim was to avoid arbitrary geographical delimitations, pointing out that it concerned impact “on the Earth *whether or not this area coincides with the population’s home region*. In short, the Ecological Footprint measures land area required per person (or population), rather than population per unit area” (*ibid.*: 51). This simple inversion of carrying capacity was found much more instructive in characterising the sustainability dilemma. The ecological footprint or appropriated carrying capacity for a specified population or economy was thus defined:

the area of ecologically productive land (and water) in various classes – cropland, pasture, forests, etc. – that would be required on a continuous basis

a) to provide all the energy/material resources consumed, and

b) to absorb all the wastes discharged

by that population with prevailing technology, *wherever on Earth that land is located.* (*Ibid.*: 51f.)

We are reminded that “whatever the specifics, the Ecological Footprint of a given population is the land area needed *exclusively* by that population. Flows and capacities used by one population are not available for use by others” (*ibid.*: 52). The concept even presupposed that present usage is sustainable, which was but all too seldom the case, and they therefore suggested that some such factor should be added (*loc. cit.*).

Ecological footprints were said to be consistent with mass balance and thermodynamic reasoning, but “land or ecosystem area” was a more appropriate measurement than energy flux because “it reflects both the quantity and quality of energy and matter available to the human economy. The key limiting factor for human life is not the amount of solar energy that falls on Earth, but what nature can do with it.that transcended them considering not only energetic inflow from the sun, but also what life managed to do with this energy” (*ibid.*: 55f.). Speaking of energy ‘quality’ is an obvious reference to Odum, and in a sense footprint analysis may be seen as an attempted popularisation of his rather more intricate and neologistic formulations. ‘Land’ went beyond mere thermodynamics, they explained, not only by capturing the Earth’s finiteness, but by standing “as a proxy for numerous essential life-support functions from gas exchange to nutrient recycling” (*ibid.*: 56). Speaking of the accumulated natural structures embodied in their conception of the term, the systems ecological reference was extended with a Gaian (cf. Lovelock 1979, 1988) one of the Earth as in itself a living thing:

The state of the biophysical world can therefore best be estimated from the state of the self-producing natural capital stocks that perform these functions. Keep in mind that these stocks themselves represent the biochemical energy that has accumulated in the ecosphere. The point is that land supports photosynthesis, the energy conduit for the web of life. This singular process distinguishes our planet from dead ones like Mars or Venus. Photosynthesis sustains all important food chains and maintains the structural integrity of ecosystems. It has miraculously transformed the originally inhospitable surface of the Earth into a self-producing and self-regulating ecosphere of spectacular abundance and diversity. (*Loc. cit.*)

However, it is not immediately evident how this transcendence is in fact captured or illuminated by being put in as an area, nor how the many problems they observe can be illustratively so translated.<sup>98</sup> Estimating the carrying capacity of the Earth, they (*ibid.*: 55) found world consumption overshooting this. Examining the per capita “fair Earth share”, they found, hardly surprisingly, the rich and industrialised world exceeding this. One could thus speak of using up the “natural capital” or savings of past generations, and an ‘ecological debt’ (not their term) both towards future generations in the case of overshoot, and by high-consumers towards low-consumers.

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<sup>98</sup> “The list of threats to the life-support system in which we are embedded is overwhelming: deserts are encroaching on ecologically productive areas at the rate of 6 million hectares per year; deforestation claims over 17 million hectares per year; soil oxidation and erosion exceeds soil formation by 26 billion tons per year; fisheries are collapsing; the draw-down and pollution of ground water accelerates in many places of the world; as many as 17,000 species disappear every year; despite corrective action, stratospheric ozone continues to erode; industrial society has increased atmospheric carbon dioxide by 28 percent. All these trends are the result of either over-exploitation (excessive consumption) or excessive waste generation.” (Wackernagel & Rees 1996: 31.)

Wackernagel & Rees (1996: 54) suggested that ecological footprints should be applied to trade to determine the embodied carrying capacity, but their principal point was another. It had been argued that ‘carrying capacity’ was made redundant as a concept by the fact that local populations could exceed it through trade. “This is an ironic error”, they argued:

Human load is a function not only of population but also of *per capita* consumption and the latter is increasing even more rapidly than the former due (ironically) to the expanding trade and technology. This led Catton to observe that “... the world is being required to accommodate not just more people, but effectively ‘larger’ people...” [...] Indeed, to the extent that trade seems to increase local carrying capacity, *it reduces it somewhere else.* (*Ibid.*: 50 & 53.)

In fact, this latter statement needs some modification. Martinez-Alier (1997: 224) agrees that carrying capacity “may make sense at a global level but it does not make sense at the regional or national level”. However, referring to Pfaundler (1902), he continues:

Although it is not possible for every country simultaneously to increase its carrying capacity through the use of resources from ecosystems in other countries they can all simultaneously make selective use of some resources from ecosystems in other countries because what is limited in one country may be abundant in another. The carrying capacity of the world as a whole is greater than the sum of the carrying capacities of all its countries.

Of course, even if it is true that the whole is greater than the sum of the resource endowments of the parts, such ecological optimisation is not a certain outcome of international trade, as could be assumed from some ecologised Heckscher-Ohlin perspective.

Some of the more important contributions to have come from Wackernagel and his team, so far, are the (continuously updated) national footprint estimates (Wackernagel *et al.* 1999), and an attempt at estimating the historical development of the world footprint 1961–1999 (Wackernagel *et al.* 2002). Extending this kind of estimation further back will probably prove difficult, since the FAO data they have been using ends that year. In it the world transcended its available biocapacity in the 1980s. Although it is not spelled out in the text, it is clear from a comparison of the article’s two diagrams, that yields have increased more than degradation of soils, so as to make their so called ‘1 Earth’ – misleadingly drawn as a horizontal line – larger. The poor visibility of calculations can be illustrated with one of the most important work by ‘non-collaborators’: an estimate of Austrian ecological footprints 1926-1995, where it is demonstrated that, depending on method and assumption in calculating time-series footprints, three possible and very different outcomes result, with the most intuitive estimate, based on the local yield factor of agriculture, yielding a not so intuitive, more or less *unchanged* national ecological footprint (Haberl *et al.* 2001). If this illustrates its limitations as an historical tool, the concept has also been severely criticised as an accounting method.

In an oft cited article, van den Bergh & Verbruggen (1999) criticise it for not taking into account the sustainable vs. unsustainable present usages of land, a point which was as we have seen already admitted by Rees & Wackernagel themselves, thereby diminishing both the footprint and its usefulness for policy makers. They also levelled the relevant criticism of the concept as a hypothetical measurement of appropriation of carrying capacity, since it could exceed the world’s total available productive land, suggesting instead that attention be paid to actual bioregions (*ibid.*: 65; cf. Ayres 2000: 347). In view of the concept’s intellectual history being an expression not only of ‘land’ (as with Vitousek *et al.*) but also of sea and fossil acreage (as with Borgström and Catton) this criticism would indicate a preference for a Borgströmian approach, and also points to a difficulty with all aggregate indicators (Costanza 2000: 342).

What seems to have raised the issue is the fact that more than half of the ecological footprint of the developed countries could be traced to the burning of fossil fuels (Bergh & Verbruggen 1999: 64 & 70). Of course, this stemmed not from ‘actual’, *i.e.*, *present*, bioproductive acreage, but from *past* – the ‘subterranean forest’ (Sieferle 2001). In this instance it could be represented as land through present energy equivalents, but the problem is general to all non-renewable resources. Adding to the confusion might be that the most common method of calculation concentrated on the ‘hypothetical’, *i.e.*, (hopefully) *future*, bioproductive acreage that would be needed to absorb the CO<sub>2</sub>-waste. The area difference in footprint between the two ways of measurement happened to be about the same, as Wackernagel and Rees liked to point out, but there is, in fact, no way the *same* forest could be used both for CO<sub>2</sub>-absorption and as an energy basis. This has been hinted at from time to time, and means that current EF-estimations of developed countries should be raised by another half, if they are to indicate corresponding sustainable consumption.<sup>99</sup> As it stands, the contemporary calculations omit all problems of non-renewable resources. The ecological-footprint concept would perhaps be aided if distinctions were more clearly made between these present, past, and future acreages, in line with Sætra’s (1977) above three ‘imperialisms’. While the problems pertaining to presenting actual heterogeneity in unidimensional metric remain within such tripartite categories, it would at least eliminate some of the problems, and it would better render real-world ones. Ecological footprints would certainly profit, at least scientifically, by increased ‘visibility’ of calculations. Here, concreteness has been all but lost in pretty diagrams, tables and maps, and the increased ‘visibility’ of the world for which Borgström, Catton, Hardin, and presumably Rees and Wackernagel themselves strove, seems to have all but disappeared.

Finally, in what sense can ecological footprint analysis, or any of the other accounting methods, be seen as more than just accounting methods? That is to say, in the present context, in what sense are they also explanatory theories of unequal exchange? In spite of some reference to unequal exchange in footprint literature, this is not easy to say. It is evident that they can all be used to *illustrate* unequal exchange, and in this sense may provide illumination and concreteness to *existing* theories. This is notably in adopting the ecologically correct view of man as a *consumer* or appropriator of biocapacity, rather than as producer. There are conflicting perspectives regarding the centrality of population or their per capita impact, both of which have a certain Protestant tinge. The same conflict of perspectives can be found in development theory, where unequal exchange theories have clearly focused on the per capita issues.

### Jan Otto Andersson on ecological unequal exchange and international solidarity

The Finland-Swede Jan Otto Andersson (born 1943) seems to be the only one to have been significantly involved in both the original debate on unequal exchange after Emmanuel and in the recent attempts to formulate ecologist variants. His Marxist version of non-equivalent exchange, even when termed in Sraffian language, required that the equality of exchange must be expressible as an equal net transfer of ‘labour values’,<sup>100</sup> whereas his ecological version

<sup>99</sup> Presently, the carbon footprint takes up about half of total footprint. If an energy footprint of equal size were to be added, this raises the footprint by 50%, making both present levels and the carbon budgeted share of footprint two thirds. Carbon’s already large share, thus becoming overwhelming, is probably what has refrained Rees, Wackernagel, and others, from taking it fully into account, since this would make it into little more than a one variable metric. Incidentally, adding waste carbon from the past seems to have raised not only present *human*, but also the *primary* productivity of certain terrestrial bioregions (*e.g.*, untouched rainforests, explaining some of the missing carbon in the carbon cycle), the level of atmospheric CO<sub>2</sub> being geologically dangerously low for C3 plants. This is not proposed as an argument against restricting CO<sub>2</sub> emissions.

<sup>100</sup> These can only be defined either as that kind of self-employment market economy described in volume I of Marx’s Capital, which in all probability has never existed and the moral point of which would be curious, or,

required that kind of expressibility in terms of 'ecological footprints' (though any other unit would presumably do equally well). Andersson's long-standing insistence on such foundation was visible in the classification, found in his major work (1976), of types of exchange relations into 'disjunctive', 'asymmetric', and 'non-equivalent exchange', where the latter were further divided into four subgroups, but all consisting in an exchange of unequal amounts of labour. It also explains the fact, deplored by Raffer (1987), that *Emmanuel's* unequal exchange did not fit in anywhere in this classification. By contrast, as we shall see in Chapter 11, Martinez-Alier argues for the ultimate *inexpressibility* in terms of a single unit of measurement, for a fundamental incommensurability of values, which can only be determined through social and political struggles and decision-making.

As to economic models, it could be argued, following Raffer (1987) and Gibson (1980), that Andersson (1976), de Janvry & Kramer (1979), Brewer (1990), and others, are mistaken in their criticism of Emmanuel's version as lacking a stable equilibrium point. Though they may have a valid empirical point in criticising the theory's assumption of goods specific to high- and low-wage regions, Andersson's objection regarding the price of timber trade was ill chosen. His early attempt to rectify the perceived shortcomings was similar to Oscar Braun's (1977) and both show a wish to reintegrate unequal exchange in the general dependency tradition where the villains are monopolies and their political henchmen. Realising the excessive reliance on protectionism, Andersson (like Gibson) constructed a new model in which the assumption of non-competing groups was abandoned, and along with it (again like Gibson) Emmanuel's assumption of externally determined wages in the centre was also abandoned. As noted by Andersson himself, his model is rather a modification of Lewis than of Emmanuel.

Contrary to Emmanuel's theory, which is the same whatever the unit of measurement, there seems to be no evident link between Andersson's Marxist and his ecological formulations, apart from a penchant for classification and an insistence that unequal exchange must be unambiguously defined, whether in Marxian (or Morishiman) 'labour values' or in 'ecological footprints'. Although his role in the former debate is the more important, at a time when his concern with the ecological approach to politics was rather its similarities with the Asiatic mode of production (Andersson 1974), here I shall focus on one of his contributions to ecological unequal exchange, an article co-authored with Matthias Lindroth (Andersson & Lindroth 2001).

The authors began by observing that "even though rich countries consume more resources, the most acute environmental problems seem to be concentrated in the poor countries." According to the so called 'environmental Kuznets curve' this was part of a general trend, according to which environmental damage is seen to increase over time as a country industrialises, but then level off and decline again as the importance of the service sector increases and 'de-industrialisation' sets in, or as technological improvements decrease the dependence on nature. In line with much of the above criticism, Andersson & Lindroth (2001: 113) suggested that "there may be a gloomier explanation", consisting in rich countries in some way 'importing' sustainability and so "preserve their local ecological capital even though they consume more biomass and sink-capacity than what is produced within their own nation." Thus, even if trade may be balanced in monetary terms, it could be "unequal in terms of the exchange of biomass and sink-capacity".

As in Andersson's economic writings of the 1970s (1968, 1972a-d, 1976), the authors set out to find a unit of measurement in which to measure whether an exchange was equal or not, and for this purpose adopted ecological footprints. They (*op. cit.*: 116) informed that "[t]he

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'critically', as a system in which all wages would be equalised and at the same time the rate of profit would be zero, all 'profits' thus falling to the working class, but which would seem to exclude the possibility of accumulation.

ecological footprint is a measure of how much a certain population consumes, not a measure of how much the ecological capacity of a certain territory is exploited.” They agreed with Costanza (quoted *ibid.*: 114) that an EF deficit at national and regional scales is simply “a net input from outside the region converted to equivalent land area units.”

In fact, it appears that Wackernagel & Rees used *global average* yields, both when estimating the area needed for consumption of agricultural products and when estimating the area of bio-capacity available. The assumption on consumption may seem adequate when seeing the world as through a well-supplied metropolitan shopping window – and quite so, the footprint concept has been launched for the metropolitan market. However, if EF-consumption is taken locally from high-yielding agriculture such as that in Bangladesh, China, Egypt, or the like, but is calculated as originating from agriculture with global average yields, then it is easy to believe it “a shocking fact [...] that although ecological footprints for some important demographically important countries – Bangladesh, China, Egypt, Ethiopia, India, Nigeria and Pakistan – are low, they still exceed the nationally available capacity” (*ibid.*: 115).

Now, one cannot deny the possibility that some of these countries are still shockingly close to, or even exceeding, the ecologically available bioproductivity, but unfortunately this is not revealed by the data presented by Wackernagel & Rees. Presumably, it could be more easily confirmed by looking directly at trade statistics. More seriously, the approach may present areas where local yields are lower than average as unproblematic. In general, the global average approach tends to exaggerate external dependence of high-yielding areas and those consuming their goods (which in general would implicate developed countries although this is compensated for by the footprint in greater fossil fuel inputs). Here, one could have a discussion on Marxist lines of national vs. international ‘value’, and rehearse all the arguments and conflicting ideas on non-equivalence appearing there. However, since the reader has been spared in the one instance he had better be so also in the other.

In any case, this objection is immaterial to the main contribution of Andersson & Lindroth’s article, which consists in an enumeration of (a) ways in which countries may preserve national natural capital through trade, (b) types of ecologically unequal exchange, and (c) ways in which trade may affect the use of bio-productive areas and the way this use is perceived.

(a) The ‘net-use’ of foreign biocapacity, the authors explained, could take the form either of a specialisation effect or a dispersal effect. A country may specialise in goods that require little by way of biocapacity in inputs, exporting this in exchange for biomass, or it may consume more goods whose environmental effects, or use of biocapacity, were spread globally – just as the decrease in profits is internationally spread out in Emmanuel’s model in case of a wage increase. Using these concepts countries could be categorised into six groups, depending on ecological surplus or deficit and on the relative size of net exports or imports.

An ecological surplus could coincide with (1) net import of biomass and sink-capacity, resulting in increased biocapacity both as a result of external factors and moderate domestic consumption; (2) a relatively smaller net export of biomass and sink-capacity, resulting in an increased ecological capacity; or (3) a relatively larger net export of biomass and sink-capacity, resulting in a decreased ecological capacity, despite sustainable domestic consumption.

Similarly, an ecological deficit could coincide with (4) a relatively larger net import of biomass and sink-capacity, resulting in increasing ecological capacity in spite of local overconsumption; (5) a relatively smaller net import of biomass and sink-capacity, resulting in a decreased ecological capacity, or finally (6) net export of biomass and sink-capacity, so that ecological overuse locally was reinforced by external factors. Degradation of biocapacity could be hazardous if a country had specialised in a good depending on it, or if the country became dependent on the rest of the world for its consumption, which could also foster

conflicts over access to resources and thereby accelerate degradation to the potential loss of everyone (*ibid.*: 115f.). (The latter is a well-known scenario in Hardin 1968.)

(b) After the above classification, the authors (*op. cit.*: 118f.) attempted a typology of ecologically unequal exchange. (1) *Simple ecologically unequal exchange* was influenced by changes in the terms of trade and expresses simply the net flow of biocapacity ‘embodied’ in imports and exports. This is analogous to Andersson’s previous understanding, where goods ‘embodied’ a certain amount of labour values which could be measured as equal or unequal, and as with this former conception the authors concluded that such unequal exchange was the general rule. Since it said nothing about sustainability neither could anything be said *a priori* about its ultimate desirability, and as in Ricardo’s comparative costs it was consistent with mutually beneficial effects on biocapacity. (2) *Unilaterally unsustainable exchange* is next cousin to Andersson’s previous ‘disjunctive exchange’, and meant that one of two countries was both net-exporter of and had decreasing domestic biocapacity, whatever the monetary or economic effects may be. If not rectified, such trade would in the long run deplete ecological capacity to the extent that the country could no longer sustain its net-exports. (3) *Mutually unsustainable trade* meant that both countries have ecological deficits, and may be the result of excessive competition, perverse signals on the market, or simply overconsumption.

(c) The *allocative effects of trade* might improve efficiency, thereby increasing world average yields, but since bio-productivity was not the only factor determining international specialisation, there might be ‘perverse’ allocation where world average yields decrease. The *income effects* of trade could be such that local, and therefore global, consumption of biocapacity increased, or they could make profitable certain exports of biocapacity which would not otherwise be used. Rich countries might suffer from an *illusion effect*, because they could buy biocapacity elsewhere and convince themselves that their life-styles were actually sustainable (*e.g.*, the environmental Kuznets curve). This could ultimately prove fatal if it led to the conclusion that richness was a condition for ecological responsibility.

The most illuminating of these effects was the *terms of trade distortion effect*, which consisted in the capitalists and rich country workers being strong enough to protect their interests, turning the poor countries into a kind of buffer for the whole system: “Falling terms-of-trade for the poor countries can be seen as a distortion of the global relative prices from an ecological point of view. Despite a deterioration of the global natural capital, this need not manifest itself in rising prices for biocapacity intensive products. Instead, it may show up as worsening standards of living in the periphery, and as falling prices due to the growing reserve army of labour” (*ibid.*: 120). In fact, the observation that falling terms of trade for the poor countries may systematically distort possibly corrective signals from increasing costs of production is not dependent on any definite explanatory theory. Notably the intergenerational implications tended to become wholly brought out of touch with ecological reality: “The poorer the producers of primary commodities, the more easily can they be forced to give precedence to short-run considerations.” While the world ought to economise on the existing biocapacity, world prices gave distorted signals because of asymmetric power relations, increasing the risks of ecological overshoot (*ibid.*: 120f.).

Andersson was unusual, if not unique, among Emmanuel’s early Marxist commentators, in actually at one point agreeing that there was a clash of interests between the working classes in high- and low-wage countries, but it appears that this stance was soon abandoned. In his doctoral thesis, the controversial question of the ‘labour aristocracy’ was faced directly. He quoted Hobsbawm’s (1970: 51) definition that an aristocracy arises “when the economic circumstances of capitalism make it possible to grant significant concessions to their proletariat, within which certain strata manage, by means of their special scarcity, skill, strategic position, organizational strength, etc., to establish notably better conditions for themselves than the rest.” Andersson (1976: 154) commented: “If we look at capitalism as a

global system, [then] the mass of the workers in the developed countries undoubtedly form[s] a ‘certain stratum’ which has managed to ‘establish notably better conditions for themselves than the rest’, and they could thereby be considered an ‘aristocracy of labour’ in relation to the proletariat of the ‘Third World.’” Case closed? No, said Andersson, because “even though the workers of the industrialized countries are considerably better off than in the underdeveloped countries, this need not mean that they are living at the expense of the ‘Third World’ proletariat.” He reverted instead to Bettelheim’s old ‘paradox’, concluding that they “may even be subjected to a greater degree of exploitation.” Thereby having paid homage to the idea that ‘exploitation’ is a relation of production rather than of appropriation, Andersson (*loc. cit.*) could thus shift the meaning of the aristocracy concept: “the crucial question is not whether the proletariat of the imperialist countries have succeeded in considerably improving their conditions in relation to the proletariat of the ‘Third World’ [...] but whether this has happened *at the expense* of the latter.” Consistently neglecting problems relating to international labour immobility, this of course amounts to the same thing as Bettelheim’s point that if productivity has increased as much as wages, then there is no exploitation, and if it has increased more, then ‘exploitation’ goes the other way around, the rich being exploited by the poor. So long as there is no mention of worker-enforced restrictions on labour mobility, this will offer great reassurance.

Distinguishing four possible views on ‘non-equivalent exchange and the labour aristocracy’ – from denial of non-equivalent exchange, via denial of its importance in bettering the conditions of well-off workers, to an acceptance of this importance as a ‘bribe’, and, finally, in laying causal responsibility for non-equivalent exchange on these workers – he then proceeded to analyse the problem from the perspective of his own three-commodity model of unequal exchange (*ibid.*: 155-60). This confrontation, which also concluded his book, established (*ibid.*: 164) that there probably *had* been a non-equivalent exchange detrimental to the development of most underdeveloped countries, but that these gains had “not been sufficient to support a labour aristocracy consisting of the majority of the workers of the developed countries.” Finally, while there *may* exist an objective basis for intercontinental worker antagonism, *ceteris paribus* “any wage increase will tend to reduce the non-equivalent exchange between nations, provided that the direction of non-equivalence due to differences in the organic compositions of capital has not been changed through some other factor, such as monopoly pricing or protectionism.” His condition that an increase in the wages of the one must decrease those of the other is of course not consistent with Emmanuel’s formulation, and neither is the assumed definition of equivalent exchange as the identity of values and prices of production, but even so, the conclusion appears to be mistaken. As observed by Evans (1984: 212), Andersson “argues incorrectly that centre–periphery worker antagonism is eliminated in his formulation”, when in fact he merely introduces a qualification, leaving the outcome an undetermined, “open empirical matter” (cf. Mainwaring 1980, Howard & King 1992). Indeed, it would have been surprising if the result of Andersson’s introduction of a common branch would have been other than Gibson’s (1977, 1980), making that one of his principal points.

Now, returning to the new ecological formulation and finally turning to its “ethical and political dilemmas”, one would perhaps have suspected a revision of these theses on the ‘labour aristocracy’ in light of the new experience and approach from the perspective of *appropriation* of the limited global output. In this hope the reader is disappointed. Like Emmanuel in the 1960s, however, Andersson & Lindroth (*ibid.*: 121) nevertheless agreed that their exercise “points to several painful dilemmas”. Trade could function in an uncannily subtle manner to preserve ecological capacity among the overconsumers, lead to ecological deterioration not only in the poorer countries but also generally. Moreover, they (2001: 121) continued on the assumptions of Emmanuel’s model, free trade and free movement of capital implied that

any agent which is rich enough may decide – directly or indirectly – how global biocapacity is used. In a sense, we have a zero-sum game in which some have to lose out if those who are richer want to use the limited biological resource for a competing purpose. The losers can be the less rich and the poor, other living beings, or, if the global natural capital is reduced, future generations.

This is partly a repetition of Emmanuel's conclusion; for surely the 'rich' who decide how to use the world's output through their purchasing power cannot honestly be restricted to the upper strata, but must include the majority of the populations of the rich countries – or else the use of biocapacity could not have been of any very great concern. However, it is also an improvement on it, because of the inclusion of other living beings and future generations, which implies that the solution cannot ultimately be the fullest possible 'development of the productive forces', with which Marxists of every shade – including Emmanuel as we have seen (Chapter 8) – over the last century and a half have been so greatly concerned as a condition for the revolution.

Andersson seems by then to have been purged of every conception of 'revolution', an attitude perhaps reinforced by parliamentary political activities, something which can turn the fiercest *fundi* into the gentlest *realo*. Now, classes were absent and it was he (and Lindroth) who worried exclusively in terms of nations and their possible conflicts. The ghost of protectionism, haunting Andersson from the start, reappeared, but now a new worry had been added, namely that analyses such as theirs may be turned against their ideological ambition to reduce inequalities. People may be converted to chauvinism:

If the situation is recognised to be a zero-sum game, people may once again start to think in terms of *Lebensraum*. It may become more difficult to reach consensual and solidaristic global solutions as the rich feel that they can only sustain their way of life by using external biocapacities, and as the poor get a stronger feeling of being exploited. If the beliefs that ecological sustainability is best reached through economic growth is shattered, we enter into a world the ethical dilemmas of which will be much harder to face. (*Ibid.*: 122.)

This 'dilemma' was extended by Andersson 2006 into a 'trilemma' between environmental sustainability, global equality, and high levels of consumption. Actually, it dissolves into a 'quadrilemma' when the latter is further subdivided into high per capita consumption and population – our old neo-Malthusian friend, with which Andersson as an old Marxist does not wish to become involved.

Now, we should not read the authors so that *thinking* in terms of *Lebensraum* should be more disturbing than its *praxis* in the form of overconsumption of biocapacity. This would make one wonder to whose ears such warnings were intended: the 'overconsumers' who feel the need to veil the system in words and theories, or the 'underconsumers' who may feel the need to overthrow it. National chauvinism can be equally dangerous among poorer countries as among richer – it is for instance in no way given that it will find expression at the expense of the rich and well-armed rather than poorer neighbours. One may perhaps hope that decreasing wealth and employment of youths in well-off countries will not primarily find expression in chauvinism but in some more sympathetic way. It is certainly true, at least in the opinion of the present author, that that mindset is obsolete, which is intent on grabbing the largest possible spoonful out of the necessarily limited fleshpots of Egypt, whether it is drenched in conservative, liberal, Marxist, or even ecologist cant. The ease with which the self-appointed intellectual spokesmen of the well-to-do workers of the world have convinced themselves that these workers were also among the 'underconsumers', or 'exploited', is one of the most disconcerting things in this affair, and does not bode well for those species and future generations who happen to have no proper voices and not enough spokesmen.

Most of the so called ecological theories of unequal exchange considered here have been a branch evolving separately from, and excepting Andersson certainly without great insight into, the economic and historical discussions traditionally associated with unequal exchange, whether those originating with Emmanuel, Marxist discussions of 'non-equivalent exchange', mercantilist and conventionally protectionist ideas in economics, or even the terms of trade debate originating with Singer and Prebisch. Indeed, as we have seen, Emmanuel himself put his point on worker antagonism in ecological terms already in the early 1970s. However, in spite of this, the integration of economic unequal exchange theories in the strict sense, with some complementary ecological dimension or theorising can fairly be said to be non-existent. This is not so when it comes to centre-periphery perspectives in general, as will be more evidenced in Chapter 11 below.

The most concrete historical phenomenon touched upon by the theorists in the present chapter concerns societies passing from a predominantly industrial to a service economy. Here, something by way of explanation has in fact been offered, in countering the claims that they will thereby undergo dematerialisation. A stronger version of the same argument could state that the apparent local dematerialisation is the *result* of environmental struggle, or that these phenomena are complementary. The problem itself stands in interesting contrast to the bias inherent to many to those traditionally dealing with centre-periphery relations, notably the dependency tradition to whose ecological branch we shall now turn, in that it is no longer possible to ascribe the inequality of trade to the exchange of raw materials for industrial goods. It therefore also points much more directly and strongly to exploitation as a matter of appropriation rather than production, which on the other hand goes counter to the bias of most Marxists, although not Emmanuel, who was concerned with understanding theoretically and (to a lesser degree) historically the workings and contradictions of the consumer society (Chapters 7-8). The problem of how to construct a theory (of unequal exchange) which incorporates and is consistent with the phenomena of both of these worlds, will reappear again at the end of our next and final chapter.

# Chapter 11. Ecological Dependency in Stephen Bunker and Joan Martinez-Alier

In the critique of the environmental Kuznets curve in Chapter 10, we came across a few writers to whom we may refer as belonging to an ‘ecological dependency’ tradition. By contrast to the ‘Protestant’ focus, this concerns itself not with ‘population’, and preferably only with those parts of ‘affluence’ and ‘technology’ factors of the  $I = PAT$  equation that can be put on the account of centre countries. Doing so, it focuses not so much on the affluence and technology constituents of environmental impact themselves, as on what proponents consider to be their necessary precondition in (neo-)imperialist exploitation of Third World resources (rendered as a related transfer of usable energy) and the ‘fair share’ of global pollution (including its direct and indirect, or ‘trade-embodied’, relocation). We shall continue with some such exponents who, although not Latin Americans themselves, have taken a particular interest in, and also to share some of the concerns, or perhaps biases, common to those who engage in the study of that continent from a dependency perspective.

Most of the basic ideas in regarding the shortcomings and possibilities of Marxism from an ecological perspective could be found in Sætra above. His perspective included the connection between ‘techno-capitalist’ overconsumption in the industrial countries and the imperialism of past, present, and future, where that of the present in turn included both an economic and ecological, or raw-materials aspect. Nevertheless, and although Odum had elaborated the basic logic of the argument in the 1970s, the *explicit* connection between the unequal exchange theories of the 1960s and 1970s, on the one hand, and energy or environmental impact, on the other, was possibly, as Martinez-Alier (1987: 238) holds, first made by the Chicago-born sociologist Stephen Bunker (1944–2005) in his book *Underdeveloping the Amazon: Extraction, Unequal Exchange, and the Failure of the Modern State* in 1985, and in a slightly previous article (1984; cf. 1980: 785).

## Stephen Bunker and Amazonian unequal exchange

Bunker (1985: 238) aimed at demonstrating that the processes which had led to, and still maintained, the underdevelopment of the Amazon could only be understood by taking account of “the succession of modes of extraction as they emerged from the interaction of regional and global constraints, pressures, and opportunities and as they affected both natural and human environments.” None of the prevailing models of development could do this, nor could conventional solutions be expected to be successful. “Massive state intervention in the Amazon has accelerated the environmental and social disruptions which extractive export economies have visited on the region for over 350 years” (*loc. cit.*). State bureaucracy which was directed to carry out capital accumulation and social welfare programs, had instead deranged development policies and undermined its own legitimacy, autonomy, and authority. Ill-founded and impotent institutions imposed from above, had increased costs, corruption, and wasteful self-management and -expansion. The responses by local dominant classes to the opportunities opened on the world market had ultimately impoverished the resource base on which their own wealth and profits depended. State projects reinforced the penetration of these classes and reduced administrative efficiency, intensifying ecological and demographic disruptions. The emergence of effective local and civil organisation was thereby prevented, reverberating in a further weakening of state administration.

The second half of the book was devoted to case studies exemplifying how “the complex social forms imposed on an environment simplified by sustained energy loss caused unintended and systematically irrational results”, in which bureaucratic horrors became only all too evident. His ambition was more general, however, with his examples meant to illustrate and promote “an ecological model which explains uneven development, unequal exchange, and regional subordination as the consequences of (1) the physically necessary relations between extraction and production, (2) the resulting imbalance of energy flows between regional ecosystems, and (3) the differential incorporation of energy in different regional social and economic formations” (*ibid.*: 239).

Inspired by Richard Adams, Bunker wanted to expand the notion of uneven development to include differential rates and amounts of energy embodied in learned human experience, social organisation and infrastructure. Contrary to the Marxist view, exploitation was not merely a question of channelling surplus value from one region or class to another, nor of diverging rates of exploitation, and unequal exchange could not be interpreted only in terms of more labour for less. “The embodiment of energy in economic and social organization encompasses far more of the essential differences and relations between core and periphery than measures limited to commodity production and exchange can” (*loc. cit.*). National centres’ exploitation of their own peripheries built upon “energy-intensive social complexity”, which complexity at the same time tended to limit its ability to administer the periphery: “When the state extends its own apparatus and policies into a socially simplified, energy-poor region devoid of organizations and institutions which can compete against the state’s agencies and for the resources they control, the state enhances both its own, and the peripheral societies’ permeability to dominant classes at the national center” (*ibid.*: 242). Contrary to the predictions of modernisation theorists, the point here was that “the extension of energy-expensive organizational complexity into simplified, energy-losing formations inevitably fails to promote development there.” An unbalanced energy-flow from periphery to centre resulted in a concentration and strengthening of the latter’s energy-consuming structures. Social complexity evolved with accelerated flow-through (*ibid.*: 243).

Bunker did not mean that energy flows or their measures explained these processes, class relations or regional inequalities, aspects which still to be included, nor did he claim that such measures were even possible to specify. He merely insisted that analyses take energy uses into account when considering the long-term potential for social reproduction and development. Such an approach to uneven development would give a more complete description of the relations between demographic, social, and ecological processes over time. It was perhaps a reflection of the penetration of the dependency tradition into American sociology when he then explained that *all* theories of development and underdevelopment have assumed variants of the labour theory of value, none of which had taken into account that ‘production systems’ required ‘extraction systems’ (*ibid.*: 243f.). This illustrates that while speaking also of ‘modernisation theory’ in general, what he primarily sought to renovate was the Marxist tradition, in either its ‘modes of production’ or its world-systems versions, and its excessive focus on labour as the source of wealth and value.

Any model assuming that ‘modes of production’ were indefinitely expandable, which considered value to be created only by human labour, or any theory of international exchange which measured commodity flows between regions only in terms of capital, prices, or labour incorporated was “fundamentally wrong”. Instead, he (*ibid.*: 246) emphasised that an “industrial mode of production can sustain itself only by drawing energy and matter from modes of extraction.” “The short-term acceleration of industrial production requires a relatively high valuation of human energy in the articulated industrial social formation and a corresponding undervaluation of natural resources and extractive labor” (*ibid.*: 246f). Perhaps uncommonly for a Marxist even in those days, he questioned the concept of ‘expanded

reproduction', which hid both the depletion of the natural resource base and, so he argued, the negative impact on the social formations of extractive economies, ultimately to the ruin of the whole system: "The progressive impoverishment of single extractive regions must finally impoverish the entire global system" (*ibid.*: 247) A necessary, if not sufficient, factor in the solution, he argued, was for local groups to achieve sufficient power within their environment to withstand outside predation.

Bunker (1985: 252) believed that "a particular country is less likely to suffer unequal international exchange to the degree that its inhabitants and direct producers achieve more favorable internal exchange rates". What he referred to here as 'exchange rates' seems to imply the internal class struggle, or the 'price' of primary producers and workers: "The negotiation of exchange rates is ultimately a matter of the relative power of the exchanging groups and their relative control over their own environments." In this sense, he agreed, "Emmanuel was right to seek the sources of underdevelopment in measures of inequality between classes." Emmanuel's mistake was "to tie this idea of inequality to wages, even in profoundly noncapitalist societies" (*loc. cit.*). Bunker instead wanted to "amplify his notion of wages to include all measures of unequal exchange", saying that "countries where labor values and natural values are seriously undercompensated will tend indeed to be underdeveloped" (*loc. cit.*). He was unaware that Emmanuel had abandoned the labour theory of value and in the process also put his theory in physical terms. While Bunker speaks of the value of 'labour', Emmanuel's theory concerned exclusively the value of labour *power* (*i.e.*, wages), and the point of his theory remained the same whether then transformed into 'embodied labour' or 'embodied nature'.

By the time of writing his book, Bunker had experience from Uganda, Guatemala, Peru, as well as Brazil, and he later studied the Japanese search for raw materials, particularly aluminium. Apart from the global flows and transportation of raw materials, he had an interest in problems of the state which surfaces in the titles of his books. Like much of Latin American studies, his work can be fairly placed in the dependency tradition, taking an interest in the long-term historical dimension which is not evident among every other theorists of ecological unequal exchange. As such, it is in line with the historical sociology of Wallerstein, Frank, and many of their Marxist critics, with whom he shares both some of the strengths and some of the weaknesses. He accordingly entered what he considered to be the "fruitless debate about whether the causes of underdevelopment occur in a global system of exchange dominated by industrial nations or within specific regional systems of production", where Marxists' and modernisationists' stand against dependency and world-system models of unequal exchange (*ibid.*: 20).<sup>101</sup> From the way of formulating the problem – 'the internalist-externalist debate', rather than, *e.g.*, 'the-part-and-the-whole debate' – and from the subject of his book, Amazonia, one might have suspected that his starting and ending point was more 'internalist' than 'externalist'. However, the way of putting the solution, 'extractive' vs. 'productive' systems, suggested a traditional belief in 'dependent' primary producers – or, 'extractors' of raw materials – exporting to independent manufacturing and industrial economies. "My own strategy", he explained, "is to elaborate a critical synthesis of the externally focused theories of imperialism, dependency, and world system with the internally focused theories of modernization and modes of production" (*ibid.*: 38).

He accordingly suggested that "a global system of exchange, made up of all importing and exporting regions, determines the terms of trade which differentially affect all of these regions, but distinct regional social structures and political arrangements determine how the commodities on which the global system depends are actually extracted or produced." His

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<sup>101</sup> Although this division is conventional, the unity within and disunity without the proposed groups is a bit constructed. All of those considered by Bunker were Marxists, and they all believed in both internal and external factors influencing 'regional' economies.

interest was rather with the political arrangements than with the terms of trade, which were thus said to be ‘determined’ by ‘a global system of exchange’, meaning “changing demand in the world market for specific commodities” (*ibid.*: 21). This designation of a ‘model of unequal exchange’ was a bit curious, since it had little to do with any of the theories of unequal exchange upon which he commented (although he may have been thinking of something that Frank or Wallerstein had written), and corresponded better to the kind of neoclassical theory which Emmanuel had set out to refute or replace. *Prices* appeared only when reviewing the views of others (*ibid.*: 34, 43); the *terms of trade* were rarely mentioned at all. This was also because “the differential capacity to direct human and nonhuman energy and to conserve part of energy flow-through in subsequently useful forms distinguishes the core from peripheral social formations more profoundly than the terms of trade for their respective commodities or their different processes of accumulation” (*ibid.*: 239).

Bunker’s (1985: 21) own proposed solution was that “different regional levels of development result from the interaction between” these changes in international demand “and the local reorganization of modes of production and extraction in response.” This is reminiscent of the late-classical economists such as Cairnes, Nicholson, and Taussig, who unsuccessfully tried to resolve the problem of price determination. Most consistent was Taussig (1906; cf. Emmanuel 1972a: 67f.) who let the general level of prices be determined by the price of exported goods, and in turn the whole range of relative prices of products by the domestic workings of the law of value. As noted, Bunker said nothing specific of prices, nor, ‘of course’, of relative national and international mobility or immobility of factors – in this he is accompanied by most other ‘theorists’ of ecologically unequal exchange – so we are rather left in the dark as to the mechanisms involved in said inequality. It is probably more likely that he believed factors, including capital, to be immobile, if only because this is the inherited Marxist view, and any diversion would have prompted reflection.

Strictly separating ‘regional’ and international levels of exchange, because of their different *modus operandi*, suggests a position where the regional ‘mode of production’ followed, if not the law of value with domestic mobility of factors, then at least some corresponding thing, whereas the ‘systemic’ international market was “the result of the combined production and demand of all of its component modes of production” (*ibid.*: 44), *i.e.*, suggesting mobility of (some) goods, but certainly not of factors, and determination of prices according to what Mill called the ‘prior law’ of supply and demand. Bunker was at any rate less consistent than Taussig. With time the wage-levels and standards of living were nevertheless determined independently for each region by the ultimate ‘productivity’ of the region. “The cumulative ecological, demographic, and infrastructural effects”, or perhaps repercussions, “of the sequence of the mode of production and extraction in any region establish limits and potentials for the productive capacities and living standards of regional populations” (*ibid.*: 21). Bunker believed the solution to lie in the circular nature of this alteration between global exchange and internal production, but the question remains whether it is not rather reason which is circular – between the one and the other there may be all the difference between long- and short-circuited logic.

Bunker made Wallerstein and Frank into principal exponents of unequal exchange theory, not differentiating it from arguments on international specialisation. His ‘synthesis’ did not really touch upon any of the theoretical arguments on unequal exchange as distinct from dependency, and was basically one between the rather vague views on the subject of said scholars, and those of their adversaries. Thus, the externalists saw “politically enforced unequal exchange as the root cause of an international division of labor which profoundly discriminates against the peripheral regions by siphoning off their capital and keeping their labor less productive” (*ibid.*: 42). Their critics “have inverted this formula by maintaining that the differential productivity in different modes of production is the root cause of unequal

exchange” (*loc. cit.*). As noted above, according to Bunker, both groups had obscured how regional production was ‘particular’ while international exchange was ‘systemic’. They also “perpetuated the error of using labor as the standard of value and as the basis of comparison for exchange of all goods, even when these goods are extracted with relatively little labor or when the social relations of production do not involve wages” (*loc. cit.*). Mandel, Emmanuel, and Amin had all declared the primary mechanism in unequal exchange to be wage differentials, said Bunker – even though his quotation from Mandel clearly states it to be productivity, a position basically shared by Amin (1970, 1974, 1976), though he wanted to supplement it with wages and contrary to Mandel (1968a [orig. 1962], 1972, 1975) believed in international equalisation of profits. Neither did Bunker comment on the dispute over the independent variable of the system – ‘circular’ as his preferences were, he would perhaps have agreed with Amin (1973, 1977) that it was ‘meaningless’.

Nevertheless, the defining element in all three authors, he (1985: 43) maintained, was “the resulting unequal exchange of ‘more labor’ for ‘less labor’”. This is more or less the only thing remaining of the alleged content of the early theories of unequal exchange. He also charged (*ibid.*: 44) that by talking of labour and wages they “implicitly affirm” the pervasive capitalist character of societies, even when insisting on the specificity of the, according to Bunker, “non-capitalist, less productive modes of production in the underdeveloped regions.” According to him (*loc. cit.*), the authors’ “focus on the labor incorporated in a product assumes, incorrectly, that this labor is always the determinant of value.” Lest this be interpreted as a ‘Sraffian’ insight into the shortcomings of the labour theory of value, let it be understood that Bunker’s critique is at the very opposite end. The problem for him was that a theory which only considered the *labour* ‘incorporated’ in the product, neglected the ‘incorporated’ “resource values, or values in nature, which occur on or in land”: “The fundamental values in lumber, in minerals, oil, fish, etc., are predominantly in the good itself, rather than in the labor incorporated in it” (*loc. cit.*). With Marx’s quotation of Petty at the back of his mind, Bunker actually believed this to be Marx’s position.

While there was nowhere any mention of prices in Bunker’s argument, there was very much said on ‘values’, mixing briskly labour values, “fundamental values”, “values which occur in nature”, “the value of portions of the energy which society consumes and dissipated”, “the cost, or loss of value, to future generations”, “[t]emporally and culturally bound attributions of value”, “the value of the ideas, beliefs, and information which underlie human social organization”, etc. (*e.g.*, *ibid.*: 35f.). His basic understanding of the concept was evidently in line with the interpretation of the Marxian labour theory of value referred to as ‘naturalistic’, where labour is somehow seen as ‘embodied’ in the product in a quasi-physical – metaphysical – sense.<sup>102</sup>

Believing this to be the meaning of the labour theory of value, he wanted to replace or complement it with *another* naturalistically conceived value, akin to that found in Odum, “the amounts of energy [...] ‘embodied’ or conserved in useful ways” (*ibid.*: 34). However, Odum, who by then had abandoned the concept of ‘embodied energy’ for the better-defined ‘emergy’, was careful to distinguish this naturalistic value from monetary value (prices), for which he seems to have hoped it would come to function as a substitute. In effect, what Odum said was that although already functioning in non-human nature, humans, to their loss – since it hindered obtaining the evolutionary imperative of ‘maximum empower’ – were unwilling to comply with nature’s regulations, and therefore put their own (future) interests at stake. Bunker referred to and discussed many other theorists on the ‘value’ of energy to society. It is

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<sup>102</sup> Cf. Preobrazhensky (1965: 149): “Ninety per cent of all the mistakes, misunderstandings and brain-torturings, which occur when our young people study Marx result from a naturalistic conception of the law of value. Having grasped in a formal way that the categories signify relations between people, many stubbornly revert to a conception of them as real categories”.

perhaps fair to say that to him an inequality depending merely on wages was more narrow than one including productivity, as in the designation by Bettelheim, but that since, again according to Bunker, both merely suggest an inequality in labour hours, they were both narrower than one in terms of energy, or *both* labour and energy, which pointed to an additional inequality of exchange in the mere passage from extraction to production.

Many Marxists admittedly share the above substantialist interpretation of labour value, and in this sense Bunker could be said to have made a valid point. Mandel (1968b), however, did not believe in labour being embodied in goods or of labour values as an aim to be achieved in communist society. Furthermore, ignoring that Emmanuel (1972a: 416f.; also 428f., n. 20) explicitly criticised it both as *erroneous* in itself and anyway *irrelevant* for a capitalist economy with several factors of production, Bunker (1985: 44) proceeded to criticise it as being too narrow: “The use of labor as a standard of value for unequal exchange thus ignores the exchange inequalities inherent in extractive economies, where value in nature is appropriated in one region and labor value incorporated in another.” His own point (*ibid.*: 45) had less to do with what he criticised, even were it correct regarding Marx or the Marxists: “Once we acknowledge [...] that not only the value in labor but also the values in nature can be appropriated [...] we must consider the effects of the exploitation of labor and the exploitation of entire ecosystems as separate but complementary phenomena which both affect the development of particular regions.”<sup>103</sup>

If we disregard the issue of the theory of value and unequal exchange, what Bunker wanted to do was simply to complement the concept of (international) exploitation with exploitation of resources, and he could therefore criticise Amin for locating the origins of unequal exchange to the rise of centre wages above subsistence. With his new definition he (*loc. cit.*) instead revealed: “The appropriation of values in nature, from the periphery, in fact initiated unequal exchange between regions, and between ecosystems, long before the rise of wages and the expansion of consumer demand in the core.” He saw several ways in which unequal exchange took place:

One, certainly results from the differential wages of labor. Another, however, is in the transfer of the natural value in the raw resources from the periphery to center. Another is in the location of the full realization of value and of its accelerated consumption-production linkages in the center, rather than in the peripheral sources of the material commodities. The outward flows of energy and the absence of consumption-production linkages combine with the instability of external demand and with the depletion of site-specific natural resources to prevent the storage of energy in useful physical and social forms in the periphery, and leave it increasingly vulnerable to domination by energy-intensifying social formations in the core. Finally, if the resources do not renew themselves naturally, the inequality of exchange is intensified by the loss of resources and by the disruption of associated natural energy flows in the periphery itself. (*Ibid.*: 45.)

He, thus, ended up with four different inequalities of exchange, which can perhaps be reformulated as follows: (1) a wage-differential, presumably higher in industrial centres, will entail an unequal exchange in terms of the hours of labour needed for each to produce a lot of goods of equal value; (2) raw materials have an intrinsic value, embodied energy, which is lost, or somehow unremunerated, when exported, but which would not have been lost had the

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<sup>103</sup> Meaningful discussion is complicated when perspectives on the theory of value are as dissimilar as that. Who are the ‘we’ implied? Are ‘we’ the independent producers trying to make a profit under capitalism, in competition with others like us, and are we then to follow Bunker’s suggestion, having ‘acknowledged’ the correct value, and pay more to the vendors of raw materials than we do at present? Would this not increase the profits above average of those raw materials producers, in addition to diminish one’s own, so as to stimulate others to enter the business, increase output until prices have sunk so low as to again ensure the normal rate of profit? Presumably this is not what Bunker means, but then it is no use criticising unequal exchange theorists, for whom this is what the theory of value says about the world.

raw material been processed domestically; (3) although “[a]dditional value is created when extracted materials are transformed by labor”, this value, for some reason which apparently has nothing to do with wage-levels, never comes to benefit the original extractor of the resource, but is sold on site, so that both the intrinsic value of the resource and the intrinsic value added by labour is retained in the core in a self-organising, self-perpetuating upward spiral; (4) the outflow of embodied energy, to which is added an inherent instability of demand for raw materials, by contrast, leaves the periphery and its diminishing natural values, to the extent these resources are not renewable, increasingly helpless and exposed to further extension of all of the above processes.

The two former concern transfers, while the two latter concern the respective self-reinforcing processes in industrial centre and primary producing periphery, or in his preferred terminology, in the ‘productive’ and ‘extractive’ systems. Bunker’s most cherished idea concerned this distinction between ‘modes of extraction’ and ‘modes of production’. Thus, he spelled out his basic conviction that ‘extractive’ economies – an avatar of raw-materials or primary producing societies, or even more precisely of Latin American export economies – were destined to become ecologically and economically underdeveloped, and that ‘productive’ (*i.e.*, industrial or manufacturing) systems were destined to prosper:

A labor theory of value excludes from consideration the usefulness to continued social reproduction of energy transformations in the natural environment. Nor can it take into account the value of the ideas, beliefs, and information which underlie human social organization. These and all other human experiences are formed out of previous dissipation of energy. They are all essential to humanly effective uses of natural energy and may make these uses more efficient in terms of their human energy costs. I believe that the unequal relations between articulated and disarticulated, and between extractive and productive, systems can ultimately be explained by the informational and organizational forms which energy-intensive economies foster in articulated productive systems and which simply cannot evolve in energy-losing extractive systems. The first generates more and more social power and the technology to extend this power over wider geographical areas. The second progressively loses social power. (*Ibid*: 35.)

Crucial to Bunker’s understanding would seem to be that raw-materials extraction and exportation really *was* related to underdevelopment, and conversely industrial production and export to development. Moreover, it would seem to require also that the one was linked with the other by a transfer of incorporated labour and/or energy. As will be argued later on, any theory based on such a presupposition faces grave empirical difficulties, even without a mechanism explaining the transfers and self-perpetuations in terms of, *e.g.*, relative prices. It also set the stage for an ‘ecological’ renovation of traditional CEPAL and dependency ideas, of which it can, in part, itself be seen as an outgrowth.

An important aspect of Bunker’s perspective, which we have had to neglect, was the focus on the state apparatus. Another aspect was the related social power relations which were included in his approach to a much greater degree than either Odum or most of the theorists considered in Chapter 10. A promising methodological aspect – if not for the confirmation of ecological unequal exchange, then at least for putting things in perspective – was the long-term view of several centuries, which contrasts with the focus in most such studies on merely the most recent decades. Finally, because of the fear of sentimentalism which reigns in the sciences, including the ecologically motivated, I would like to emphasise the, to me, sympathetic ecologist reminder, inspired by Rappaport’s (1971) description of “a mature ecosystem as one in which all species enhance the survival and reproduction potential of the rest even while maintaining themselves”, and the success tropical forest swidden-cultures had achieved in such symbiotic reproduction:

The history of capitalist development, the history of noncapitalist countries' responses to world markets, and the history of complex precapitalist civilizations do not provide much hope that societies not bounded by regionally limited ecosystems can achieve this maturity. Humans in complex societies have thus far used their prescience to increase their control over natural energy flows and over the social organization of human energies in ways which undermine the ecosystems that sustain them. Human groups could, however, use their prescience to enrich, rather than impoverish, the ecosystems in which they participate, both by striving to assure and strengthen natural regeneration and energy transformation processes and by enhancing the effectiveness of their own social organization. Systemic undervaluation of either nature or of human labor, and the unequal exchange which enforces such undervaluation, can only distort and impede human enhancement of the natural environment and of the socially created infrastructure and organization that are finally their contribution to the ecosystem. Rappaport's mature ecosystem, then, requires not only an egalitarian human society, but also an egalitarian human society which sees itself as part of, rather than master of, the natural environment. The population of extractive regions may learn from their own experience long before it becomes apparent to the populations of productive regions, but their capacity to reinforce this understanding and to resist the continued degradation of their own environments would require forms of social organization, coordination, and power that the internal dynamics and the external relations of extractive economies currently make impossible. (Bunker 1985: 254f.)

Ultimately, then, Bunker's principal project was to remind of the ever-present, and ever-extracted, resource basis of production and reproduction.

However, this basic ecologist perspective was linked with an equally strong will, present in more or less every attempt at an ecological theory of unequal exchange and reminiscent of dependency theory, Prebisch and Nurkse, protectionists and mercantilists of all ages, to link extractive economies – resource production and export – to underdevelopment and a general disadvantage *also in the strictly economic sense*. Thus, the basic mission in this respect remained “unmasking the illusion that extraction leads to economic development” (Bunker & Ciccantell 2005: 236). The Amazonian example served as a starting point for a more generalised model, in subsequent work, of the dynamics of how “the contradiction between the cost of distance and economics of scale” had “driven the progressive globalization of capitalism” (Bunker 2003: 236). If this was an improvement on the original model, in the meantime, however, references to ‘unequal exchange’ had become all but absent, *e.g.*, in one of his last works (Bunker & Ciccantell 2005: 26, 70), containing merely two references in passing, relating to an effort to sell raw materials as cheaply as possible or “incorporated electricity [...] at prices less than the cost of production”.

By then, however, the idea of ecological unequal exchange had already taken hold in a more general literature. The achievement and importance of Bunker's (1985) book, was in catalysing this idea to the popular dependency perspective. It was widely reviewed and commented, often critically, in sociological, geographic, historical and ethnological journals. First of all, however, comments had been incited by Bunker's (1984) previous summary article on “Modes of Extraction, Unequal Exchange, and the Progressive Underdevelopment of an Extreme Periphery: The Brazilian Amazon, 1600-1980”.

Robert W. Volk (1986: 1431) admitted the sore need of integrating politico-economic theories of development with ecological principles in order to assess the complete impact of economic activities on the periphery, but claimed that Bunker failed to the extent he relied on the notion of ‘values in nature’, and rejected his assumption that extraction represented a separate mode of production. He was uncertain “whether Bunker seriously intended value in nature to be an economic term or just a descriptive concept”, but found its utility suspect in either case. Pragmatically, it did not seem measurable, in terms of descriptive value, whatever the form of the drain of resources it was already well known, and the idea that ‘value’ existed in the material itself separately from ‘use value’ as used by Marx, was unsubstantiated (*ibid.*:

1432). “In spirit, the concept is well taken, and it may be useful in developing the theoretical notion of ‘ecological colonialism,’ but its application seems doubtful.” Furthermore, Volk found that “Bunker’s major thesis exaggerates the differences between the laws of motion in modes of extraction and in modes of production” (*loc. cit.*), that his usage of the latter expression was a breach of the conventional usage, “which concentrates on how things are produced rather than what is produced”, and suggested instead that what was described was “the result of an overspecialised export economy” (*ibid.*: 1433). Bunker’s case rested on the well-known idea of a ‘law of diminishing returns’ in primary production, which, if correct, presented him with the paradox that prices for primary products had declined during most of the century. Many of those factors attributed to extractive economies were applicable to export economies in general, such as the absence of ‘lateral linkages’, or ‘sectoral disarticulation’, dependence on foreign capital and technology, state participation, infrastructure designed for exports, and importation of labour after the indigenous populations have been depleted. Analytically separating the production process into extraction and production, ignoring their interdependence, Bunker offered a contracted definition of the former, which excluded agricultural activities, including sheep raising and cattle ranching, proceeding to narrow his analysis down to the ‘extreme periphery’, defined as an area where the exchange of extracted commodities is the principal connection to the world capitalist system, which excluded hunting and gathering, and limited commodity production to *exports* (*ibid.*: 1434ff.).

Bunker (1986: 1436) replied by trying to correct what he saw as Volk’s distortions and by restating his argument “that theories that attribute all value to labor and capital cannot account for the social and environmental costs of extractive economies and, therefore, cannot adequately account for the progressive underdevelopment of regions where such economies predominate”. This point was presumably implied by his (2003: 238) later referring to Volk’s alleged claim “that Marx’s labour theory of value provided all the mechanisms required to explain why ‘enclave economies’ led to unequal development”. He had instead demonstrated that rising unit costs accompanying increased extractive scale explained why it was labour intensive, his point being that the depletion of originally abundant and accessible natural resources meant that increased amounts of labour and capital were required to extract an equal value or mass of the same commodity (1986: 1437).

Unfortunately, this reply completely ignored the problem of price determination and the changes in terms of trade. This impression is strengthened by his reply that natural resources are *not* furnished by nature gratis, but extracted at the cost of depleting resources or of disrupting their regeneration. Again this confused the question of value as a price category and as something physically embodied in commodities. In the former case the point that resources were ‘gratis’ was the same thing as stating that nature was not remunerated (with which one would have suspected Bunker to agree) and so did not add to the price of an article. If the depletion, etc., had shown up in relatively higher costs of production than non-resources it would have shown in prices, or else in lower remuneration of the workers, capitalists and/or land owners.

Bunker claimed to side with theorists studying “unequal exchange between unevenly developed regions”, who “attempt to explain how commerce between capitalist and non-capitalist social formations leads to the underdevelopment of the latter”, particularly when their “exports are primarily extractive” (*ibid.*: 1439). Apparently, in his (*ibid.*: 1439f.) view, capitalism “is the mode of production based on the production and circulation of exchange values”, and did not apply to extraction of natural resources, because rent only “assigns prices to natural resources, but the resources themselves have no value”. His idea that rent was any different from wages in this instance is curious (cf. the difference between ‘labour’ and ‘labour power’), but the idea that capitalism incorporated only labour and capital but not land

is bizarre. He (*ibid.*: 1440) reminded that his “extractive export economies constitute an extreme case of what de Janvry has called dependent disarticulation” (*idem* 1985: 32), but that “by measuring trade inequalities *only* in monetary or labor quantities, de Janvry and most other analysts miss the crucial and accumulating environmental costs that extractive export economies impose on regional environments”, and that “a consideration of energy transformation processes that underlie a specific type of export economy, the extractive type, must be *added* to the labor-based calculus of unequal exchange and uneven development that he employs” (*idem* 1986: 1440).

He also objected (*loc. cit.*) to Volk’s “belief that falling prices for raw materials contradict the tendency of extractive costs to rise assumes that prices are cost determined, an extraordinarily naïve idea”, which Bunker believed meant reverting to a neoclassical and marginalist idea. Unfortunately for Bunker, the idea that the ‘cost-of-production’ side determines prices belongs to the *classical* and *Marxian* law of value. What he had in mind was evidently some version where core capitalists or countries were the villains: “In fact,” he (*loc. cit.*) explained, “except in cases of extreme monopolies, resource-exporting economies have little effect on price except by competing with each other and thus driving prices down. [...] core industrial capacity to seek new sources or to develop technological substitutes for high-priced resources pushes prices down as extraction costs rise and [...] the resulting squeeze has ruined many extractive export economies”.

On other points, his reply was perhaps more convincing, such as when reminding that his descriptions of the indigenous populations’ uses of fruit, nuts, fish, turtles, grubs, and game, “constitute concrete referents for the abstract category – hunting and gathering”, with which Volk was presumably familiar; that when speaking of mining concessions to foreign companies he was speaking of multinational corporations; and that his discussion of pasture formation in the Amazon implied extractive cattle ranching. He also found room to argue that his statement “that ‘different agricultural and pastoral economies – present a gradient’ between extraction and production” was different in meaning from Volk’s placing these ‘in between’ activities, and that he had never intended his ‘mode of extraction’ to suffer under ‘laws’, only ‘tendencies’, of motion (*ibid.*: 1443f.). Volk’s point still remains, however, that the concept’s area of application diminishes.

In a subsequent review of Bunker’s book in the same journal, Chilcote (1986: 1015) called it “a superb analysis of Amazonian development and underdevelopment”, based on original and exhaustive field work and an integration of existing studies. In another sociological journal, Ragin (1986: 651) called it “a major interpretative study of an important region” and “a model case study”, at the same time making “solid theoretical contributions to the study of dependency and development”. The Amazon was never lost from sight, but its centrality was balanced by an attempt to use existing theories to understand it, finding them lacking and using the chosen region to rectify their shortcomings. A further benefit was that it linked past and present by showing the continuity of contemporary efforts, using historically based insights to criticise them, and address contemporary issues. Bunker’s main theoretical concern was that the relative inattention of dependency theorists to ‘extractive’ economies and the value contributed by the environment itself should be complemented by examinations of matter and energy flows (*ibid.*: 652). His main theoretical contribution was the concept of ‘mode of extraction’ which had already aroused lively debate. In spite of Ragin’s sympathies for Bunker, he (*loc. cit.*) still objected that “Bunker presents extraction in an exaggerated, ideal-type formulation that heightens the contrast with mode of production.” Of the two empirical sections, the one devoted to the history of extractive underdevelopment of the Amazon was devoted the lesser space, and that devoted to the failure of the modern state the greater. There he also departed from the exclusive attention to the mode of extraction as organising principle, instead focusing on the state’s bureaucratic and authoritarian character,

in an argument which was part political, part ecological. Some studies were nevertheless undertaken, claiming to lend empirical support to Bunker's modes of extraction and production dichotomy (Firebaugh & Bullock 1986, Smith & Nemeth 1988).

Bunker's "useful" and "dispassionate" study of the Brazilian military government's attempt to develop (or exploit) the region during its reign from 1964 to 1985, was the focus of Maybury-Lewis (1987: 582) review. Originally an attempt to colonise the Amazonian region with rural poor from other regions, the program was haphazardly carried out, the soils proved less easy to farm than had been expected, government agencies supposed to help them were not provided the necessary funding or support, and "only large enterprises with energetic lawyers could gain legal title". After considerable ecological damage, failure of colonisation schemes, and abandonment of the idea of solving the problem of land hunger, the government finally used the Amazon to solve Brazil's balance of payments problems rather than its agrarian dilemmas, encouraging large mining and ranching enterprises instead of small-holders. In this familiar story, Bunker had clarified relationships between a myriad of agencies, demonstrating insights into official corruption, and pointing out that though government agents were aware of the incoherence of their bureaucracies, they nevertheless blamed failure to develop on the people's backwardness, seeing themselves as 'civilising' as much as assisting. The failed Amazonian adventure at state-controlled development ultimately weakened the state, tipping the scale in favour of the dominant classes and large enterprises. Bunker's analysis was excellent in dealing with micropolitics of the backlands, Maybury-Lewis concluded, but his main thesis, "constantly restated throughout the book", that extractive economies are better understood in terms of energy flows than production systems or political imbalances, was "unfortunately couched in almost impenetrable jargon" (*loc. cit.*).

For Norgaard (1986: 615f.), Bunker's study was evidently placed within the richer Marxist camp, and it was here that his mission lay, in adding environmental content to the periphery. Bunker's summary of 400 years of Amazonian history was "charged with excitement" as it linked the complex dynamics of the rainforest ecosystem with economic, social and political history, but his synthesis was "better than the portrayal of the parts" (*ibid.*: 616). Mathewson's (1986: 279f.) enthusiastic review specifically observed Bunker's reliance on geographers for his ecological insights, though "curiously", as it happened, only those of the so called 'Berkeley School' and with historical and cultural ecological perspectives. He suggested that a geographical foundation could allow dependency sociologists to reach their own take-off stage of sustained scholarly growth. Dickinson (1986: 419) found it an important and challenging study, which deserved attention because it utilised the theoretical literature on development to formulate a model for understanding processes of change in Amazonia, and he noted that it took a longer time perspective than most comparable volumes at the time (for yet other reviews see Creevey 1986 and Meggers 1986).

However, since it was claimed for the book that it "shows 350 years of different extractive economies have periodically enriched various dominant classes but progressively impoverished the entire region", Moran (1986: 624) was surprised "that the history and prehistory of aboriginal Amazonia is treated in only two pages, and that the colonial and empire periods up to the rubber boom of 1883 receive a scarce five pages", all of which was based on secondary and tertiary sources. The rubber boom itself, "which tends to agree more with the author's views and is better documented, receives about seven pages, but the treatment is vague, and the prose is tied to world-systems theory in a rather mechanistic way" (*ibid.*: 624f.). By contrast, the "important period between 1910 and 1950" had received only three pages, "even though a great deal happened in, and to, the Amazon during this stage, such as major migrations from Europe and Japan; internal migration and settlement; and the development of some communities with favourable communication routes to markets" (*ibid.*: 625). "The book has minimal value as historical analysis and is burdened with jargon from

world-systems theory and political economy of center–periphery relations.” Its strength lay in the description of “the workings of Brazilian bureaucracy in a frontier setting based on the author’s extended interviews with mid-career professionals”, but Moran found it unfortunate that Bunker had not tried “to connect his analysis of bureaucracy to the historical changes in bureaucratic structure in Portuguese society.” Processes were treated as unchanging, because readers were given no historical detail. Of the book’s nine chapters the first and second attempted to characterise Amazonian resource extraction through “a peculiar ‘energy theory of value’ that tries to show that because Amazonia is a net exporter of value, it is exploited” (*loc. cit.*). This Moran found “a trivial finding”, since any region was likely to experience cycles in which it is a net exporter of value or energy, and other periods where it is in balance or gaining from this exchange. Bunker’s theory could not explain underdevelopment, likelier reasons for which Moran (*ibid.* 625f.) found in the region’s high diversity of species and in habitats, which made it costly to develop technical knowledge applicable on a region-wide basis, or of that same bureaucracy to which Bunker devoted his main energy, and which had not sufficiently appreciated the difficulties of diversity any more than Bunker had.

This was not the first time that Bunker and Moran had crossed swords. In fact, the title of Bunker’s book suggests that he was already involved in a controversy with Moran’s earlier *Developing the Amazon: The Social and Ecological Consequences of Government Directed Colonization along Brazil’s Transamazon Highway* (1981). Bunker’s (1983: 190) review of that book had called it “naïve” as an analysis of Amazonian development potential, and he further believed (*ibid.*: 191) that the information was gathered “in ways that disguise the enormous damage that political ambitions and economic rapacity wedded to incompetent planning have inflicted on the biological and social systems in the Amazon.”

Now, it was Bunker’s (1987: 367) turn to be disappointed with his reviewer, whom he charged with being an environmental determinist. Moran’s dismissal of net exports of energy as an explanation of underdevelopment had missed that “the extraction process itself destroys a wide range of resources produced by energy flows through ecosystems in which the extracted commodity formerly participated”, which “destruction limits the potential for more productive economies”, and “increases susceptibility to disruptive exploitation as more resources are discovered”. Moran’s own attempt “to extrapolate from specific habitats to the region as a whole” was inappropriate.

This renewed charge occasioned yet another comment by Moran (1987: 368) to correct the misrepresentation of his own work and to reaffirm the criticism that Bunker neglected microlevel adaptation and presented no data to “demonstrate the explanatory value of his approach”, that “nearly every frontier is a net exporter of energy in the early stages of development, and that there are many possible explanations for the trajectory that follows”. The ‘energy hypothesis’ had some value in that it might encourage quantitative analysis. “However, his claim that this theory explains Amazonian processes is inadequately grounded in the historical record which [...] he glosses over.” Moran also referred to a more extensive critique by Katzman (1987).

Observing that mainstream development economics placed little emphasis on natural resources, Katzman (1987: 426) saw two diametrically opposed alternatives to it. The vent-for-surplus theory (cf. Caves 1968, Watkins 1963, Williamson 1974) saw natural-resource exploitation as an engine of growth, whereas the dependency school, to which Bunker’s study evidently belonged, looked upon it as the road to underdevelopment. The latter tradition originated in the perception that tropical exporters did not develop when integrated in the world economy. It could be traced to Prebisch (ECLA 1949), Singer (1950), Nurkse (1959), Levin (1960), and others, who concluded that prices of primary products tended to decline secularly, basically because of supply and demand elasticities. The neo-Marxist variant placed emphasis on the political and monopolist class, who controlled the chain of import-export

activities and had an interest rather in hindering import-substitution. Dependence on resource-based exports was therefore simply harmful (Frank 1967, Beckford 1973). Now, Katzman (1987: 427) pointed out: “The interesting general question is why some staple-exporting regions, particularly in the temperate zones, developed, but others, primarily in the tropics, did not.” His own, or what he called the “now conventional”, explanation (referring especially to Hirschman 1977) looked at differences in technology and how “the relative marginal productivity of skilled labor, brute labor, capital and land in a region’s staples influences its social class structure” (Katzman 1987: 427). Instead of technology, Bunker looked to ecology and politics for answers.

Katzman (*ibid.*: 430) took great interest in the ecological approach in general. In ignorance of its particular ecology, many projects had “fallen victim to the rapid metabolism of the tropical rain forest, the correspondingly low nutrient content of the soil, and the large number of potential pests immanent in the highly diverse ecosystems.” A decade of research and experiments had in fact shown that soils were similar to those of the south-eastern United States and could be cultivated by continuous cropping minimising direct exposure to rain and sun (*ibid.*: 432). “Shifting pastoralism, not shifting cultivation, is responsible for the major share of deforestation in Amazonia”, he pointed out, implying that sustainable agriculture could and eventually would also reduce deforestation. Among anthropological studies, Moran (1982, 1984) had made “the most precise measure of energy and material flows in his examination of the hunting and farming strategies of Amazonian aborigines and *caboclos*.”

Now, even from the ecological perspective Bunker’s attempt was unfortunately unsuccessful, making “no distinction between depleting activities, like mining, and potentially sustainable activities, like agriculture and lumbering”, merely seeing resource extraction as a one-way flow of energy and materials. In contrast to Moran, Bunker had made no attempt to measure these flows directly, only referring metaphorically to the second law of thermodynamics as applied to ecosystems. His ‘energy theory of value’ evaluated commodities by their embodied energy, but like the labour embodied theory of value, it was “widely discredited by economists as irrelevant in describing and predicting economic behavior” (Katzman 1987: 430). That Amazonian trade flows showed it to have been a net exporter Bunker took as evidence of exploitation, but as Katzman (*ibid.*: 430f.) pointed out, the “continual influx of solar energy dwarfs the small amount of energy embodied in staple exports.” Similarly, there was a continuous renewal of nutrients from the gradual decay of bedrock and pasture reforestation, which left it an open empirical question, which Bunker had not addressed, whether the rate of nutrient exports exceeded the rate of renewal.

Finally, whereas Bunker argued that Amazonia had become underdeveloped because capitalism had maintained it “in a posture of unequal exchange”, it was not clear why capitalism should sustain mechanisms of regional rather than class inequality. Looking at his presentation, it implied that institutions discriminated against small-farmers, just as they did against smallholders and small businessmen in the centre, and that the mechanism was the state bureaucracy: “The more strictly bureaucrats adhere to legal standards imposed from the center, the greater the ability to exclude the poor” from appropriating land and capital. “Indeed, the transactions costs explanation is more powerful than an appeal to political economy of center-periphery relationships under capitalism” (*ibid.*: 433).

To an economic historian, Bunker’s sketch of the subsequent export products of the Amazon would have called to mind the well-known Canadian model of how consecutive staples restructured European and Amerindian societies situated on the St. Lawrence drainage basin, along with its ecology. When hearing of the staple thesis from his reviewer, all this was apparently novelties to the sociologist Bunker. Without referring to Katzman, he (1989) set out to counter the misrepresentation he felt Innis’s work had undergone through linkage with the development economist Albert Hirschman, the American institutionalist economic

historian Douglas North, and most of all the reworking by Melville Watkins (1963) into a 'staple theory of growth'. Bunker's article was a welcome reminder of some fundamental differences between Innis's reflective and critical approach, and the subsequent reworking into a theory of growth. On the other hand, as we have seen (Chapter 3), by the 1970s, Watkins and the Canadian dependency tradition had themselves reversed this perspective, some therefore fearing that Canada was becoming underdeveloped. It seems unlikely that Bunker was aware of this tradition, but setting out from a dependency perspective he reached a similar conclusion, only with more sensitivity to ecology and mostly leaving out Canada.

If Moran's earlier book served as a point of departure for Bunker to contrast his interpretation of Amazonia, Katzman's review article set the stage for the future. Characterising it as a challenge from the right, and forgetting the ecological arguments, Bunker (2003: 238) recalled it as "an encyclopedic summary and critical deployment of neo-classical resource economists['] claims that vent-for-surplus of natural resources was a regular and reliable means for the economic development of 'newly settled' frontiers." Katzman's bibliography served as a guide to literature that he had previously ignored. Bunker (2003: 239) was thereby driven "to search for the reasons that some extractive peripheries, most notably the United States, but also Sweden, Denmark, parts of Germany, Canada, and Australia, had subsequently industrialized sufficiently to achieve at least partial participation in the core." This was not the first time a dependency theorist had been reminded of such 'paradoxes', *i.e.*, refutations of the idea that extraction and export of raw-materials led to underdevelopment, but the response was not to abandon his paradigm but to rephrase it. As he informs, Bunker (*loc. cit.*) "gradually became convinced that notions of unbalanced energy flows were too abstract and too aggregated to permit analysis of the specific binary and multilateral production and exchange relations that structured and periodically reorganized the world economy."

This basically meant abandoning his previous unequal exchange theory. The new perspective was inspired instead by David Harvey and Harold Innis. Somewhat like Innis, although unlike him wanting to explain underdevelopment, he concluded (*loc. cit.*) that the "physical and chemical attributes of raw materials, and their location in space as mediated by topography, hydrology, geology, climate, and biology provided much more direct bases for explaining the social and geopolitical strategies for extraction, transport, transformation, exchange, and consumption of the secularly expanding diversity and volume of commodities." Unfortunately, instead of comparing said counter-examples from this perspective (Scandinavia, the British Dominions, the United States) with those extractive economies which underdeveloped, he continued to search for examples which could be fitted to his preconception of manufacturing developed countries and extracting underdeveloped (the Netherlands, Japan, Amazonia). What Katzman (1987: 427) referred to as the "interesting general question", why temperate staple-exporting regions developed while tropical did not, was basically left untouched also after renewal. Thus, references to 'wheat', the principal bulk commodity exported by the former group, were as scarce as those to 'unequal exchange'. While no comparison was made between such exports and respective ecologies in developed and underdeveloped regions, we instead have "transtemporal comparisons of spatio-material processes" and leading-country "access strategies", showing in essence that as resources became scarcer close by, instead of perishing, hegemony developed their means of transportation, thereby lowering ton/miles costs and supplying market demand. As before, the long-term perspective is laudable, but the historiographical execution unfortunately thin, particularly as compared with what can be found in Innis.

## Joan Martinez-Alier and unequal exchange as an ecological distribution conflict

Two years after Bunker's initial book was published, in a history of ecological or energy economics, Joan Martinez-Alier (1987: 238) identified it as the first ecological theory of unequal exchange, wondering: "Why has the question of unequal exchange not been posed in ecological terms until quite recently [...] and still without political consequences?" He has since spent a respectable number of years to promote what he believes to be some of these political consequences, not only with respect to 'ecological unequal exchange', but also in the language of many other ecological distribution conflicts around the globe. The argument has been summed up in his (2002) book on 'the environmentalism of the poor' and 'ecological conflicts and valuation'.

There, Martinez-Alier's (2002: ix.) stated purpose was "to explain how *the unavoidable clash between economy and environment (which is studied by ecological economics) gives rise to the 'environmentalism of the poor' (which is studied by political ecology)*", that is (*ibid.*: x), "the resistance (local and global) expressed in many idioms to the abuse of natural environments and the loss of livelihoods". In the first chapter, as well as in a previous book (Guha & Martinez-Alier 1997), he distinguished it from what he considered the 'cult of the wilderness' of Northern environmentalists such as Aldo Leopold, and 'the gospel of eco-efficiency', which was popular with ecological engineers and mainstream environmental economists. He (2002: xi) stated his own stake in this "potentially the most powerful current of environmentalism" as "one of the midwives at the protracted births over the last 20 years of ecological economics and political ecology".

Among other things, Martinez-Alier has been involved in the founding of the journal *Ecological Economics*, which subject was introduced in the second and third chapters, described (*ibid.*: 19) as "a recently developed field which sees the economy as a subsystem of a larger finite global ecosystem", and which questioned "the sustainability of the economy because of its environmental impacts and its material and energy requirements, and also because of the growth of population". It was distinguished from mainstream environmental economics, with its "pious invocations to 'internalise the externalities' into the price system" (*ibid.*: 54), etc., in that it concentrated instead on "developing physical indicators and indexes of (un)sustainability" (*ibid.*: 19). A peculiarity central to his version of ecological economics, which distinguishes it from both environmental economics and much ecological economics, was the incommensurability of values, and their irreducibility to unidimensional – indeed, even multidimensional – indicators whether monetary or physical.

As in the distinction between the political economy of Marxists and Sraffians on the one hand, and the economics of neoclassicals on the other, so the political ecology of Martinez-Alier was distinct from environmental and more conventional ecological economics by relying ultimately on socio-political determinants (*ibid.*: 45): "Estimations of environmental values depend the endowment of property rights, the distribution of income, the strength of environmental movements and the distribution of power." Thus, a central and important observation of his book is that "externalities that fall on poor and powerless people are cheap, even when 'internalised'" (*ibid.*: 95; cf. 246-50). This would create a further tendency for environmentally harmful or costly branches to be re-localised to regions in which environmental movements were politically weak, whatever their level of environmental 'consciousness' (so emphasised by ecologists).

It is in identifying and exemplifying the international problematic of such ecological distribution conflicts, *i.e.*, conflicts "on environmental entitlements, on the loss of access to natural resources and environmental services, on the burdens of pollution and on the sharing of uncertain environmental hazards" (*ibid.*: 97), and pointing to possible connections with the types of environmentalism, that Martinez-Alier's greatest strength and service lies. The task

he had set himself was not really to construct a theory of unequal exchange, a subject on which he often seems to rely heavily on Bunker, but to assemble a wide range of seemingly disparate environmental debates under the common designation ‘the environmentalism of the poor’. As such, his approach is more programmatic than actually achieving a coherent theoretical and historical perspective within political ecology or ecological economics.

The focus on political power relations and class-struggle as factors in ecological distribution conflicts (and vice versa) nevertheless makes his work more interesting than most other ecological versions of unequal exchange. This seems partly to be a fruit of his collaboration with the ecologist Sraffian, Martin O’Connor. Together they introduced the concept of ‘ecological distribution’ for “the social, spatial, and temporal asymmetries in the access to natural resources, or in the burdens of waste disposal and pollution”, whether traded or not: “The economic values which non-traded, and traded, environmental goods and services, or negative externalities, might be given, depend [...] on the endowment of property rights and on the distribution of income” (Martinez-Alier & O’Connor 1996: 154). They also established that prices of environmental resources and services formed by transactions among humans who are alive and present, will depend on the existence and endowment of property rights on ‘natural capital’, and also on the distribution of income already within the present generation of humans (*ibid.*: 155).

World Bank chief economist Lawrence Summers (1992: 66; cf. Foster 1993) once made an infamous remark that health impairing pollution should be allocated “to the country with the lowest cost, which will be the country with the lowest wages.” The “economic logic of dumping a load of toxic waste in the lowest-wage country” was found “impeccable” and it was the job of the World Bank to face up to that fact. This piece of *Realpolitik* explained rather well, as Martinez-Alier & O’Connor (1999: 380) saw it, why the best chance the poor have of addressing ‘externalities’ would not be in the market or in surrogate markets, but through other types of social action referred to as the ‘environmentalism of the poor’ (cf. Guha & Martinez-Alier 1997, Martinez-Alier 2002). According to neoclassical equilibrium theory, a low price would indicate non-scarcity relative to demand over a vaguely defined time-horizon, the changed perception of which should result in an altered price. By contrast, the Sraffian approach, preferred by Martinez-Alier & O’Connor (1996: 155, 1999: 380), looked “directly at the power relations that underlie pricing”.

Indeed, Martinez-Alier’s conception of ‘political ecology’ as the study of distribution conflicts is basically Sraffian, and distinct from the foci on ‘utility’ or ‘embodied values’ in other traditions: “In Sraffian economics, the value of human-made capital is shown to depend on the distribution of income. Assuming there would be a Sraffian ecological economics, we would need first to decide which items belong to ‘natural capital’ (i.e. are appropriated and by whom), and then we could show how their valuation depends on the distribution of income” (1997a: 233). However, he objected, even ecologised Sraffian economics would still only attempt to explain economic values, and “not deal with the wider issues of ‘ecological distribution’” (*loc. cit.*). Following, as he informs, suggestions from Frank Beckenbach and Martin O’Connor, Martinez-Alier (*ibid.*: 233f.) referred ecological distribution conflicts “to the social, spatial, and temporal asymmetries or inequalities in the use by humans of environmental resources and services, i.e. in the depletion of natural resources (including land degradation, and the loss of biodiversity), and in the burdens of pollution, whether traded or not.” ‘Environmental racism’, ‘ecologically unequal exchange’, ‘ecological debt’, and disproportionate use of ‘environmental space’ were all examples of such ecological distribution conflicts – the true subject of *political ecology*, just as economic distribution conflicts were studied by *political economy* (*ibid.*: 234).

In Martinez-Alier’s view (*ibid.*: 232), Georgescu-Roegen and Sraffa were “the two great critics of neoclassical economics”, and in a sense his own mission has been to break the ice

between these two. Although Georgescu-Roegen never saw fit to comment on Sraffa's work, nor had anything to say on unequal exchange – and in fact was much more of a neoclassical economist than ecological economists commonly wish to believe (so much so that Paul Samuelson could suggest him for the Nobel Prize for economics) – Martinez-Alier (*ibid.*: 234) interestingly reminded of his strong stands on some issues of ecological distribution. One of these was a manifesto, parallel to the Club of Rome report for the Stockholm Conference (to which he had not been invited), proposing “to permit the free movement of all peoples to any part of the world without passport or visa restrictions”. The world-wide territorial distribution of population was both a major question in human ecology and indubitably political. Neither ecology nor economics had any explanation to offer, Martinez-Alier reminded (*loc. cit.*; cf. 2002: 204), for the restrictions to migration between South and North America, or between North Africa and Europe: “At such borders, there stand a sort of Maxwell's Demons, who successfully maintain [...] the large differences in the per capita use of energy and materials between adjacent territories.” One can only regret that he has not noted the links between this observation and that of unequal exchange. It is difficult to see how Georgescu-Roegen, from his theoretical vantage point, could have come up with a theory to handle this problem any more than those ecologists and economists mentioned by Martinez-Alier, but it was in fact the central problem of unequal exchange for both Emmanuel (1969, 1972a, 1975a) and Lewis (1969, 1978a, 1978b). Instead, Martinez-Alier's contribution to ecological unequal exchange was inspired by the CEPAL and dependency traditions.<sup>104</sup>

There is a deep rooted tradition in literature and investigative journalism of denunciation and criticism of the plundering of the Latin America's natural resources by corporations from the North Atlantic world. It was strongly articulated in works such as Eduardo Galeano's *Las Venas Abiertas de América Latina* (1971), closely related to the 'dependency' tradition. Academic ecological economic and environmental historical contributions by Latin Americans were less enterprising, but there was a sprouting interest in environmental history and economics towards the end of the 1970s. For example, in 1978 the Chilean geographer Pedro Cunill pointed to the necessity of establishing an historical horizon in the analysis of environmental problems, going back at least to the 16<sup>th</sup> century (Herrera n.d.). Economists in the CEPAL tradition have generally not cared for ecological aspects, and the earliest contribution, according to Martinez-Alier (1998: n.p., n. 3), appeared only in 1980, with the “excellent volumes compiled by Oswaldo Sunkel and Nicolo Gligo” (1980), to which Gligo and Jorge Morello contributed a brief article, “Notas para una historia ecológica de América Latina”. In 1983, Luis Vitale's *Hacia una Historia del Ambiente en América Latina* replied to Sunkel and other social scientists linked with CEPAL, and in 1987, Ortiz Monasterio and others published a manifesto against the plundering and destruction of Mexico's natural resources since the European conquest, but so far as environmental history was concerned, according to Herrera (n.d., 2004), this was followed by a prolonged silence. According to Martinez-Alier (1998: n.p., n. 3), in the 1980s and 1990s, Axel Dourojeanni and Nicolo Gligo “unfruitfully tried to drag CEPAL toward ecological economy”, which was difficult in the face of the neoliberal orthodoxy, who revelled in memories of the golden age of exports until the 1920s.

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<sup>104</sup> Contrary to one of his reviewers (Featherstone 2003: 1032f.), I would argue that the links Martinez-Alier (2002: 48-53) tries to establish between neo-Malthusianism and eco-feminism are not in the least unsettling and by contrast promising. It also indicates that my placing him in the 'dependency' rather than the 'Protestant' camp is rather to denote his stance on unequal exchange. Still, he concluded (2002: 53), rather prematurely in my view, that “[d]ecreasing human fertility across the world means that the main factor [in environmental impact] is now overconsumption.” The observation is not even very meaningful, since whether or not consumption is 'over' some undefined level is of course dependent on the numbers consuming.

Limited and dispersed funding in Latin America has obliged making use of the opportunities provided by international institutions such as the CEPAL and the Interamerican Development Bank. These “tend to emphasise the structural over the temporal in their analyses of problems, and to subordinate the treatment of environmental issues to the necessities of economic policy”, Herrera (n.d.) suggests, which, in turn, helps to explain why contributions including an historical dimension of environmental problems have appeared mainly in proximity to international conferences on the environment. The main interest has remained structural, however, and even when the environmental perspective is not subordinated to *economic* policy, it seems still to be subordinated to *policy*.

The 1990s saw a more sustained official interest in problems of the environment, and the important event was the preparations for the World Conference on Environment and Development, to be held in Rio de Janeiro in 1992. On another plane, it is also possible, although admittedly speculative on my part, that the traditionally Marxist bent of dependency thinking felt a need for a new rationale after the fall of Eastern European communism, which gave new opportunities for, or tipped the scale in favour of the more ecologically minded. The Latin American usage of the concept of ‘ecological debt’ can be traced to the first of these events, and possibly to the second.

According to Martinez-Alier *et al.* (2005: n.p.) the intellectual roots of the concept goes back in a very general sense to observations in the 19<sup>th</sup> century that “all parts of the world are ransacked for the Englishman’s table”, to Borgström’s concept of ‘ghost acreage’ in the 1960s, to various concepts of ‘environmental space’ and ‘ecological footprints’ in the 1980s and 1990s (Rees & Wackernagel 1993, Buitenkamp *et al.* 1993), all of which amounted to the intellectually not so challenging, but all of a sudden politically burning, idea that rich people and big cities use up resources acquired elsewhere. Then – actually a little earlier – came the ‘ecological debt’, Martinez-Alier *et al.* (2005: n.p.) explain, broadly defined as including pollution, ‘theft’ of resources, and disproportionate use of the environment. Under the shadow of the debt crisis “South American researchers and academics such as the Instituto de Ecologia Politica from Chile pointed to the exploitation of their countries’ natural resources and began to speak about ecological debt.”

Apart from the simile with the economic debt, although with reversed signs, the Chilean experience of exporting mineral products and guano probably played a part in this formulation of the problem. However, without the influential CEPAL tradition, and its dependency avatar, linking underdevelopment to raw materials exports, it is unlikely that a concept such as this would have appeared when and where it did. Like most of these concepts, its function is more directed to serving political strategy and policy than science as an explanation.<sup>105</sup> Virgilio Barco, the President of Colombia, had used the expression in a speech in the USA in 1990. Latin American NGOs occasioned discussions around 1992, Martinez-Alier (2003: 25) informs, and Fidel Castro was persuaded by Latin American activists to use the concept in his speech at the official conference in Rio de Janeiro in 1992. In 1999, the Friends of the Earth turned ‘Ecological Debt’ into one of its campaigns for the following years. However, Martinez-Alier reminds, the notion itself was first proposed in 1985 by the eco-feminist Eva Quistorp, a founding member of the German Green Party: “Women are creditors of economic debts arising from unpaid labour, they are also entitled to compensation for the political and

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<sup>105</sup> “Ecuador is now home to a campaign to reclaim its eco-debts”, Martinez-Alier *et al.* (2005: n.p.) explain: “The international Jubilee debt relief campaign has also embraced ecological debt following work by the British aid agency Christian Aid and think tank the New Economics Foundation. Friends of the Earth include ecological debt as one of its campaign themes. In Belgium the former Minister of International Cooperation asked the Universities and NGO’s to realize a study on ecological debt and how to use this concept in international policy work.” This will be undertaken by the University in Gent and the Flemish Platform on Sustainable Development (VODO), and on the global level there is an ‘International Alliance on ecological debt creditors’, “trying to promote and integrate this useful concept in their analysis, policy and educational work.”

social subjection they have suffered, also they are owed ecological debts caused by the plundering, pollution, and irreversible destruction of our natural resources which make it ever more difficult for women to secure the existential basis for their lives and those of their children” (quoted in Martinez-Alier 2002: 212).

In Martinez-Alier’s (2003: 25) opinion, its merit was that it “brings together many international ecological distribution conflicts”, one of which was that of ‘ecological unequal exchange’. Furthermore, it “puts on the table the question of the languages in which such conflicts are represented.” Although the perspective is rather consistently Latin American, ‘Latin America’, ‘the Third World’, and ‘the South’ are used interchangeably, and the definition is couched in the global categories of North and South, or the like: “Ecological debt is the debt accumulated by Northern, industrial countries towards Third World countries on account of resource plundering, unfair trade, environmental damage and the free occupation of environmental space to deposit waste” (Martinez-Alier *et al.* 2005: n.p.). Martinez-Alier (1998: n.p.) underlined that the environmental disruption was caused by exports, and found a “long history of the pillaging of nature, something not due to the pressure of population on natural resources, but the pressure of exports. More and more is exported in order to be able to pay the External Debt”. Exports, Martinez-Alier *et al.* (2005: n.p.) believe, had not enriched Latin America, but in a recursive trend gone to pay for foreign debts: “In many cases the payment of external debt causes further depletion of natural stocks and environmental degradation, because of the emphasis on and nature of the export sectors.”

The exponents of environmental debt give a somewhat mixed image of why they talk about it, sometimes claiming a wish to effect a paradigm shift “about how and why countries become impoverished and enriched, and at the expense of what and who”, sometimes boiling it down to: “The crucial question is: who owes who?” (*ibid.*: n.p.). Although an economic concept, Martinez-Alier (2002: 233) would not have it be a mere exchange of external debt for protection of nature, but “to consider that the external debt from south to north has already been paid on account of the ecological debt the north owes to the south, and to stop the ecological debt from increasing any further.” The concept thus served to boost morale in Latin American countries with large budgetary deficits and foreign debts (cf. *ibid.*: 233, 1998: n.p.). The concept has a generational aspect, and is sometimes invoked with religious connotations (Donoso *et al.* 2005), but commonly, in the end, it all boils down to an unwillingness to *pay* on behalf of the industrialised nations (*loc. cit.*, Anon. 2005, Acción Ecológica 1999, Christian Aid 1999), and little is said on debt to non-humans, ‘ancestral peoples’, or a global deficit. Martinez-Alier’s involvement is of course part of the attempt to give the powerless a language in which to express their claims.

The possibility that these campaigns are successful makes the concept interesting as a prospective economic category in the sense of a possible claim to a share in societal output, with ‘ecological taxes’ paid to the South, thus affecting distribution. Perhaps such campaigns may function to raise the willingness of Northern citizens to pay more for their banks and their Third World imports. This will in all probability particularly benefit the Latin American countries, and may help explaining why these seem to be particularly vocal. There is much to sympathise with in the world-egalitarian and ecological ideals of the advocates of the ecological debt perspective, but the question we shall turn to now is rather what they contribute to understanding, in particular, what they have to say on the question of ecological unequal exchange.

According to Martinez-Alier, environmental debt had two components, where one was ecologically unequal exchange and the other was the disproportionate use of environmental space. He consented to put them in monetary terms, where the unequal exchange had the following four major components:

[1] The (unpaid) costs of reproduction or maintenance or sustainable management of the renewable resources that have been exported. For instance, the nutrients in the agricultural exports of Argentina [...]

[2] The actualised costs of the future lack of availability of destroyed natural resources. For instance, the oil and mineral no longer available, the biodiversity destroyed. [...]

[3] The compensation for, or the costs of reparation (unpaid) of the local damages produced by exports [...], or the actualised value of irreversible damage.

[4] The (unpaid) amount corresponding to the commercial use of information and knowledge of genetic resources, when they have been appropriated gratis (“biopiracy”) (Martinez-Alier 2003: 26, 2002: 227f.).

It may be remarked that all of them were exports. The two remaining components of disproportionate use of environmental services were both imports:

[5] The (unpaid) amount reparation costs or compensation for the impacts caused by imports of solid or liquid toxic waste.

[6] The (unpaid) costs of free disposal of gas residues (carbon dioxide, CFC...), assuming equal rights to sinks and reservoirs (Martinez-Alier 2003: 26, 2002: 227f.).

The areas to be included in ecologically unequal exchange are thus (1) renewable resources, (2) non-renewable resources, including biodiversity, (3) environmental pollution, and (4) the rather special case of genetic letters patent, actualised because of the Northern claims in this direction and which Martinez-Alier (1998) initially included among the unpaid environmental services. Among these services, the ‘carbon debt’ has received particularly widespread attention (Christian Aid 1999).

The oddity of only including poor-country *exports* in ecologically unequal *exchange* (while environmental services include only imports), is reaffirmed in the definition as “imports of commodities from poor regions or countries, which do not take into account either local externalities or the exhaustion of such resources” (Martinez-Alier & O’Connor 1999: 382; cf. Martinez-Alier 2002: 258), and in the identification with *Raubswirtschaft*, a ‘plunder economy’, rather than an actual market economy. This is a serious weakness in Martinez-Alier’s handling of the concept, even if one agrees with the ‘eco-Sraffian’ approach. Others would probably prefer formulating it as an actual exchange, thereby including the relative and/or absolute environmental costs or benefits of both exports and imports, monetised or (more commonly) not. Apparently, it was not a mistake on his behalf since this unilateral terminology is consistent with his idea that only the South could suffer from it, while the North was only causing ‘ecological dumping’.

Unequal exchange had functioned as part of a theory of underdevelopment in terms of labour and health, and of deterioration of the terms of trade expressed in prices, Martinez-Alier *et al.* (2005: n.p.) explained, but by recognising links to the environment “the notion of unequal exchange can be expanded to include unaccounted, and thus uncompensated, local externalities.” What they mean by ecologically unequal exchange, then, is “the fact of exporting products from poor regions and countries, at prices which do not take into account the local externalities caused by these exports, or the exhaustion of natural resources, in exchange for goods and services from richer regions”. The authors had no intent to add an ecological dimension to the terms of trade (something on the other hand done in Muradian *et al.* 2002: 56), but rather to reverse the former charge of ‘social dumping’ made against low-wage countries, now instead speaking of ‘ecological dumping’ – the phenomenon of selling at prices which did not include compensation for externalities and for the exhaustion of resources.

Such dumping, they agreed, “happens not only in the trade of natural resources from South to North but also sometimes from North to South, such as agricultural exports from the United

States or Europe to the rest of the world which are directly subsidised, and also indirectly because of cheap energy, no deductions from water and soil pollution and use of pesticides, and no deductions for the erosion of biodiversity.” While they retained the denotation ‘ecological dumping’ when it occurred at the expense of the environment of the North, they preferred ‘ecologically unequal exchange’ when it occurred at the expense of the South: “We describe the first kind of ecological dumping (from South to North) as ecologically unequal exchange to emphasise the fact that most extractive economies are often poor and powerless, and therefore they are unable to slow down the rate of resource exploitation or to charge ‘natural capital depletion taxes’, are unable to internalise externalities into prices, and unable to diversify their exports” (Martinez-Alier *et al.* 2005, n.p.). This distinction was defended on the grounds that environmental disruption in rich countries was voluntary, while in poor countries it was not. Thus, whatever the historical reality of relative environmental destruction and load, whatever the reality of the ‘environmentalism of the poor’, or, indeed, any connection with exports and imports, the poor were, by definition, suffering from ecologically unequal exchange.

The language of *social dumping* was and is a pure lobbyist tool (since those who speak of it do not mind low wages when they occur in non-competitive branches), but do we really need more of that? A curiosity with this view is of course that, it is irrelevant to speak about any empirical or historical record of net transfers, with which Martinez-Alier nevertheless would seem to have been concerned.

His basic idea can be put like this: Since he was not interested in the *relative* environmental burdens and consequences, what he says in effect is that environmental costs are already fully internalised in the rich and powerful North, while in the South they are not internalised at all, and that, consequently, the poor are already paying an unacknowledged ecological tax to the rich. How is this ‘tax’ transferred? Partly through the ether, perhaps (or atmosphere in the case of eco-services), but hardly by the rich lending money to the poor, if only to pay the interest on previous loans. The only way would be the exchange of goods and (eco-)services, and if the balances of payments and trade do not contain sufficient explanation, the ‘tax’ must be incorporated in the terms of trade.

How the ‘tax’ originated was not on Martinez-Alier’s agenda, preferring to speak of how social movements, born by suffering disproportionate environmental damage, try to redress the imbalance of power, “so heavily biased today in favour of multinational corporations” (2002: 271). ‘Power’ was clarified as an ability to “impose decisions on others”, by causing environmental havoc in a ‘cost-shifting’ way, and as procedural power to “impose a language of valuation determining which is the bottom line in an ecological distribution conflict”. Implying a future struggle, Martinez-Alier ended his book by asking who had this power.

In fact, if we look instead at the past, the only historical agent imaginable would have to be the environmental and/or workers movement of the North, perhaps born of suffering disproportionate damage in the past. Incidentally, this would be in complete parallel to the nationally confined labour movement in Emmanuel’s theory, but is probably not the solution looked for, which may be the reason why it is not mentioned. It would be consistent with Foster’s (1994) identification of the environmental movement as a parallel people’s movement in the United States to the labour movement in Europe, and with Guha & Martinez-Alier’s (1997) consent to American scholars that environmentalism had been mostly an American affair, characterised by its ‘cult of the wilderness’ and ‘eco-efficiency’. Naturally, it would be consistent with the nationalist ‘lifeboat ethics’ of Hardin (1974), and with the shift among German Greens “who used to be internationalists, [but] have now joined the European ‘eco-efficiency’ movement” (Martinez-Alier 2002: 8).

In addition to the political factor, however, Martinez-Alier saw one pertaining to what he consents to the CEPAL or dependency traditions is an inherent difference in the characteristic

export good. Thus, the basis of ecologically unequal exchange in Martinez-Alier's understanding is (1) a relative social and political weakness, creating a corresponding inability to incorporate social and ecological externalities in export prices, and (2) a relative weakness in the relation between the regenerative powers of an ecology and its respective goods, whether because of differences between tropical or temperate ecosystems, or because of some inherent property of the specific goods produced, which he tends to write of in terms of primary commodities (raw-materials and 'preciosities', *i.e.*, Wallerstein's term for 'luxuries') on the losing side, and secondary and tertiary commodities (manufactures and services) on the gaining. The first point, he says, was inspired by Bunker's exposition of ecologically unequal exchange; the second by Altvater's (1994) (and before him Soddy's) identification of the antagonism between economic and geochemical-biological production times:

Ecologically unequal exchange is born, therefore, from two causes. In the first place, the strength necessary to incorporate local externalities in export prices is often lacking in the south. Poverty and lack of power induce local environment and health to be given away or sold cheaply, even though this does not mean a lack of environmental awareness but simply a lack of economic and social power to defend both health and environment. In the second place, the ecological time necessary to produce the goods exported from the south is frequently longer than the time required to produce the imported manufactured goods or services. As the north has profited from an ecologically unequal trade, it is in a debtor position. (Martinez-Alier 2002: 219.)

Although Martinez-Alier draws the line between the type of good, since the per capita production of raw materials is higher in the North than in the South, it would perhaps be more appropriate to emphasise the relation between the type of goods produced and the regenerative powers of the respective ecologies, which I interpret as implying basically temperate and tropical ones, in which they are produced. If this is admitted, it would give a new dimension to Lewis's unequal exchange between temporal and tropical areas, or to the admittedly marginal observations by Innis in that direction.

### Some trade statistical and historiographic complications

Martinez-Alier (1997b: 219) regretted that "[h]istorical research on such topics, as 'ecological unequal exchange' and the 'ecological debt' is still lacking", but nevertheless claims with some assurance that the North has profited from an ecologically unequal exchange. This remains to be demonstrated, however, and would also require stricter definitions, but it is intuitively plausible at least for the postwar period, as we shall soon see from available material balances. An estimate of relative fossil fuel *consumption*, if this is included in the definition, would certainly be in accord with this approach, and since for the postwar period Northern consumption has exceeded its *production* (extraction), as we shall see, there are also net imports in purely physical terms.

A similar argument can be made for many pollutants. According to the so called 'pollution haven' hypothesis (Mani & Wheeler 1998), similarly advanced against the existence of an environmental Kuznets curve, more stringent environmental regulations in the North will make pollution-intensive branches migrate to the South. This issue has stimulated some laborious estimations, to which Martinez-Alier has lent hand. Studying the pollutive emissions 'embodied' in physical imports and exports between three core regions (the United States, Western Europe and Japan) and Southern countries between 1976 and 1994, Muradian *et al.* (2002: 56) found that these were generally higher in imports from the South than in the goods sold by the North (see also Muradian & Martinez-Alier 2001). What this says is simply that export industries in the South are relatively more polluting than those of the North.

One way of interpreting this is that there is an accordant displacement of environmental load from the North to the South through international trade. While participating in this study, Martinez-Alier had no problem estimating the “environmental terms of trade”, defined as environmental pressures associated with Northern exports in relation to those associated with imports from the South. These deteriorated for the United States, improved slightly for Western Europe, and significantly for Japan. An improvement means that exports are coming from relatively less pollutive industries. Does this mean that the United States are to be lauded for diminishing its ecological exploitation through trade, or are they to be scolded for using relatively more polluting industries? The lessened relative embodiment of pollution of Japanese exports is due to structural changes away from polluting industries, so this would seem to be a good case of attack. Again, it can be asked whether this is related in any significant way to environmental legislation or is merely incidental to wages having risen and these branches having met with competition from newly industrialised lower-wage countries or China? While it reveals historical trends, the moral lessons are not evident.

Most ecologically minded writers in the dependency and world-systems tradition have a further intuition that ecologically unequal exchange of some kind goes much farther back in time, perhaps as far as 500 years, although the studies performed in this line of argument are confined to only the most recent decades. This ‘intuition’ is much less intuitively plausible, however, if only because it is related to the *myth*, as Paul Bairoch (1993) and Arthur Lewis (1978a) called it, that Third World raw materials were crucial to development and industrialisation of the North or West. Martinez-Alier’s major book on the environmentalism of the poor has in fact been criticised for being “quite devoid of history in any *analytical* or *theoretical* sense, and for this reason as well as other reasons lacks a convincingly dialectical engagement with its world historical subject matter” (Bernstein 2005: 434). While waiting for something more substantial we should note that the historical research which *does* exist gives no indubitable support to the idea of a *net* transfer of raw materials from the underdeveloped world to the developed, until after the Second World War.

Thus, in a well-known study emphasising the regional character of industrialisation, and commenting on 19<sup>th</sup> century trade, Pollard (1981: 174f.) observed:

These trading relationships between the more and less industrialized nations have for well over a century been consistently misinterpreted as an ‘exchange of food and raw materials’ against ‘manufactured goods’. As it happens, the coverage is not dissimilar, but it is false. It remains false also when converted to Colin Clark’s scheme into ‘primary’ and ‘secondary’ industry products [...] Thus coal, which is plainly a primary or raw material, has always belonged to the export list of the most advanced European economies, and thus has upset innumerable statistical tables. [Pollard instead argued that coal mining be regarded as a ‘high-technology’ industry.]

Coal was by far the most internationally traded raw material throughout the 19<sup>th</sup> century. Whereas the least developed regions of Europe were importers, the largest producers and exporters of coal were the United Kingdom and Germany, the former even exporting to the future Third World. According to Bairoch’s figures, annual net exports of coal from the UK amounted to one million tons by 1837, 20 million by 1880, and in 1913 had reached 78 millions or 27% of production (on the UK’s material balance cf. Schandl & Schultz 2002). Oil was beginning to grow as an import, but looking at commercial energy in general at a pre-World War I date, the developed world was still a net exporter of almost 19 million tons of coal equivalents (Table 20).

Table 20. *Production and commercial balance sheet of energy products, 1909/11 (annual average; millions of tons of coal equivalent).*

	Production	International trade		Balance	Total (in % of production)
		Imports	Exports		
<b>Coal<sup>a</sup></b>					
Europe	546.2	90.7	110.2	19.5	3.6
Russia	26.3	4.8	–	–4.8	–18.2
North America	467.5	13.6	17.2	3.6	0.8
Oceania	12.0	0.2	1.9	1.7	11.9
Japan	54.3	0.1	3.0	2.8	5.2
Total developed	1113.2	109.6	133.6	24.0	2.2
<b>Oil<sup>b</sup></b>					
Europe	3.4	5.4	1.2	–4.2	–123.8
Russia	9.3	–	0.8	0.8	9.0
North America	27.3	4.5	4.8	0.3	1.1
Oceania	–	0.1	–	–0.1	–
Japan	0.3	0.3	–	–0.3	100.0
Total developed	40.2	10.4	6.8	–3.6	–9.1
<b>Coal and oil</b>					
Europe	553.3	98.5	112.0	13.5	2.4
Russia	40.2	4.8	1.2	–3.6	–8.9
North America	527.8	20.4	24.2	3.7	0.7
Oceania	12.0	0.4	1.9	1.5	12.5
Japan	54.8	0.5	3.0	2.4	4.4
Total developed	1195.0	124.8	143.5	18.8	1.6

<sup>a</sup> Including lignite/brown coal in or calculated from coal equivalent

<sup>b</sup> In or calculated from coal equivalent

Source: Bairoch 1993: 61. Although scale is not affected, there are apparent oddities of calculation in Bairoch's figures, not explicable by oddities of rounding.

The energy balance of trade shows the developed world in 1913 as a net exporter, in which position it remained during the inter-war period (Table 21). A deficit began to show only with

Table 21. *Production and trade balances of total commercial energy, 1909/11–1989<sup>a</sup> (in millions of tons of coal equivalent).*

	1909/11	1929	1937	1950	1973	1980	1990
<b>Western Europe</b>							
Production	469.8	728.7	714.6	507.3	617.5	816.4	928.1
Trade balance	12.1	31.5	10.4	–67.0	–846.3	–741.8	–705.3
<b>North America</b>							
Production	527.8	873.3	847.4	1195.9	2453.6	2326.6	2466.5
Trade balance	3.7	15.3	33.4	8.7	–168.1	–292.1	–287.2
<b>Japan</b>							
Production	54.8	45.1	61.4	44.1	38.0	42.3	47.6
Trade balance	2.4	–1.8	–4.9	–1.9	–340.0	–392.7	–464.5
<b>All "West" Developed</b>							
Production	1071.2	1592.8	1554.5	1795.8	3285.4	3397.6	3801.8
Trade balance	20.9	40.7	31.7	–68.5	–1348.0	–1414.1	–1362.3
<b>Eastern Developed Countries</b>							
Production	123.7	60.5	176.8	470.9	1907.8	2379.5	2749.3
Trade balance	–2.2	–12.7	–11.4	24.2	20.8	319.5	307.6
<b>All Developed Countries</b>							
Production	1195.0	1653.3	1731.3	2266.7	5193.2	5777.2	6551.2
Trade balance	18.8	53.4	43.1	–44.2	–1327.2	–1094.6	–1059.7

<sup>a</sup> Calculated by comparison of production and consumption statistics; except for 1909/11: calculated on the basis of foreign trade

Source: Bairoch 1993: 63.

the rapid growth of Middle Eastern oil production after World War II. The soaring increase in Developed country deficit is not explained by the depletion of coal sources, but by the fact that oil (incidentally produced in low-wage regions), for the first time in the mid-1950s, became cheaper than coal (produced in high-wage countries). In addition, being liquid, oil leaves almost no ashes and is thus locally – or in the direction of the wind – advantageous, thus supporting the thesis of ‘internalising’ environmental costs.

The relevant issue in understanding changes in the mineral balance is also relative cost and transportation. Looking at the major mineral, Yates (1959: 127), observed that the “iron ore trade before 1914 was primarily an intra-European activity, France, Spain and Sweden supplying the needs of the United Kingdom, Belgium and Germany; Europe also obtained some ore from Algeria and Tunisia. This European commerce accounted for 28 million out of the 32 million tons in world trade.” The rest was mostly attributable to a small shipment from Cuba to the US, exchange between the US and Canada, and a small quantity from China to Japan. It was neither necessary nor profitable to transport iron over long distances, and the picture remained similar even forty years later, though requirements were twice as large (*loc. cit.*): “much of the increase was met by more intensive exploitation of home and nearby resources.” Thus, even in 1950, developed country deficit of iron ore was merely 6% of its production, and began to rise rapidly only thereafter (Table 22).

Table 22. *Production and trade balances of iron ore, 1913-1990 (millions of tons of metal content).*

	1913	1937	1950	1960	1970	1980	1990
Western Europe							
Production	35.5	33.0	28.3	51.3	54.3	38.4	21.0
Trade balance	-0.2	-2.6	-0.6	-12.4	-48.3	-54.4	-65.0
North America							
Production	27.0	37.9	51.1	58.0	83.8	79.1	58.3
Trade balance	-0.8	-1.2	-3.8	-10.8	-1.6	3.6	5.3
Japan							
Production	–	0.3	0.5	1.0	0.9	0.3	0.1
Trade balance	–	-1.9	-0.8	-8.6	-63.2	-80.3	-75.2
Other West Developed							
Production	0.1	1.5	2.2	4.1	37.5	81.1	91.0
Trade balance	–	0.2	–	0.3	28.3	63.7	70.9
All West Developed							
Production	63.0	72.6	82.1	115.1	176.0	199.5	170.3
Trade balance	-1.0	-5.4	-5.3	-31.6	-84.8	-67.5	-65.3
Eastern Developed Countries							
Production	–	16.4	23.2	60.2	109.0	138.3	142.7
Trade balance	–	-1.0	-5.9	-2.6	-0.8	-7.4	5.0
All Developed Countries							
Production	64.0	89.0	105.3	175.3	285.0	337.9	313.0
Trade balance	-1.0	6.6	-6.6	-34.2	-85.6	-74.8	-60.3

<sup>a</sup> Australia, New Zealand, South Africa.

Source: Bairoch 1993: 64; cf. Yates 1959: 128f.

Furthermore, Bairoch (1993: 65f.) points out: “The story of the other main ores after 1913 is more or less that of iron ore; the 1950s and the 1960s saw a rapid increase in the dependency of Western developed countries.” Summing up some of Bairoch’s statistics we get the overall picture of the main internationally traded minerals as reproduced in Table 23.

Table 23. *Production and trade balance of coal equivalents and main ores 1909/13–1990.*

	All Developed Countries			Western Developed countries				1990
	1909/13	1934/8	1953	1953	1960	1970	1980	
Coal equivalents	(1909/11)	(1937)	(1950)	(1950)		(1973)		
Production	1195,000	1731,300	2266,700	1795,800		3285,400	3397,600	3801,800
Trade balance	18,800	43,100	-44,200	-68,500		-1348,000	-1414,100	-1362,300
Iron		(1937)	(1950)	(1950)				
Production	64,000	89,020	105,280	82,100	115,110	176,010	199,530	170,310
Trade balance	-1,000	-6,570	-6,640	-1,380	-34,600	-84,780	-67,490	-66,270
Copper								
Production	802	986	1,641	1,309	1,709	2,653	2,563	3,218
Trade balance	-217	-620	-996	-1,239	-1,939	-2,859	-3,711	-3,329
Lead								
Production	1,002	1,062	1,347	1,062	1,125	1,918	1,770	1,724
Trade balance	-120	-340	-501	-502	-773	-712	-1,547	-1,937
Bauxite								
Production	110	520	1,330	840	1,363	4,040	7,884	11,000
Trade balance	0	0	-	-	-2,875	-4,116	-5,320	-5,020
Tin								
Production	16	-	-	8	7	14	19	17
Trade balance	-100	-	-	-106	-148	-139	-119	-117
Manganese								
Production	-	-	-	-	2,012	4,496	7,991	5,905
Trade balance	-	-	-	-	-4,073	-5,592	-3,311	-1,300

Source: Bairoch 1993: 63, 64, 66.

The non-metallic minerals are as a rule found in most parts of the world, their wide availability and thereby relatively high transport costs assuring that they are locally produced and consumed. The most important materials in this category are those used in clay, cement and glass industries, the most important in terms of volume being clay, of which Bairoch estimates a production in 1910 of 80 million tons, followed by cement 34.2 million tons, and glass 2.2 million tons, all in all twice as much as the metals and all locally produced.

Turning next to non-fuel organic raw materials and fertilisers, early Third World inputs play a more important but not dominant role. The former include numerous textile fibres (cotton, wool, jute, silk, flax, and hemp) and their dyes, as well as rubber, hides and skins. Textile fibres were the most voluminous, with an annual consumption in developed countries of 7.2 million tons for the period 1909-13, half of which was cotton, of which most came from the United States (certainly within the developed world, and no longer based on slave labour, although still cheaper than it would have been without it). Cotton imports from the future Third World, therefore contributed only 13% of that consumption, which also happen to be the share of wool. Jute was all imported, raising the share for all fibres taken together to 22-23%. The annual consumption of rubber for the same period 107,000 tons, all of which was of course imported. More important were the imports of fertilisers. Guano, of which so much is spoken, amounted to less than 60,000 tons, whereas the net imports of natural phosphates amounted to 2.9 million tons, over 40% of consumption, though for all fertiliser-related products the deficit was closer to 20%, representing less than 3 million tons.

Therefore, Bairoch (*ibid.*: 67f.) concludes, “on the eve of World War I when the developed world already had a volume of per capita manufacturing production some seven to nine times higher than that of the world in 1750, 98% of metal ores used by the developed countries came from the developed world; 80% of its textile fibres; and, as we have seen, over 100% of its energy. In terms of the volume of the rest of raw materials (such as those used in glass, cement, paper and clay industries), the degree of local autonomy was over 99%. Furthermore, [...] the excess of net coal exports represented a volume about five times larger than the net imports of the rest of the raw materials.” The self-sufficiency of textile fibres was about 90%

in 1830, but had decreased to 80% in 1913. However, (*ibid.*: 69f.) “even at the end of the 1930s the self-sufficiency of the developed countries in raw materials was around 96-8% in terms of volume”. Finally, says Bairoch:

By 1953 the per capita level of industrialization of the West was some twenty-two times higher than that of the beginning of modern development and global industrial production some eighty-five times higher. Therefore, if in fact from 1955 onwards the large dependence on raw materials from the Third World was a reality, before that period it was a complete myth. (*Ibid.*: 70.)

After all, the reason for the largely balanced raw material exchange is not so difficult to understand.

The earlier we go, the higher were the relative costs of transportation. In order to avoid empty cargoes, ships had to be filled with something. Thus, even the arch-industrial, arch-trading, and arch-imperialist Great Britain had a materially balanced trade until the post-war period, easily explained by coal exports benefiting from the lower rates for outgoing vessels. If one ‘hopes’ to find great sins of ecologically unequal exchange related to trade in raw materials, or in order to explain the diverging histories of the developed and underdeveloped world, there is an upward slope of such immensity already to begin with that most people are probably daunted by the task.

It is no argument that one can find regions *within* the developed world which, up to the first half of the 20<sup>th</sup> century, have suffered from such an ecologically unequal exchange, since this could in no way explain the divergence *between* the developed world as a whole and the underdeveloped world. The reason why the idea is popular has something to do with the fact that from the point of view of the underdeveloped world, most exports were indeed raw materials. To this are added strong ‘mercantilist’ and protectionist traditions, not to mention the age-old paradigm of city-countryside relations. The significant lesson to be learnt from modern capitalist development, the ‘take-off’ economy, however, is that it began in the countryside, not in the city. This is the basic reason why attempts to ascribe the development-underdevelopment rift to an ‘exploitative’ exchange of raw materials for manufactures are misdirected. This does not necessarily mean that none took place, and certainly not that they are unimportant for contemporary or future development and underdevelopment.

The implication of the above figures for Bairoch is that, since the regions of the world now developed could become so with raw materials found within that same territory, so could the now underdeveloped world. This is quite another cup of tea, however, as we realise by looking at the known reservoirs and estimated resources of some of the above raw materials, and the future prospects following from projecting various consumption trends as Porter & Sheppard (1998) have done (Table 24). I am the last to deny that the estimated resources are very likely to be too low, since, as we can understand from the above exercise, prospecting has been much more thorough in the already developed regions of the world. On the other hand, it is certain that resources are not *growing* and that consumption *is*, not only continuing to eat away the funds at the same rate. The above minerals are not at all the most uncommon, but as we can see, any upwardly, ‘redistributive’ projection leaves the world short of crucial minerals in only a few decades excepting coal and iron.

The explanatory contributions of ‘ecologically unequal exchange’ have so far been very slim, whether in Martinez-Alier’s version or that of some other. One reason is probably the uncertainty of what, if anything, it is one wishes to explain. Yet Martinez-Alier (2002: 218) maintained that “an explanation why market prices and market mechanisms have not provided a fair and reciprocal exchange” is “precisely something which a theory of ecologically unequal exchange has to provide”. So where does he go for such an explanation?

Table 24. *Global mineral resources: availability, demand, estimates of lifetimes (years).*

Mineral	Reser- ves	Resour- ces	World output (1989)	US demand (1989)	Units	Global growth rate of demand (1980s)	Reserves			Resources			Goeller & Zucker % left in 2100A.D.
							Static	Dyna- mic	Redis- tribu- tive	Static	Dyna- mic	Redis- tribu- tive	
<b>Energy</b>													
Coal	1,167,000	20,000,000	6,000	930	10 <sup>6</sup> MT	4.0%	195	80	55	3,333	110	941	–
Oil	991	2,100	21	6	10 <sup>9</sup> Barr.	2.3%	47	25	7	100	45	15	–
Natural gas	4,400	9,000	54	21	10 <sup>12</sup> ft <sup>3</sup>	6.5%	81	20	9	167	30	19	–
<b>Main ores</b>													
Iron	66,100	800,000	539.9	54	10 <sup>6</sup> MT	3.0%	122	50	54	1,482	150	648	14%
Copper	352,000	2,300,000	8,751	2,211	10 <sup>3</sup> MT	1.6%	40	30	7	265	110	45	0%
Lead	70,000	120,000	3,420	1,236	10 <sup>3</sup> MT	1.0%	20	15	2	35	25	4	0%
Aluminium	4,250,000	8,000,000	39,112	6,457	10 <sup>3</sup> MT	1.9%	109	50	29	205	80	54	0%
Tin	4,280	37,000	205	45	10 <sup>3</sup> MT	0.9%	21	15	4	180	90	36	0%
Manganese	819,000	3,540,000	8,347	900	10 <sup>3</sup> MT	–0.5%	98	105	40	424	Long	172	0% [?]
<b>Fertilisers</b>													
Phosphate	13,855,000	Immense	157,700	39,035	10 <sup>3</sup> MT	2.3%	88	40	16	Long	Long	Long	–
Potash	17,075	250,000	31.43	5,264	10 <sup>6</sup> MT	1.8%	543	195	142	7,954	Long	2,077	–

Source: Porter & Sheppard 1998: 212 & 224. Note: MT, Metric tons; Barr., barrels; ft., feet. Assumptions: ‘Static’, world demand will not increase; ‘Dynamic’, world demand will increase as previously; ‘Redistributive’, world demand will instantaneously settle at US levels; ‘Goeller & Zucker’, per capita demand in the first world countries does not increase after 2000 A.D., increases gradually in the Third World reaching half of First World levels in 2100 A.D.

As he sees it, the theory of ‘ecologically unequal trade’ only revived the tradition of CEPAL, in spite of their sustained lack of interest in ecology. It is only fair to say that so far as any explanatory *theory* of ecologically unequal exchange of Martinez-Alier’s kind can be found, the origins and leading ideas lay not so much in the environmental movement, as in the dominant CEPAL-tradition originating with Raul Prebisch:

The economic thinking of CEPAL in the years between 1950 and 1973 did not incorporate ecological aspects to the Latin American agenda. In its creative era, the thinkers of CEPAL were unorthodox economists, but still economists. Now, the new doctrine of ecologically unequal trade has recovered these old unorthodox Latin American ideas and complemented them with an ecological economics analysis, even though this debate will not be heard within institutions such as CEPAL. The discussion on unequal trade will reappear as part of the ecological debate, in NGOs and academic magazines, and in universities, and perhaps in some political groups and governments (Martinez-Alier 1998: n.p.).

Its reappearance was guaranteed because there were still periods in which the terms of trade worsened for primary commodities.

Martinez-Alier did not pay much attention to the economic and empirical criticism levelled at the Prebisch-Singer thesis over the years, or to the originators own recaptures and reformulations. He (1998: n.p.) mentioned at least how “in some periods economies can grow on the basis of the export of primary materials, and these open economies can create significant urban and industrial bases (as the history of Buenos Aires until 1925, shows). This has been called the staple theory of growth, the theory of economic growth based on the export of primary materials, and applied to countries such as Canada, New Zealand, Australia, and the Scandinavian countries.” As he was well aware, this ‘objection’ – some would call it ‘refutation’ – was inspired by Innis, whose contributions to this field predated Prebisch’s by two decades or so. He (1998: n.p., cf. also 2003: 18) nevertheless believed that Prebisch’s theory, or at least that “the theory of the deterioration of the terms of trade (which laid the

basis for the Latin American policy of 'import substitution') is again relevant given the present neoliberal export wave". The Argentinean record suggests that the policy would have appeared with or without Prebisch's theory to support it, but we can at least conclude that what Martinez-Alier was interested in, then, was not a general theory, given regional differences, but one useful for policy purposes.

He was quite right to suggest, following Bunker (1989), that although attributed to Innis, 'the staple theory of *growth*' was really a later construction by Watkins (1963), and that Innis had a much more critical and sceptical perspective. On the other hand, Watkins, who as we know was one of the pioneers of the Canadian branch of the *dependency* school, is ironically denoted a 'doctrinaire neo-liberal' (Martinez-Alier 1997b: 236).<sup>106</sup> It is, furthermore, something of an understatement to refer to the United States, the British Dominions, temperate Latin America, and Scandinavia, constituting by far the lion's share of world primary exporters in the 19<sup>th</sup> century – or should we also include British and German coal exports? – as 'some regions' to have developed on the basis of extractive enterprises (the Latin American areas would perhaps not have been included by Martinez-Alier). Since these countries include the wealthiest regions of the world, they may be considered important enough to cast some doubt on a logic which presumes exports of primary products to be the mainspring of poverty and ecological debt. To be honest, as the originators of the Prebisch-Singer theorem were, what can be learnt from the experience that in some *other* regions "extractive economies often produce poverty at a local level and an absence of political power, leading to the inability to slow down the rate of resource extraction or to raise the prices" (*loc. cit.*), is that the trouble does not lie with the kind of export at all, but in the 'kind' of something else.

When Martinez-Alier did not try to find a theory of unequal exchange he was familiar enough with the influence of 'power relations' and the 'class struggle' have, particularly in the Sraffian perspective, on the pricing of products. What he seems to have been completely *unfamiliar* with is that, at least since 1970, the language of the original unequal exchange theory as well as its major alternatives has been Sraffian. Perhaps following Bunker, Martinez-Alier believed instead that Emmanuel's theory depended on some kind of unequal transportation of embedded labour hours: "There is a real deterioration in the terms of trade, and also (as Marxist economists such as Emmanuel (1972) had explained many hours of badly paid work are "exported" in exchange for a few well-paid hours. Such theories [are now] complemented by adding to them the environmental component" (Martinez-Alier 2003: 18). Very recently, he (2006: 31) reiterated how the Prebisch-Singer approach on peripheral raw materials had been complemented by Emmanuel, who had supposedly pointed out that "exports from poor countries were more labour intensive than imports, so there was also unequal exchange in terms of human labour".

Apparently, Martinez-Alier still believes that this standard Marxist idea – perhaps available already in the work of Quesnay – of a difference in 'organic composition' leading to an unequal exchange of labour hours, was what Emmanuel's theory was about, in spite of his clear statement that he (1972a: 60) did "not regard this type of exchange as unequal." I will not go through the extensive critique of the labour theory of value to be found in that book,

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<sup>106</sup> The reason for including economic historian C. B. Schedvin's (1990) useful article under this heading is presumably because he thought Péron's policies of 'populist nationalism', protectionism and import-replacing industrialisation, to have effected a fall to 5% in Argentina's export ratio. On the other hand, tariff protection in Canada was one of the factors responsible for Canada's relative success, so no conclusion could be drawn from that (*ibid.*: 548). It should be said that Schedvin's study, considering only the temperate regions of recent settlement, manages to retain the explanatory relevance of the staple thesis crucially by pointing to the respective strong and weak 'domestic linkages' of the leading staple export, by its 'degree of dominance', added to what he believes to be the strong "influence by [its] distinctive production function and other technical characteristics" (*ibid.*: 545), agreeing, finally, that "both institutions and the staple need to be taken into account" (*ibid.*: 546).

nor all its ironies over “the esoteric reality of the Marxists” (*ibid.*: 399) where it was relevant, only establish beyond doubt that the relevant measuring rod is *not* quantities of labour:

*Since equivalence in capitalist production relations signifies not the exchange of equal quantities of labor, but that of equal aggregates of factors ([e.g.,] labor and capital), nonequivalence (unequal exchange) can only signify the exchange of unequal aggregates of these same factors.*

This is certainly not the view taken by the majority of Marxists, including Bettelheim, for whom exchange value, whatever it may be, is merely a (phenomenal) form of the “value” created in production, appearing at the level of circulation and accompanying the commodity as an intrinsic quality, like a substance that has, so to speak, been injected into the commodity by productive labor. This unconsciously metaphysical belief in a perennial content of value, independent of its form, a sort of thing in itself, is to be found to a greater or lesser extent among most Marxists. (*Ibid.*: 325.)

It is ironic that Emmanuel is both criticised by Marxists for not following the labour theory of value and by non-Marxists (neoclassicals as well as ecologists) for doing so.

Having defined a factor of production as a ‘claim’ to a primary share in the economic product of society, and in that sense being strictly speaking a ‘factor of price’ (*ibid.*: 29, n. 2), he (*ibid.*: 1f.) could explain that “the exchange of commodities represents, in the last analysis, an exchange of factors, that is, an exchange of claims to a primary share in the economic product of society.” Since he was concerned with *established* claims, *i.e.*, fixed incomes such as wages, rent, or indirect taxes, and variable incomes (profit), it is true that his theory of unequal exchange did not include unremunerated natural factors. His was a ‘positive’, not a ‘normative’ economics, in the language of Martinez-Alier, whose theory is instead an attempt to *establish* resources, etc., as a claim in the form of ecological taxes levied by Southern producers or states on Northern consumers. Alternatively, if Northern environmental costs have really somehow been internalised in export prices – through the environmental consciousness *and* political power of their people – it can be seen as an attempt to *redress* the balance, although the more ‘positive’ scientific labour remains to be done.

Emmanuel (*ibid.*: 259) nevertheless agreed, in his critique of comparative costs as a theory of optimal specialisation, that the use of natural resources constituted an expense on behalf of *society*, the only problem being that capitalist reality did not recognise it (and through voluntary abstention or neglect the same may apply to any planned economy). On the one hand, assuming full employment, labour and capital represented an equal ‘sacrifice’ on behalf of both society and the enterprise. On the other hand, while rent and indirect taxes influenced relative prices, and thereby the decisions of individual enterprises, they did *not* constitute a burden on society as a whole. Finally:

There may even exist a third category of “factors,” such as certain natural resources liable to exhaustion, for example, certain forest or mineral resources that, insofar as they are available to production units without any equivalent, or any adequate equivalent, being required, are not true factors by my definition and do not count for the enterprises and for the establishment of equilibrium prices – the basis of comparative costs – though their utilization nevertheless constitutes expenditure on the part of society. (*Loc. cit.*)

Among the restrictions to the theory of comparative advantage as a theory of optimal specialisation, then, one would also have to include “the absence of these ‘other’ factors” (*loc. cit.*).

The same point was made by ecologists, such as Odum when he observed that since the circulation of money only involved humans, non-human inputs were destined to remain unvalued in terms of ‘emergy’. Martinez-Alier was of course also aware of the problems involved in monetisation. While Odum, true to his Technocratic beliefs, appears to have wanted to construct a more objective accounting tool than money for such evaluation,

Martinez-Alier was much more sensitive to the basic incommensurability in evaluation and decision making. For Emmanuel, as I read him, either way the solution required the abandonment of the capitalist economic system for a planned one, even though there was no sign of more optimal organisation under existing socialism.

For Emmanuel (*ibid.*: 400), too, ‘values’ were basically incommensurable, and one quarter of wheat could equal one kilo of iron, either through active decision in a planned economy, or through the relative claims resulting in such prices in the capitalist economy – it could *never* be arrived at by “reducing commodities to a *single* common property, *physically given*.” This did not mean that one could not, if one so wished, *translate* ‘one quarter of wheat = one kilo of iron’ into such an entity. Having arrived at this identity, for example in the capitalist economy, by the established relative wage-levels and a common rate of profit under given technical conditions, “[n]othing now prevents us from transforming the relative prices [...] into absolute prices by means of some unit of reckoning”, for which, if only to please Marxists, we may “choose an hour of labor as our unit of reckoning” (*ibid.*: 405).

This said, it is of course equally possible to choose some *other*, for example *ecological* or *biophysical*, unit of reckoning. Indeed, this was what Emmanuel did when he wrote:

The impasse of development can be made brutally plain if it is translated into real terms. Some 6% of the world's population – the inhabitants of the USA – consume more than 40% of an available quantity of raw materials. An equalization of consumption to US levels implies, therefore, a more than sixfold multiplication, on average, of the present volume of extraction – assuming that the USA does not progress any further. Geologically and technically, a leap such as this is out of the question in the foreseeable future (Emmanuel 1974b: 78).

If the present developed countries can still get rid of their waste products by dumping them in the sea or expelling them into the air, it is because they are the only ones doing it (Emmanuel 1975a: 66).

The actual measurement of unequal exchange, ecological or not, was never central for Emmanuel who was interested in the explanatory logic behind it, the historical understanding it provided on ‘overdevelopment’ and the lack of international solidarity, as well as the consequent prospects for the revolutionary end of capitalism.

An historical materialist, Emmanuel believed that the weakest link of the capitalist system lay in the underdeveloped regions of world, just as Martinez-Alier, an ‘ecological materialist’, pins his faith on the ‘environmentalism of the poor’. Both are in this sense Third Worldists, and neither has any great patience with ‘non-materialist’ environmentalism, such as the discussion of ‘quality of life’ in affluent countries, or the “biocentric religions (as distinct from ‘Western’ anthropocentric religions)” (Martinez-Alier 1995: 84), on which other environmentally concerned scholars (*e.g.*, Lynn White 1967, Claude Lévi-Strauss 1983) pinned their hope. Although showing his neo-Narodnicist sympathy for peasant movements in the Third World, Martinez-Alier was silent on the political engagement of similar small-scale peasants and small traders in the now developed world, at least in Europe. The reasons for this seem fairly obvious.

Martinez-Alier's (pers. comm.) interest in ecology began while in Peru in 1973, via the ecological anthropology and agricultural energetics of the time, when everybody was counting calories (*cf.* Rappaport 1967, Odum 1971a, Pimentel *et al.* 1973; he read Georgescu-Roegen [1971] only in 1974). His history of ecological economics (1987) can largely be seen as tracing the origins of this tradition. His first encounter with an environmental conflict, on the other hand, concerned the construction of some hydro-electric dams under Franco “in the lower Ebro valley in Spain in the 1960s and early 1970s” (Martinez-Alier 2002: 36f.). This was quite another experience than calorie counting. Scientific literacy was not a requirement

for environmental engagement, as one of the local fights was led by a tailor and a priest. “The priest did pass around a few publications in English on nuclear risks, and tried to convince the villagers (still under the Franco regime) that they should oppose the nuclear power stations. He himself liked to say in private that, since the villagers knew he could speak some Latin, they believed he could also read English texts on radioactivity.” The moral was that, “popular environmentalism is not hampered by lack of knowledge, it either relies on old traditional knowledge on resource management or it relies on the uncertainty or ignorance which scientific knowledge cannot dispel about the risks of new technologies”, and that this was often misrepresented by servants of power as anti-rationalism: “Industry spokesmen get frantic when science can no longer (in such situations of uncertainty) be used in the service of power. Thus activists are described as ‘master manipulators’ who rely on ‘junk science’ or on ‘tabloid science’, who demand ‘zero-risks’, who ‘substitute politics for sound policy’, making it impossible for regulators to base their decisions on ‘sound science’” (*loc. cit.*).

The local struggle against top-industrialist, more seldom agriculturalist, invaders, supported by state and law, is presumably the essence of most popular environmentalism whether in the North or South or in between. The felt exposure to British-American cosmopolitan capitalism and Soviet industrial state communism, was a factor in the popular support of German ‘ecologism’ in the interwar years. Martinez-Alier is unwilling to acknowledge any such connection, pointing out, as many environmentalists have done, that actual National Socialism was more about ‘Blut und Autobahn’ than ‘Blut und Boden’. ‘Autobahnism’ is of course not limited to the First and Second worlds, but some students of the *Autobahn* have even come to realise that they were projected so as to provoke as little disruption of landscape aesthetics as possible. Others have pointed out that, whatever the actual content of National Socialist policy – that they privately had many *spiritual* connections with anthroposophy, etc., is beyond doubt – the Germans who supported them in the conclusive election, mostly small-scale farmers and small enterprisers, could very well have *believed* in the sincerity of their wish to re-establish connections with the ‘blood’ of the local community and the soil. Naturally, when the environmentalist movement began to revive, the charge (insinuation was enough) was frequently made by their opponents, notably against the German Greens, of connection with German National Socialism. Whatever the historical accuracy of the allegation, any postwar environmental activist with some remainder of survival instinct, whether ‘realist’ or ‘fundamentalist’, is bound to react with instinctive horror against any such implication. It is certainly true that most often the purpose of the claim has nothing to do with historical accuracy either. The ‘folly’ of such charges is not, as Martinez-Alier believed (1995: 71), that the German National Socialists did not have green leanings, but that these were so greatly overshadowed by the militarism, imperialism and racism, for which they are hated – elements harder to link with environmentalist Greens.

Bramwell (1989: 12) noted that today’s Right and conservatives fear what they believe to be an anti-rationalism in ecologism, together with the oppositional nature of its conservative values and non-conservative means:

The frequent attacks on alternative science, medicine and evolutionary theories launched by luminaries from the scientific establishment clearly display this fear; together with its corollary, that the oppositional, anti-establishment and radical nature of the Greens could lead to revolutionary phenomena. Of its essence, the fear of anti-rational revolution is the fear of a Pol Pot as opposed to a Lenin. A Lenin is seen as working, however destructively, within a recognised and familiar Western framework. The revolt of the peasant, however, is boundless, formless and terrible.

As she comments, attacking a philosophy “because it claims to overthrow progressive aims through its objectivity and closer grasp of reality, and to attack it because it appears to do away with rationality, does seem to imply that there is a confusion somewhere. It may be a

valuable pre-paradigm-breaking confusion, or perhaps a sign that existing values are under attack, – but certainly it is something that warrants investigation” (*loc. cit.*). By contrast, Martinez-Alier (1987) deliberately confined his history of energy, or ecological, economics to authors who offer specific calculations of calorific values and resources. Of course, Bramwell (1989: 10) noted, this “naturally excludes biological ecogism, as well as philosophical or mystical ruralism,” for which Martinez-Alier, while taking on the cause of poor peasant environmentalists, appears to have no great sympathy. Perhaps this explains his complete silence on Bramwell’s work after its publication, although he referred to it in manuscript form. It also influences his later historiography of environmentalism (Guha & Martinez-Alier 1997), where the ‘German connection’ is wholly absent, and where the Third Worldist environmentalism of the poor – not including Pol Pot – is confronted basically only by the American and ‘dematerialised’ tradition of the rich. He thereby refuses to learn, or teach, *anything* from the human experience which these dark events nevertheless represent.

Yet in the conclusion to his first and justly reputed book, Martinez-Alier (1987: 238f.) could write, “so far there are almost no ecological social movements with roots in the Third World”, although the idea of a Third World ecopopulism had grown in recent years and was to become his principal theme in the years to come. At the same time, back in Europe, “while a current of competent and persistent ecological politics keeps growing in Germany and other countries, there is the puzzle of the failure in France of a link between the traditions of the Marxist left and the new ecogism, in contrast to Germany.” Furthermore, he admitted (*ibid.*: 237): “I am puzzled by the fact that left-wing ecogism has grown in the 1970s, and is still growing, not so much in the Third World as among part of the youth of some of the most over-developed countries. This book [...] is probably also a by-product of ‘German’ political ecogism.”

Martinez-Alier’s work contains more fragments of a useful theory of ecological unequal exchange than other political ecogists that I am aware of, but they are insufficiently integrated into a coherent theory and historical context. The principal problem with his contribution to such a theory, is, I suspect, that his orientation on what the originators of theories of unequal exchange actually meant to say is much more restricted than his knowledge of ecological economics or Sraffian political economy. However, one suspects also an incapacity to critically confront problems related to a dominating paradigm within CEPAL, dependency, and ecological traditions, confusing the manufactures/raw-materials divide with the developed/underdeveloped one. There is also the deep-rooted tendency preferring to accuse multinationals for the evils of environmental destruction rather than attempt a balanced historical understanding of the (Maxwellian) ‘demons’ involved in maintaining, or even increasing, per capita consumption along with its differential.

In my view, this would, on the one hand, involve confronting cherished ideas of the progressiveness of workers, democratisation as well as environmentalist movements, in their confrontation with increasingly internationalised communications and the corresponding ‘multinationalisation’ of capital movements. On the other hand, understanding the global, small-peasant movements, on which Martinez-Alier sets his hopes, would probably benefit from examining the parallel movements in occidental societies over the centuries. This would also imply trying to learn by facing the demon of national socialism. If this is too provocative, similar confrontations with the demons of once existing socialism, colonialism, neo-liberalism, and so on, could put all existing ideologies and politico-religious projectors in the same bag of good-willing do-baders, and thereby, through deliberate, self-critical appraisal, hopefully advance the chances of much-needed, possibly revolutionary, creative dialogue on things of ultimate concern.

## Preliminary summary on accounting ecological unequal exchange.

Initially, in Chapter 1, we rehearsed the standard mercantilist argumentation for a surplus balance of trade and particularly one in manufactures and services, in the systematic form given to these ideas by Cantillon. Basing himself significantly on some sort of land theory of value, he constructed a model centring around a fixed total of landowners' rents. When opened up to international competition, it provided arguments for said mercantilist concerns, expressed in terms of an unequal exchange of the produce of land. Inspired by Petty and Boisguilbert, Cantillon was himself a great inspiration for Quesnay and the physiocrats, as well as future organised political economic thinking in general, in contrast to which he accepted policy reality. Classical political economy and Marxism systematised their theories instead around the other original factor of production pointed to by mercantilists, *i.e.*, labour, often contrasting it with the unproductive earnings of the capitalists, while land rents were by then too insignificant to function as organising principle.

Ecological revival meant that land again emerged, but now as the producer of 'real' wealth, often in an attempt to supplant or complement what one believes to be an unecological obsession with labour, which is unscientific because everything, including everything of economic value – ultimately spring from the Sun (energy) and the Earth (matter) and the labour of man, along with all his technical extensions (including money), is only a derived aspect of these. Odum has constructed the most systematic system to incorporate the former, whereas industrial and social metabolists have been more concerned with the latter. Odum, in particular, has systematically applied it to international unequal exchange, where it was related partly to the emergy inherent to raw materials not being included in prices (meaning that, ecologically speaking, land rents are too low), whereas the emergy of labour and capital was. It was also related to the unequal emergy ratios of different currencies, which in turn was explained by the level of urbanism, meaning that in rural areas labourers to a greater extent could supply themselves with non-monetised goods of nature. This neglects politically enforced differences in wages, which also have their emergy equivalent, an impression reinforced by confusedly referring to any raw materials production as an 'underdeveloped' trait, even when concerning New Zealand, Australia, Alaska, etc. The policy suggestions drawn from this were unoriginal, but much in line with the common-sense ones drawn, *e.g.*, by mercantilists, protectionists, or Latin American structuralists. There is the notable exception, however, of the permanent effort to sell more than one buys, which would seem to remain an incomprehensible absurdity in Odum's intellectual empire, just as it remains a feature of the real world of a capitalism that he felt a calling to reform if not revolutionise.

If nuclear testing assembled an environmental consciousness, ecology as a science profited from these tests and its symbiosis with the military. Another link to the Cold War, as for development economics, was the feared population–resource crisis which risked driving people to communism and fascism. Part of Truman's Point Four, this imagery had a political and an ecological side, and in the latter camp certain neo-Malthusian, and rather Protestant, concerns emerged over the inhibited procreation of the poor, but also the embarrassing overconsumption of the rich, in which sense even Europe and the United States were 'overpopulated'. If the former showed up in malnutrition, as it was believed for lack of proteins, the latter was made possible, in Borgström's conception, only through the incorporation of phantom 'land' areas from fishing or trade, the latter being the acreage, in terms of tilled land, required for the produce of land constituting net importation. 'Ghost acreages' implies living on the resources of others through hidden transfers, wherever in this world or the next or the former, they may belong – an idea better caught in Sætra's imperialisms in past, present and future tenses, than by any other. Believing that the Earth's output, with current technologies was limited in a quantity-quality continuum sense, increased

quantity of output had only been achieved through lost quality, and at the cost of widespread undernourishment. The more radical ecological stance was that the latter, if not caused by, was nevertheless linked to the overconsumption of the rich, necessitating a reorganisation on an international scale to achieve less exuberance, greater nutritional equity and restraints on procreation. The less idealist, such as Hardin, concentrated on the enforcement of population control and closing the poorer masses from overpopulated areas out of ones own and more well-fed, so as to maintain 'dignity' and 'civilisation'. If it has had no intellectual offspring, it seems to fit better what actually happens.

Borgström translated all produce of land, sea and trade, into factors of tilled land, and suggested adding fossil fuels (something explicitly done by Catton). His public success may have added stimulus to Odum's turn to similar concerns in the second half of the 1960s, either directly or through becoming involved in official projects (but the more important factor in this case would seem to be the Green Revolution). By transforming livestock, etc., into population equivalents, Borgström pointed to humanity's heavy appropriation of bioproductivity, another idea that via numerous ecological studies was to be incorporated in Rees's ecological footprints, or appropriated carrying capacity. Apart from many other difficulties, impenetrabilities, and a possibly growing Earth, by mixing past, present and future in one unidimensional metric, the concept unnecessarily confuses the nature of environmental problems, which would be better illuminated and probably better helped on the lines suggested by Sætra. Drawn to its limits, the spatial and quantification bias ultimately becomes unpedagogical, loses its motivation, and should, evoking Innis, be escaped and complemented with a consideration of time, and an understanding of quality and heterogeneous detail as stretched through or standing out, three-dimensionally in time.

The same problematic informs the discussion in ecological dependency writers, obsessed with finding a spatial relation between development and underdevelopment, this time understood as a transfer, hidden or otherwise, of resources and ecoservices from the latter areas to the former, causally linking ecological degradation to underdevelopment, or perhaps the development of the one to the underdevelopment and ecological degradation of the other. The time dimension of both ecological and economic problems, current limitations and prospects arising from heritage and dispersed possibilities for the future, are all subsumed into present-minded accounting of real or imagined transfers. There is another, and so far as it concerns unequal exchange more promising, streak in this tradition, which is mostly absent from those referred to above. This refers to the illumination to be had from looking at the relative strengths in the sphere of social conflicts, and their repercussions on distribution, pricing, and international division of labour from an ecological perspective. Here, there are prospects for added understanding of our historical existence, most recently on the question of the environmental Kuznets curve, which on the other hand does not fit nicely into the explanatory paradigm of raw materials exchanging for manufactures usually favoured. Adding ecological concerns to our historical understanding, we should try to avoid falling into conventional and politicised irrelevancies. Notably absent from most writings on ecological unequal exchange is, ironically, any particular concern with non-human nature, 'ecological conflicts', or the relative ability to wreak havoc upon fellow species. Taking on the perspective of these species, might be a useful exercise in trying to get perspective also on social conflicts.

Finally, as concerns the obvious lack of theoretical sophistication among the above ecologists so far as unequal exchange is concerned, this might be remedied first of all by acquainting oneself with the literature. Emmanuel, along with Lewis and Innis would be my own recommendations and would also be those with most sense of history.

## Summary and conclusion

Since the primary aim of this thesis has been historical, its principal proof is in the pudding, or point in the telling. In this summarising conclusion or concluding summary, I shall therefore rehearse the main outlines of the historical arguments above.

As stated initially, I have tried to avoid a merely internalist perspective focusing on the evolution or not of theoretical content, and instead tried to use the entourage of history to illuminate possible shortcomings or strengths of theorists and in their theories. Paying homage to the personal involvement of the internalist perspective with the progression of one's particular branch of learning, certain questions of theoretical content have nevertheless reappeared throughout the text. These have first of all concerned the usefulness as aid and interpretative tools to understanding our historical existence. I have accordingly argued that certain popular traditions of interpretation such as those of 'monopoly capitalism' and much of the centre-periphery literature trying to link underdevelopment to the exportation of raw materials are very much less useful than often believed to be. With respect to Marxism, I would also argue against confusing the labour theory of value understood as a theory of pricing, in which sense it is meaningful but erroneous and had better be abandoned, and the favourite Marxist or ecologist understanding of labour as the creator of 'value' in some more metaphysical sense, in which sense it may be correct (in the minds of believers) but not very meaningful and had better be abandoned. By analogy, theorists – should they so qualify – of ecological unequal exchange had better beware of falling into the same trap, whether their preferred measuring rod is emergy, footprints or something else instead of embodied labour hours. Historically, the labour theory of value in its Marxist guise has served as an illuminating tool in many instances, notably, in the history of non-equivalent exchange theories, in the case of Bauer, and in the history of unequal exchange in Emmanuel's initial formulations. Similar points could have been made with respect to the Socialist bloc for Preobrazhensky, or indeed on those huge sections of the world trying to organise planned economies. The common denominator in these cases may be that problems are concrete and theories serve precisely as interpretative tools.

In fact, the doubt as to whether there really are any *theories* of ecological unequal exchange is not so absurd as it may sound in the ears of those who perhaps consider themselves to be contributing such. Current writing is engaged mostly with the mere question of more or less successfully *accounting* for nature and unequal exchanges in one's preferred metric. Only rarely is there any useful explanatory theory involved aiming to cast light on historical change – or more pointedly, rarely if ever have ecological theories of unequal exchange been brought in to explain phenomena because they have proven inexplicable by other means. The rematerialising of the so called dematerialisation setting in from the 1970s, may be a notable exception, and this may be enough, but it contrasts starkly with often grand projections – perhaps indicating a strong sociological element where the ambition often seems to be to explain everything and one succeeds in explaining nothing. When not merely accounting or classifying for its own sake, there seems to be some uncertainty of what is the riddle to be solved.

If the problem is industrialisation and underdevelopment, as one is sometimes led to believe, then the net transfer of raw materials is a lost cause doomed to failure. I have tried to illuminate some of the reasons for the recurrent belief in such a link, starting with the strong common sense tradition of mercantilism (in itself continuing an interpretation in terms of the city-countryside dichotomy), which, it has been suggested, is perhaps much more reasonable than conventional economic teaching would have us believe, but which was not concerned

with the problem of the rift between developed and underdeveloped countries for the simple reason that it had not yet appeared. It is doomed to fail, not only because the actual transfers from periphery to centre were minuscule in comparison with domestic production or the goods themselves peripheral luxuries without much importance to economic development (gold and silver being possible and already extremely well-researched exceptions), but basically because the actual historical discontinuity set in the countryside, and the reason for expanding to the periphery was largely the domestic openings sprung from such already keen activity. Linking the raw materials–manufactures versions of centre-periphery or metropolis-hinterland dichotomies to that of development–underdevelopment is a mistake also because the geographical peripheries, who did the most exporting of raw materials, were also the most successful ones economically – Scandinavia, the United States, the British Dominions, and Argentina. The reason for the popularity of this idea, then, may be as I have suggested, first, in classifying Latin America as a whole as an underdeveloped, peripheral region, forgetting that the regions doing the most exporting were also the ones to become prosperous themselves, and then transferring this paradigm to the rest of the Third World. There is, of course, much to be done in understanding the relations between past ecologies and human societies, also on a global scale, but the usefulness of unequal exchange theory, or measurements of non-equivalent exchanges in this area is not evident.

If neither monopoly capitalism nor the above concern with raw-materials are examples to follow, what is the use of unequal exchange theory to the ecologically concerned? More positively, then, I have suggested rejuvenating Emmanuel's original concerns with unequal exchange as an explanation of terms of trade phenomena, pointing to the underlying sphere of social conflicts between the *great masses* of peoples, and thus with understanding the overdeveloped, globally inequalisable, high-wage, high-profit consumer society. This is not an overtheorised field of human ecology or ecological economics, and certainly not among Marxists, for whom the very question is suspect. Neither is it a very concretised field in Sraffian economics, nor for that matter in conventional economics, for which the very question of social conflict underwriting price mechanisms is suspect. Finally, and rather more peripherally, I have suggested that the problem of ecological accounting for this society, is better done with greater attention to the past and future tenses. I would suggest drawing up some kind of expanding or contracting global 'possibility-sphere', in which past and future generations are included along with other species and other Earthly co-processes. This may ultimately be much more of a literary and imaginative challenge, involving much of historical (including historical ecologies) understanding, than a diagrammatic and quantification one. With this program for the future, we shall now return to our history of theories of unequal exchange. As said initially, it is one which would not have been conceivable without the work of Emmanuel, who has functioned as a rejuvenating theorist in this instance just as Keynes of Sraffa for other traditions.

Among the sciences, human ecology is one of the more peripheral and its field of inquiry vaguely and vastly defined. Like many of its sister sciences it can be regarded as complementary to the tradition of political economy. The attempt has been made to trace unequal exchange as a theme of political, economic, and ecological theory and debate. It has led us through a field which is largely complementary to standard histories of economic theory. The point has not been to replace standard economic theory or its historiography of the subject, but rather breach an opening for debate and questioning. Whether this takes place under the umbrella of the one science or the other – preferably both – may be of less importance than the attempt at a more inclusive approach. More important, perhaps, is how deeply political motivations, or factors of 'general history', intermesh with allegedly 'pure theory', and although the present study has been with peripheral theories and has had to limit coverage of general history, there is no reason to think that the same is not true of standard

theories. Unequal exchange is a fundamentally political issue, and in the political field, considered not in the 'party political' or 'vested interest' sense, the present study has been an initial probe into areas with some uncomfortable associations of nationalism and chauvinism. The globalism or internationalism often held up as ideals must, in my opinion, be complemented by even more uncomfortable and therapeutic questioning into this field. The same approach will be needed if the equally pressing problems relating to future generations are to be resolved.

We began by pointing to the almost definitional preferred hierarchy of goods among 'mercantilists': the two very basic and interrelated mercantilist doctrines, stating, in essence, that it is better to exchange manufactures for raw materials than the other way around, and better still to exchange them for the money commodity (gold or silver), *i.e.*, that it is better to sell than to buy, which for a nation implied favourable balance of trade and payments. According to traditional mercantilist, and premercantilist ideas, the creator of 'natural' and 'artificial' wealth was basically God and man, and the source of 'value' consequently, in more worldly terms, land and labour. Admittedly, when not seduced by this analogy, the mercantilist authors also understood very well the necessity of an accumulated art and ingenuity to make anything of value. An important origin of ecological theories of unequal exchange is the reaction against what has been perceived as the classical and Marxist economic obsession with 'labour' as the origin of value – an obsession which may largely be the case for much of Marxism, including many Sraffian-Marxist versions. Recent ecological theories of unequal exchange can largely be seen as an expression of the rediscovery of 'land', for example by Marxists of a more ecological ilk.

However, if it is admitted that 'land' can function as such a unit, then the origin of ecological theories of unequal exchange can be traced at least to Cantillon in the 18<sup>th</sup>-century. Building on Petty, Boisguilbert, and traditional mercantilism, his only remaining work follows a method of abstraction from a simple system to the international and general (in something of the pattern later to be projected but not accomplished by Marx). It was divided into three parts dealing with a definition of wealth, a survey of the social and institutional framework, and value analysis (Part I), prices, money and interest (Part II), and finally international trade, foreign exchanges, banking and credit. Contrary to much 20<sup>th</sup> century ecologism, he accepted the societal aim of increasing population, and the essence of the unequal exchange model was to achieve this. The total produce of the land was given, but a state exchanging a small product of land for a larger in foreign trade could increase it. Furthermore, with a greater abundance of money than its adversaries it would always exchange a smaller product of land for a greater.

In thus linking gain in land produce to the general money level Cantillon's theory reminds perhaps only of Odum. An exchange of labour (manufactures, services) for the produce of the foreign land was similarly advantageous, since one's inhabitants were fed by the foreigners land. Hailed as 'the first of the moderns' and the creator of the first economic system, his policy conclusions were nevertheless mercantilist, as opposed to Quesnay whom he greatly inspired, recommending exports of manufactures and securing inflow of bullion. Placing him within the ecological rather than the mercantilist camp could be defended by the break with more traditional mercantilists, who had greater confidence in the arts and ingenuities of man, much as in the growth theories of the 1960s. By contrast, Cantillon had a cyclical view of development, within the limits set by the scarcity of land and luxury consumption characterising phases of decadence. With trade and correct policy the relative position in the inter-state system could be raised, money and population increased, and all be supported by the inflow from competing nations. The absolute limits set by the rent of land reminds of Borgström's different acreages, or the limited source of renewable solar energy in Odum's

theory, which seems to incorporate also the refinement of labour and the arts (cf. Odum's 'emergy') if real value was to be enhanced.

From the internalist perspective, it may be said that to qualify as a *theory* of unequal exchange requires organising ideas into theoretical systems. Although this would perhaps obliterate the majority of later contributions as well, and while it may allow entrance to several late mercantilists, from this perspective, theories of non-equivalent exchange could appear only with the economic systems and level of abstraction of the physiocrats and classical economists. Their clear separation between 'productive' labour and sectors of the economy, creating the 'surplus' on which the 'unproductive' classes fed, indicated a non-equivalent exchange in terms of that land or labour which they, too, tended to consider the mainspring economic real values. Inspired by his French predecessors' attempts to understand why France had fallen behind England, Quesnay emphasised agriculture as the mainspring of wealth. Contrary to the mercantilists, he argued that exports of agricultural goods were preferable since it tended to stimulate investments and increase productivity in that sector, which was precisely what France needed to catch up with England. It has also been argued that Quesnay preferred agricultural exports because they incorporated what in Marxist terms would be called a higher 'organic composition' of capital than did manufactures, which would imply an abstract transfer of labour values.

In a sense, Adam Smith represents the apogee of the preceding centuries of British political-economic debate on the best policy for the Commonwealth. The fear of importing luxuries was as great in his work as it was in that of both mercantilists and physiocrats. A rather modern version of the idea of unequal exchange was derivable from his interpretation of the trade between town and country. His interpretation of the advantageous location and monopsony of the town, and notably the monopoly on the factors market, due to better organised labourers and merchants and restricted entry, contained all the ingredients of a theory of unequal exchange, with prices biased in favour of towns and consequently expressible as a non-equivalent exchange in terms of the labour theory of value. His defence of free trade was based on the same argument as Quesnay that anything increasing the annual produce of the country was likely to increase its wealth, and increased international specialisation through free trade was one way to assure this for all parties. His argument was probably less influential than that of the late mercantilist Josiah Tucker, who argued for free trade as a means to improve the balance of trade. Since England was absolutely more productive than other countries in both agriculture and manufactures, Smith's argument was inconclusive as to which was to be her ideal specialisation, corn or textiles.

In the theory of international trade Smith was therefore soon overshadowed by Ricardo, who answered that since England was relatively more productive in manufactures, it would be better for all if she specialised in that branch rather than in agriculture. Whatever the reasons why Ricardo came up with his theory, its conclusion that England was predestined to be an exporter of manufactures fitted perfectly well with centuries of mercantilism, and perhaps even more with the rising conception of 'racial' superiority demonstrated by technical in the free entrepreneurial struggle for survival. Reactions to the free trade theories set in before its practical application, first in the American colonies (Hamilton, Carey, and the German immigrant Friedrich List), where the old mercantilist ideas were turned into the idea of 'protectionism' and later partially reintroduced into standard classical political economy. A separation was nevertheless clearly visible between political economists, and those involved in practical policy and matters of economic history, preferably in neighbouring countries, but also the English historical economists. The Ricardian version won an all but total victory as international trade theory, but its 'abstractions' and free-trade recommendations were combated by historical economists who also suspected them of having fostered domestic class-struggles and Marxism.

Following the Ricardian socialists, while sharing conservative fears of domestic contention, and even observing the ecologically disruptive effects of cotton plantations, Fitzhugh attacked the soundness of the free, competitive society as it evolved in England and America. This was one reason for his propagandist defence of a patriarchal slave economy, although his hopes that it would generalise to the North sealed its fate as propaganda. His argument, less sophisticated in itself than that of Steuart or many others before him, included a conception of non-equivalent exchange inspired by Ricardian socialism in terms labour values. The product of one hour of southern labour should exchange for one hour northern labour, but this was not the case. The same principle of equality could not be expected to apply between individuals within society, only between sufficiently large populations such as the North and South. And yet, though he admitted its seductive short-run advantages, free trade did not assure this because the agricultural labour, which he believed to characterise the South, was unskilled and uneducated 'hand-work' in abundant supply and whose price would always be determined by the cost of subsistence. By contrast – and etymologically ironic – manufacture was 'head-work', which tended to be better paid and which he believed to characterise the industrial North. Theoretically unsophisticated and with ideals highly unsympathetic to the later dependency theorists, his and their perspective on trade inequality has many parallels including the advocacy of autarchy. In the case of Fitzhugh the solution was a patriarchal slave economy, which could secure the livelihood and old age of its workers, whereas dependency theorists advocated a socialist state, presumably for the same purpose and against the same northern state enemy. In both cases, the identification of the periphery with agriculture may be correct, but interpreting the centre as an industrial region is equally false. In Fitzhugh's case, it denied the fact that it was rather the North which exported agricultural products to the slave society of the South, and that the economic problem for the latter seems to have been the generally lower productivity in both manufactures and subsistence agriculture, although not in export goods sector, a pattern well-known from later theorists and historians such as Lewis or Emmanuel.

The main tradition of interpretation continuing Ricardo's theory of labour value was of course the Marxist. Here, the contemporary unequal exchange problematic eventually appeared, but traces of it can be found in various formulations of *non-equivalent* exchange, *i.e.*, a net transfer of value between branches of differing capital intensities in Marx – or countries in theories of non-equivalent exchange proper – due to the process equalising profits between them. While basically an abstract problem arising from theoretical definitions, it has on occasion aided interpretation of real problems. I have argued that the factual vagueness of what was to constitute a 'nation' in the Habsburg empire, contributed to theoretical innovation in Austrian Marxism. Otto Bauer and others often complained about their bad luck of having been born in that Empire where conflicts between different nationalities had diverted attention from the truly important socialist issues of class struggle. Bauer was unaware of introducing any theoretical novelty in his discussion of the economic aspects of national hatreds between Germans and Czechs in Bohemia. He treated the German and Czech regions trading with each other as respectively more and less subject to capitalist development, or as relatively more industrial and more agrarian, and introduced Marxian price theory to explain oppositions. Profiting from the debates on the 'transformation' of values into prices of production, he observed that the equalisation of profits under the latter implied a transfer of surplus values from the branches and regions with lower than average 'organic composition' or level of productivity, to those with higher than average productivity. Within Bohemia, thereby treated as a 'nation' in the economic sense with a uniformly equalised rate of profit, the more developed, industrial, region thus benefited from such an implicit transfer of surplus value, or a non-equivalent exchange. There was no theoretical novelty in this and it was not presented

as such. The novelty arose when the 'nations' were instead said to be the German and Czech peoples of Bohemia, whose hostility Bauer had set out to illuminate.

If his former argument had assumed an equalisation of the rate of profit, here, he instead reminded that the different levels of development corresponded to different wage rates between the regions. This explained the trend of low wage Czech workers to move to high-wage German regions, where they were seen and treated as strike-breakers undercutting wages and wage demands. According to Bauer, the issue had been resolved not by German workers keeping the Czech out by force, but by winning their support for German trade union organisations and training them for union struggle. Bauer was pleased to confirm that the Czech now tended to demand almost as high wages as the German, but he forgot that according to his own figures they were also the second most developed of Bohemia's many peoples. Fundamentally, the reason for this equalisation of wages was due to the mobility of workers characteristic of capitalist countries. Bauer was still oblivious to *international* mobility of capital, and did not consider the potential conflicts which may, and had already started to occur in a truly international setting where wage differentials were of another order than those between Bohemian Czechs and Germans. Again, the problem of international immobility of labour between high- and low wage regions was to be actively treated only, *e.g.*, with Lewis, Myrdal or Emmanuel, where only the latter two considered simultaneously the problem international mobility of capital, and only Emmanuel constructing a comprehensive theory.

The first self-conscious attempt to speak of *international* prices of production, and thereby of international non-equivalent exchange, appears to have been Henryk Grossmann, adapting an example by Marx comparing Europe and Asia. He introduced it as one of the factors counteracting the tendential fall in the rate of profit, which he argued, using an argument to the contrary by Bauer, would lead to the breakdown of capitalism. Although the argument about the breakdown of capitalism was fundamentally flawed, the possibility of international non-equivalent exchange to counter-act a fall in the rate of profit was not, or not necessarily so. Like Bauer's argument on the economic reasons behind international hostility, it also has an interesting parallel in one of Emmanuel's later argument on unequal exchange as counteracting the fall in the rate of profit, occasioned in his case not by some alleged automatic tendency, but by successful domestic wage negotiations. By contrast, the North American dependency tradition had links rather with Bauer's and Grossman's critics on the question of transfer of value and non-equivalent exchange, via Sweezy to Baran and Frank. Instead of the terms of trade, and somewhat like the Indian 'drain theory', with links backwards to late mercantilist Steuart, Baran and Frank preferred to speak of transfers of 'surplus' within multinational corporations or 'monopolies'.

The Canadian dependency tradition was obliged to relate to Harold Innis, whose so called 'staple thesis' they tried to revive as a theory of Canadian (*sic*) underdevelopment. Ironically, one of the fathers of this line of interpretation, Watkins, is more known for his previous attempt to read into it a theory of growth and development. In line with the early Watkins, Innis was revived again by a critic of Bunker's ecological dependency theory of unequal exchange. Bunker countered, unwittingly in line with the later Watkins, by trying to link it instead with underdevelopment, but at least doing the service of reminding of the ecological dimension in Innis's work. In Innis's own world, it was neither a theory of development nor a theory of underdevelopment, although he made crucial observations on differences between Catholic tropical countries and Protestant temperate ones in the reactions to the swings in the business cycle.

The staple thesis was an interpretation of 'the case of new countries'. In their initial stages these tended to focus on finding a small-bulk, high-price export product, fur and fish in the Canadian case, in order to retain or augment the consumption patterns of emigrants. The

habits, economic and social structures thus erected, eventually leading up to the establishment of Canada around the network of water communications and the export of furs, were highly dependent on the geographical and ecological peculiarities of the region, as well as on the existing Indian civilisation, canoes and local knowledge. If the technically more advanced European civilisation had tended to disrupt Indian civilisation to the point of extinction, Innis similarly believed that the technology of the industrial revolution, particularly as reexported from the former American colonies, tended to undo European civilisation. Contrary to the otherwise in some senses similar Turner thesis for the United States, which focused on the alleged individualist purification bath of the frontier experience, the staple thesis claimed that new countries were basically directed towards the metropolis, and in the case of Canada the frontier experience tended to foster a centralised political organisation, reinforced by the railway and the wheat economy. Contrary decentralising effects on political organisation were observed for the fisheries, in this case the problems of the British Empire with New England, and later the importance of Nova Scotia in establishing 'responsible government' in the Dominion of Canada.

Part of Innis's interest in the hidden effects of economic minutia on political organisation, was his concern with the disruptions effected by changes in the same seemingly harmless minutia. Sudden changes in production or sales technique reverberated 'cyclonically' in societal reorganisation throughout the metropolis-hinterland system. Thus, with each change of staple product followed serious social disruption and reorganisation, not merely in the periphery but also in the centre, notably with the export of wheat in the depression of the late 19<sup>th</sup> century, pulp and paper or the new journalism in the First World War. Although the peripheral situation was considered politically and economically problematic, and often socially disruptive, there was never any question of Canada becoming underdeveloped, and the attempts to fit the Innisian staple thesis to the dependency perspective only illustrate the shortcomings of the latter, even if an ecological reading is a much welcome addition. Unfortunately, with minor exceptions (one of which was in fact inspired by Emmanuel), one has not profited from the possible comparisons between the British dominions and Latin America. Without noticing the tropical-temperate and Catholic-Protestant dichotomies, and applied only to the raw materials-manufacture one, the interactions of the centre-periphery system in the swings of the business cycle, may well have been adopted by Prebisch except that he was not very informative about the sources of his ideas.

Innis's basic inspirers were Adam Smith, in the interpretation of the historical economists, and the satirical science of Veblen. There are in fact other things to be learnt from the Innisian perspective, some of which have links with the problem of nationalism. Like Veblen, his principal concern was with detecting trends and avoiding their effects. Whereas the problem of underdevelopment was as yet undetected, he focused instead on the problematic nature of Western civilisation to excessive expansionism and nationalist aggression, and the lack of institutional means for self-reflection in an era when the old habits of thought and action faced a new and electrified environment. The former trends he believed to be an aspect of the 'space bias' of the media of communication which had dominated Western political organisation, alphabet, paper and print. The problem of finding a politico-religious organisation which could handle the 'problem of space' and regain a sense of 'time' was as yet unresolved, and is no less so in the era of global inequalities and problems of the future and 'eternity', which have been partially reawakened in the environmental and perhaps various religious or ethnic movements. Apart from his sensitivity to the underlying ecologies, then, Innis provided also a means to interpret the differing trends among what Emmanuel's was to call the 'exogenous' or 'independent variables' of his model.

Based on his contribution to the debate on the falling terms of trade for raw materials, Raúl Prebisch has been held the originator of 'the' theory of unequal exchange. He is certainly an

important figure in that context, but it was pointed out that his argument on and interpretation of the changes in the factorial terms of trade had been borrowed from Hans Singer, whom he quoted. I have furthermore argued that, as in the case of Innis in Canada, the centre-periphery perspective by Prebisch in Argentina was not initially adopted to explain the underdevelopment of Latin American countries. Indeed, it could not have been relevant to think of Argentina as underdeveloped, and in Prebisch's own formative experience of the early 1930s, the link between exports of raw materials were common to Argentina, the United States, and the British dominions, neither of which was underdeveloped but all of which were or had been peripheral to Britain. In fact, while using Singer's statistics and some of his conclusions, not even in Prebisch's most illustrious contribution from 1949 is Latin America identified as 'underdeveloped', but only as 'periphery'.

Always deeply involved in formulating practical policy issues, the consequences of the depression, and perhaps the encounter with Keynes's writings, 'converted' him to protectionism and industrialisation. It is perhaps significant that Prebisch came to his policy conclusions before he had formulated any theory with which to motivate them. Although an important figure, his change of perspective was part of a more general trend which arguably would have occurred with or without him. There are many parallels between his ideas, including the concern over the balance of payments, and those of Heckscher's 'natural man', and it has even been argued that they are not sufficiently distinct to qualify even as *neo-mercantilism*. This is not in itself an indictment. Many similarities have been observed between Prebisch's views and those of well-known figures of the 1930s, such as Schmoller, Manoilescu, Keynes, or even Innis, although Prebisch himself liked to present himself as a self-made man.

If the ensuing debate on the falling terms of trade was conducted in terms of raw materials vs. industrial goods, this is partly explicable by the consistent predictions to the contrary by classical and neoclassical theory. The debates themselves, however, led to a refocus, significantly through the work of Kindleberger, and notably by Singer himself, from raw-materials producing to underdeveloped countries, although a falling trend is perhaps perceptible even for raw materials. If the rising trend for raw materials has not materialised, as was previously unanimously predicted by classicals and neoclassicals, Marx and Marshall, Keynes and Clark, then one may suspect them to be hard pressed for explanations. Prebisch's and Singer's explanation(s), on the other hand, merely constituted modifications of the neoclassical stance and laid great emphasis on certain allegedly inherent characteristics in the demand for raw materials, although they added a battery of additional explanations, notably in Prebisch's emphasis that the trade union power of industrial countries tended to assure that wages rose with productivity in the upswing faces of the business cycle, but then did not decrease again in the downswing. Kindleberger pointed out, however, that if the elasticity of demand for raw materials were such as they said it was, then the additional explanations were unnecessary. But as the actual trend was not exactly for raw materials but rather for a certain type of countries, there would seem to be better reason to abandon the elasticity argument and focus instead on the trade-union, or some other such argument. This, Lewis tried to do by adapting the classical, instead of the neoclassical, perspective, and Emmanuel by adopting the Marxian.

If it was not so much the type of good, but the type of country that mattered, Arthur Lewis instead suggested that it was the different evolution of wage-levels between these types of countries that explained the evolution in the terms of trade. Furthermore, if Prebisch as an Argentinean was sensitive to the fortunes of agricultural exports, Lewis as a black West Indian, was obviously sensitive to racial discrimination in both wages and migration policies. This origin is the only reason for referring to him as 'peripheral'. Apart from Innis, the Nobel laureate Lewis was probably the most talented historian of those studied in this work, in

addition to making significant contributions not only to economic theory and as a compiler of world trade statistics. Being less brutally confronted by racial prejudices than many other famous West Indians, he established himself in Manchester. Like many other development economists at the time searching for alternatives to socialist planning, Lewis was first of all inspired by the example provided by the British industrial revolution, which served as the template for his development model.

According to this model wage levels were basically determined by a sector of subsistence agriculture, where labour tended to be of 'unlimited supply' and wages correspondingly to be pushed down to subsistence. High agricultural productivity in England and the simultaneous uninhibited possibility of emigrating to new and 'uninhabited' lands overseas, served as the basis for the higher wage-levels in England and its colonies. Similar processes were at work in other parts of Europe, migrating to other temperate areas where agricultural conditions were similar, although German wage increases are somewhat curiously explained through the force of 'habit'. Eventually, and while his story here may be less convincing, the 'unlimited' supply of labour dried up and wages started following the general level of productivity. By contrast, tropical agriculture tended to allow lower levels of subsistence and wages – be it only because they had evolved without great prospects of migration. The corresponding stream of Indian and Chinese low-wage workers had tended to become directed towards tropical plantations, was forcefully resisted by the democratic majorities of these high-wage 'workers' paradises', and for the same obvious reasons that Bauer had observed in Bohemia, only without any prospects of reconciliation. The diverging wage trends thus established, in concert with various trends in the productivity of respective tropical and industrial goods, constituted Lewis's explanation of the observable falling terms of trade for the underdeveloped countries. Therefore, he said epigrammatically, it was the factorial terms of trade that determined the barter terms of trade.

Put like this, his theory very much resembles that of Emmanuel, although the latter favoured what he argued to be Marx's idea that wages were determined by social struggles, historical and moral elements, rather than the classical idea that wages levelled off towards the subsistence sector or the neoclassical idea that they were determined by productivity. Had he been a Marxist, Lewis might well, like Emmanuel, have been driven to challenge the idea of international worker solidarity. But he was a Fabian socialist and a social democrat, and furthermore a talented critic of the prospects for a totally planned economy. Like much of development economics, he was well ingrained in the cold war competition over the souls and support of the underdeveloped countries. If Hayek and Rostow were on the one end in their opposition to communism and planning, and Baran was at the other end, instead arguing that communism was the only escape from underdevelopment, Lewis remained in the middle. Emmanuel appears in this instance to have been closer to Baran. Not because of an alleged greater efficiency with economic planning, however, but ultimately because it put the economy back on its feet, an aspect of which was to abolish the recurring crises and underemployment of productive factors that were inherent in a capitalist economy.

In spite, or perhaps because, of all the attention and controversy allotted to Arghiri Emmanuel's work, it seems never to have been considered as a whole. His basic vision, in which his theory of unequal exchange has a specific theoretical and historical role to play, has therefore mostly remained unperceived. We started by tracing the outlines of Emmanuel's formative years in a Greece whose recent and failed imperialist ventures in Asia minor had accentuated the problems of 'ethnic purification', and whose traditional emigration during periods of hardship had to face the closing of the North American continent. Going instead to trade in the Belgian Congo, the immense wage differential between Belgian and African workers could not have gone unnoticed, and may well have occasioned an observance on the relation between racism and wages. Being in trade between Belgium and its colony he also

observed that the commonplace charge against such tradesmen in the Congo of taking out exorbitant rates of profit was not well-founded, at least as compared with their Belgian counterparts. This may have suggested to him the idea of an international equalisation of the rate of profit, and ingrained him against the claims from the conventional monopoly interpretation. Involvement in the Greek resistance and a leftist or republican uprising against the Alexandrian government in exile, supported by Churchill's whim for monarchs and crushed by the British without any opposition by the mainland communists or Stalin, may have added to his basically Third Worldist stance. Whatever the reality of his possible involvement with Lumumba, the rising insecurities, visible in Lumumba's arrest, seems to have occasioned a speedy departure to France.

It was here, in 1962, that Emmanuel first formulated his theory of unequal exchange as an explanation of the falling terms of trade for underdeveloped countries. In the context of an internationally equalised rate of profit, and contrary to the conventional Heckscher-Ohlin-Samuelson theory with the direction of determination going from the 'prices' of factors (wages, rents, indirect taxes, and profits) to the prices of goods, the trend in the terms of trade was occasioned by organised working classes obtaining nationally screened wage-increases which had thereby pushed prices up. This price problem was indicative of conflicting interests on the underlying socio-economic plane between workers in different (higher- vs. lower-wage) countries, such as those which had haunted Marxists and communists since the collapse of the Second International. The theory was to be hotly contested from various angles, starting with French and other Marxist traditions, proceeding to neoclassical defences of comparative costs, and then to formalist Sraffians.

The French Marxist debates seem to have been deeply influenced by circumstantial factors. The initial establishment of Marxist economics in France was partly an offspring of interest in Marx as the philosopher of alienation. It was also dependent on the strong position and popularity of the French Communist Party (PCF), which was seen as the major force of the Resistance, and on the apparent robustness of the Soviet planned economy both during the depression and in opposing Germany. Finding itself in government, the PCF was forced to distinguish itself from the general vogue of *étatisme* and Keynesianism, which reinforced the 'monopoly' interpretation of the state (eventually materialising as a school of 'state monopoly capitalism'). The monopoly tradition was also an interpretative outlet for a communist party opting for a peaceful, democratic road to socialism in France, when faced with the complex issues of colonial liberation in Indochina and Algeria, and with the 'paradox' of workers who were also imperialists.

The most important of Emmanuel's critics was his tutor Charles Bettelheim, who had become inspired by Baran's theory explaining economic backwardness by dependence under monopoly capitalism, and where the solution was to be found in state planning of the Soviet or some as yet undreamed of kind. His ultimate opposition to Emmanuel was both economic and political, centring largely on the correct interpretation of Marx and the 'law of value'. While initially, in 1962, himself suggesting the great significance of wage-differential in the explanation of underdevelopment, in the later debates he argued instead that wage-differentials were determined by productivity differentials, in which case international worker solidarity could still be defended. He did not attempt to explain the abundant manifestations to the contrary. By contrast, Emmanuel's position risked merely to stimulate a necessarily abortive trend, which had thus far been met with great popularity in Latin America, requiring economic 'justice' within the capitalist system. It furthermore presented Third World countries with illusory, 'bourgeois' prospects of being able to develop through a mere increase in wages. If Bettelheim had himself underlined the great importance of wages in this respect, it would seem reasonable to argue that the political aspects of Emmanuel's theory were more important for its final rejection. This image could be reinforced by other

contributions to the dispute following the publication of Emmanuel's thesis in 1969, in which nothing essential was added to Bettelheim's. They seem to have debouched into an attempt to reintegrate the concept of unequal exchange with the conventional image where 'monopolistic' multinationals determine and are held responsible for unequal pricing, underdevelopment, maliciously biased investments, control of state apparatuses in poor and rich countries alike, and bribery of and ultimate treachery against the well-off workers of the world.

The sheer incomprehension of Emmanuel's argument to explain why externally increased wages led to development, and its insufficient presentation until 1974 when positions had already been entrenched, certainly presented further obstacles to fruitful debates. Anglo-Saxon Marxist reactions began with the 1972 English translation on lines drawn up in Bettelheim's critique. Most seem unaware that the distinction between unequal exchange in the 'broad' and 'narrow' (Bettelheim) or 'strict' (Emmanuel) sense, was drawn up by Bettelheim in 1962, and for this reason commented on by Emmanuel in 1969, and he has variously been accused of not taking a significant interest in the 'broad' sense, or conversely for introducing confusion by making this distinction. Of such confusion there were significant amounts, whether in neoclassical crusaders or Marxist. There has been a substantial inability to fathom that the problem with which Emmanuel was concerned was not a net transfer of incorporated labour values, but the historical phenomenon of the falling terms of trade, as reflecting underlying wage-differentials and therefore social struggles. The contrasting net-transfer approach has been involved in all or most of the attempted developments of Emmanuel's theory, whether they take on old Marxist or new Sraffian clothes.

The problems inherent to the labour theory of value, and the dogmatism with which it was adhered to in France, led Emmanuel already in 1970 to reformulate his theory of unequal exchange in Sraffian language. Perceived by some as a rejuvenation of a Marxist focus on class conflicts underlying price determination, and by others as yet another bourgeois mystification, this meant a shift of debating centre from France, where more purist Marxism was held to be the only alternative to neoclassical economics, or to scholars who had had their economic training outside of France. Like Dobb or Steedman, but unlike many others who have attempted to reintegrate the Sraffian approach with standard Marxian labour values, Emmanuel emphasised the approach as a politico-social determination of prices.

Fairly unknown, already in 1974, Emmanuel gave his theory an ecological expression. His route to ecology was different than Andersson's, and sprang directly from expressing his theory in Sraffian terms without 'values' and directly in physical inputs. This way of putting the problem was inspired by Somaini's charge that his theory required that profits became negative in case of wage-equalisation upwards. Having easily demonstrated this, he found that such upwards inequalisability was never more visible than when expressed in physical or ecological terms. However, as for Marxism, reception in the Sraffian camp has been similarly characterised by attempts to reintegrate Emmanuel's novel perspectives into the conventional understanding of the school, whether it concerns his choice of *nominal*, not real, wages as the independent variable of the system, or his critique of what Keynes called the first axiom of political economy, the equality of the value of productive output and the purchasing power of income.

While superior to most interpreters, Evans, like most Sraffians, thus sticks to strictly formal questions, disregarding most questions of historical plausibility. Even his definition of unequal exchange in terms of comparative dynamics did not try to relate its 'laws of motion', or the tendency for unequal exchange to be reinforced over time. In fact, not only did he not pay any attention to Emmanuel's argument relating unequal exchange to the general 'overproductionist' tendency of a capitalist economy, but his reformulated model explicitly assumed the above 'axiom', which had been the principal target of Emmanuel's second major

work (referred to by Evans in another context). Instead of trying to understand this argument, however, Evans, like Bettelheim, prefers to charge Emmanuel with being a ‘circulationist’ – a standard derogatory term in Marxist parlance equal to the ‘fetishism of commodities’ in Marx. Again, the reason was apparently his too outrageous claim that an increase in wages was a stimulus to investments rather than the opposite.

Linked to the general abhorrence of his choice of (nominal) wages as the independent variable, what in Emmanuel’s view scandalised about his argument was that it led the reader eventually to a recognition that increased consumption brought about greater development and greater enrichment of nations. In itself, the observation seems not to be all that different from Nurkse’s or Bettelheim’s own 1962 position, but with a penchant and talent for the paradoxical, in a way which still challenges his adversaries’ astonishment (whether Andersson, Bettelheim, Evans, or Raffer), Emmanuel (1972a: 337f.) generalised his observation: “*No capitalist country has ever become poorer for having spent too much.*”

The capitalist ‘laws of motion’, as interpreted by Emmanuel, depended crucially on the lack of purchasing power compared with the value of produced output, reflected both geographically, in the greater incentives to invest in high-wage countries, and chronologically, in the swings of the business cycle and its temporary overcoming in the postwar decades. The lack originated in part of the income (purchasing power) of capitalists (profit of enterprise) not being realised until the very moment of sale. The quantitative difference between cost price and sale price was well-recognised both in practical matters and legal terms, but it was not allowed any consequence in economic theory. Dynamically, however, the total sales prices of production thus exceeded the total of realised income at any moment, even though formally and after the sale the value of output equalled the value of incomes. This created a general tendency for prices to decrease under their prices of production (in spite of the fact that statically these are defined as long-term equilibrium prices), for investments to be withheld, and for economic development to be blocked. Capitalist production could therefore only reproduce by producing below full capacity, in waves of overtrading stimulated by external extended reproduction, rising prices and profits, or hopes thereof. If left to itself, this expansionary phase was ultimately limited by the roof constituted by full productive capacity, and the subjective impossibility of investors to turn from extensive to intensive reproduction (investment in investment goods), precisely when the market ceases to expand. At that point the general imbalance between purchasing power and the value of output would again make itself felt, certain investors start to withdraw, and thereby set of the general regression.

Now, the glorious years of the postwar period had demonstrated that the capitalist economy could indeed grow without major depressions, and this could only be explained if investments had somehow been stimulated in spite of the system’s normal functioning. Relative redistribution of incomes away from profit of enterprise could only explain the diminution of the gap between income and production, so the ultimate explanation had to be sought elsewhere, in some external factor. Possible factors were the inflow of purchasing power from the balance of trade, budgetary deficits securing the sale of goods before their production, and finally ‘overtrading’ which was in Emmanuel’s view the outstandingly most important factor in the explanation.

Incentives to overtrading – purchasing with credit created *ex nihilo*, not corresponding to any available income – could be ‘recurrent’, as in the business cycle, ‘erratic and momentary’ due to the opening of new markets, innovations, or discoveries, and finally ‘chronic’, due to some modification in the basic structure of the economy. It was among these chronic incentives, that unequal exchange had its significant and specific historical role to play. They comprised, on the one hand, currency depreciation – which, if the general problem is one of excessive demand for money compared to other goods, would obviously act as a stimulant

facilitating sale and as an incentive to overtrade – and on the other an institutionalised increase in wages, which had been occasioned by increased trade union power and political influence, and which had only been possible through unequal exchange, and thanks to the low-wage labour and resources provided by Third World. Emmanuel's argument on 'underconsumption' (in the economic sense) thus had certain apparent similarities with the ecologists' critique of 'overconsumption' (in the physical sense). Indeed, as noted he even formulated his case in terms of the impossibility of an international equalisation of wages, downwards for social and political reasons, and upwards since this would, on the one hand, make the total value of profits negative and, on the other, would not be ecologically and biophysically possible. It is only in this perspective that Emmanuel's theory of unequal exchange comes into its own, completely dislodged from abstract 'labour values' whose possible transportability may stimulate metaphysical speculation, but whose explanatory power is highly questionable.

Emmanuel conceived his political economy on the one hand as a crucial advancement in line with the vision at one point projected, but not completed, by Marx, but also as an interpretative rejuvenation more in line with the realities of the 20<sup>th</sup> century than anything to be found in Marx or most of contemporary Marxists. Observing the many unresolved issues still remaining one of the more crucial was the underdeveloped theory of the state, and the contradictions involved in the transition to socialism via the usurpation of the state bureaucracy. In spite of his ecological formulation of unequal exchange, he did not observe the similar contradictions involved in reaching a socialism which was ecologically sound via the fullest possible development of the productive forces in East and West, North and South and in between.

Unfortunately, the most common route to ecological theories of unequal exchange has been through some physical or quasi-physical standard of measurement in line with the Marxian labour values, indeed, often actually conceived as complementing them or as their more complete analogue. Howard T. Odum's emergy concept is certainly the most advanced modern ecological descendant of Petty's or Cantillon's attempted unidimensional measure of 'value' – in some 'real' as distinct from monetary sense. It is also arguably the most comprehensive and inclusive such estimation tool of ecological unequal exchange developed so far, although an important point of criticism has pointed to the need for multidimensional estimation and accepting world heterogeneity. A central figure in the 'age of ecology' as the main originator of ecosystem ecology, his theory of unequal exchange is an aspect and outgrowth of his more general system as applied to human societies.

If Odum could appear to be more of a 'pure scientist' than other contributors to this branch, neither he nor ecosystem ecology were exempt from crucial political motivations or context, notably with nuclear test sites and military funding. In his case there was notably the additional 'Technocratic' mission to replace monetary standards of value by biophysical ones in order to give the correct feedback-signals and secure the most 'empowering' development possible. The approach was inspired by the movement with that name, but also by his famous father and brother, by Lotka, Hutchinson, and the postwar vogue to create a cybernetically sound society. Like Cantillon before him and Borgström among his contemporaries, he pointed to the stored energy of organic matter produced over a broad land surfaces at a slow rate. This was then collected and concentrated by the consumer systems of animals and of tree twigs and limbs, and the cost which concentrating work was 'paid' for from some of the collected food.

Ecological applications to society began in earnest only from the late 1960s and early 1970s, through a parallel with concentration and storage of the 'dilute' energy of the sun through the hierarchy of the food-web, on the one hand and the similar 'concentration' involved in different sources of energy and energy support systems for human societies and

production. The true value of energy to society was the 'net energy' remaining after the costs of getting and concentrating that energy have been subtracted. This idea was evolved into 'energy quality', 'embodied energy', and finally 'emergy', all of which do not content themselves with the *direct* costs of transforming one type of available energy into another, but also of the *indirect*, or hidden, costs involved in the 'support systems', and ultimately was an 'emergent property' or function of the general system. By analogy with economic concepts from mercantilism onwards, 'emergy' could perhaps be seen as an attempt to capture the 'arts' and 'ingenuity' of natural systems – natural capital, the accumulated structural organisation of species and ecosystems, or simply the time dimension – which was then reapplied to societies.

Along with these concepts of energy quality, his most important contribution to biophysical economics has been seen as the counter-current flow of energy and money. Money circulated in a closed loop, bought goods and services derived from, and using up, low-entropy energy which then left the economic system as degraded heat. In a market economy, money operated as a feedback, stimulating more energy to be drawn into the economy to produce additional goods and services. It was the dysfunctions of this feedback that was criticised by the Technocrats in the 1930s depression. In this sense, 'emergy' was Odum's corresponding suggestion for a new 'currency'. He reminded that the large natural energy flows of solar radiation, water, wind, and stored in raw materials, had no associated dollar flows, and did not, therefore, enter into economic transactions directly. This often led to their misuse or to the mismanagement of life-sustaining environmental services, along with decreased overall 'empower' and thereby sustainability.

The new currency was calculated by taking solar insolation to the Earth as baseline. Odum the social reformer, not the detached economic observer, wanted to construct a coherent and allegedly "scientifically based value system for human service, environmental mitigation, foreign trade equity, public policy alternatives, and economic vitality" (Odum 1988a: 1132). Being paid only to people for their services, money and prices were biased against nature, and could not be used to evaluate environmental contributions or impacts. Because a resource contributed most to the economy when it was easily available and required little labour, prices tended to be not proportional, but *inverse* to its emergy, or real-wealth contribution. Drawing up a rural-urban division among countries of the world, the latter being the highly developed, predominantly urban centres in the global hierarchy, he concluded that when an environmental product was sold from a rural to a more developed state or economy, the latter earned a large net emergy benefit. This was expressed by the emergy of environmental products being higher than in the money paid 'for the processing services', *i.e.*, for the labour, and secondly because the emergy money could buy was higher in certain regions than others, benefiting the currencies of urban over rural countries. While sharing the erroneous identification of 'underdeveloped' with 'exporter of resources' (obliging him to make disturbing inclusions of Alaska and New Zealand), his approach is in fact applicable to any other high- or low-cost differential, whether rural or urban, including that of wages as in the approach of Emmanuel and as partly reflected in the argument about emergy-ratios. What remains inexplicable in an Odumian perspective is why countries should strive for a surplus balance, selling *more* (of anything) than they buy, thereby sending emergy away. It obviously has something to do with money's counter-current feedback-flow, but what this is remains unexplained by Odum, and an absurd self-flagellation according to his principles.

Of the much criticism of Odum's approach, one of the more pertinent, advanced by Georgescu-Roegen and others, was that it neglected *matter* – like a sun-worshipper who needed to get his feet on or in the ground – and indeed many other aspects limiting niches. The material flow analyses of Fischer-Kowalski and others was an attempt to compensate for the much calorie counting of the 1970s, but has in itself been recompensed for energy – direct

and 'hidden' – as well as for human appropriation of net primary production, biodiversity, and so on. So far, the material analyses of the historical North-South problematic seem to have yielded no significant additional information to that available from economic historians such as Bairoch. While important historical points have been made, *e.g.*, with respect to transport, the approach would probably benefit from closer attention to the ecological and economic functions of various materials if anything more useful is to arise from the 'social metabolic' approach in this area. What is required is perhaps not so much more modelling and measuring, as some simple historical 'dirt economics' such as that conducted by Innis.

Like many others in the ecological movement, Odum was more interested in planning for a 'correctly' organised and downscaled society, in his case according to an emergy-currency, than in historically interpreting and understanding the political economic and socio-political causes of distortions. His proposed solutions, or at least the language in which it was expressed, thereby seem politically 'Technocratic' and incomprehensive of the problems of international planning, agreement, and perhaps even revolution involved. Furthermore, comprehension seems so far to have been limited regarding emergy as an 'emergent property' aspect of the system as a whole, where any true innovation in technology or social organisation 'mutates' the whole system and changes the emergy 'content' of all its constituent parts. The problems in planning for such a system was pointed out by Lewis, but there may be reason to believe that they could be *lessened* by looking at the entire *global* system. Odum seems to share Lewis's liberal or mixed economy views, but his approach may be a welcome addition to such prospective planners. The *general* system which is most 'sustainable' is that in which 'empower' is maximised, but this does not imply that it is predetermined, only that should it be achieved it would improve the evolutionary sustainability of the system and its constituent parts, and it was therefore not illogic of Odum to try to bring such sustainability about, whatever the limitations of his political, economic or historical analyses, or the language in which they were expressed.

If the step from Odum and social metabolists to some of their colleagues may seem a downturn in terms of accounting methods, it also brings us closer to the political battlefield, where it is rather language that counts. We first turned to the 'Protestant' line of argumentation focusing on restraints on promiscuity (population) and resenting or feeling a certain embarrassment before luxurious overconsumption (affluence). This line was traced from American conservationism and the cold-war concern over a possible 'population-resource' crisis, to Georg Borgström's 'ghost acreage', and after some decades of environmental debate, presumably reinvigorated by prospects of funding and political hearing related to the 1992 Rio Conference, by Rees's and Wackernagel's 'ecological footprint'. The basic idea is merely to account consumption in a land-unit, as was suggested by both Cantillon and Odum. The popularity of area-based accounting methods is probably related to their easy comprehensibility to traditionally agricultural peoples, as well as the long-standing tradition of seeing 'land' as a source of wealth, and often classified as of different quality and of differing availability. As such they are related to insolation while more concrete and dependent on temperature, precipitation, soil quality, etc., but also, and less obviously, on social organisation.

Ideally, consumption and production are accounted by 'double-entry' book-keeping, where the consumption and waste discharge within an area is compared with biological production and waste absorption within the same area, perhaps including maritime sources. The rest is ascribed to trade, whose flows are thereby classified as unequal. Borgström's approach differs from later approaches, in a sense resembling Odum's, in his great concern for the emergy 'quality' of food, the impoverished protein standards and nutritional problems believed to be hidden in increased calorific bulk. He, too, classified the perceived trade relations into inequalities between the raw materials producing and underdeveloped countries on the one

hand, and developed manufacturing countries on the other, but as can be seen from his figures, the contrast is rather between Europe and the 'neo-European' regions of recent settlement. The confusion is similar to that introduced in Prebisch's work, and significantly, Borgström's original inspiration, like that of Vogt, came from his experience in Latin America, which is characteristic in being both a major supplier of raw materials through the ages and in being classified as 'underdeveloped'. Like most, Borgström had a political agenda, involving the organisation of the world as a 'household', but as in the case of Odum, the specifics, political-economic and socio-political problems involved, remained unanalysed. In the early 1970s, he inspired the approach of eco-socialist Hartvig Sætra, who classified different versions of ecological 'imperialisms' in past, present, and future tenses, involving also the terms of trade (again seen as through a raw materials- and manufacturing lens). This kind of division in and through time may well be more pedagogical in the end than the increasingly hypothetical unidimensional land areas of other approaches.

The most significant interpretative function played so far by ecological accounting methods, is in countering the claims for an 'environmental Kuznets curve' (EKC), claiming that environmental impact will first rise with economic development as society turns from an agricultural to an industrial basis, but then decline again as employment proceeds to the service sector. Starting from consumption based approaches, advocates of an ecological unequal exchange interpretation maintained instead that if the decline had not been accompanied by a change in the pattern of consumption, the implication was instead that what was previously produced domestically was now imported. Environmental impact had remained unchanged, meaning that this road would not be available to late developers.

While Andersson is more important as a Marxist theorist of unequal exchange he reappeared after a longish pause also as one of the ecologist scholars arguing against the EKC. His Marxist version of non-equivalent exchange, even when termed in Sraffian language, required that the equality of exchange be expressible as an equal net transfer of 'labour values'. Similarly, his ecological version required that kind of expressibility in terms of 'ecological footprints'. By contrast, Martinez-Alier argued for the ultimate *inexpressibility* in terms of a single unit of measurement, and for a fundamental incommensurability of values, which could only be determined through social and political struggles and decision-making. While Emmanuel's focus was on appropriation rather than production, Andersson had followed the conventional Marxist emphasis on productivity. In his Marxist approach he redefined the concept of an 'aristocracy of labour' from implying a 'certain stratum having established notably better conditions for themselves than the rest', to meaning 'living at the expense' of that rest, and thereby managed to liberate the majorities of developed country workers from inclusion in this category. Unfortunately, he has so far not made the same examination in his new ecological phase, where the focus has commonly moved back again from production to appropriation. Along with most Marxism, and contrary to the normal bias in our 'Protestant' camp, Andersson did not want to place too much emphasis on the problem of population, but focused instead on the 'affluence', while distinguishing himself from the ecological dependency theorists in not relying on the idea of peripheral raw materials exports.

The language in which this 'Protestant' or '(neo-)Malthusian' line, originating in the concern with population growth and the overconsumption of the rich, can be contrasted with the more 'Catholic', Latin American, or Third Worldist, of the dependency tradition, where population pressure on natural resources is of neglectful importance. Here, focus was placed directly on how the affluence of the rich was said to cause ecological (and economic) degradation of the poor, notably, as it was believed, by the direct transport of materials and energy products, but also in the 'transfer' of environmental degradation, *e.g.*, through international specialisation. An environmentalist awakening seems to have come later to the Latin world than the above Protestant.

Galeano and Gligo notwithstanding, the first *explicit* attempt to connect the unequal exchange theories of the 1960s and 1970s with an energy or environmental impact accounting seems to have been made by the American sociologist Stephen Bunker. He aimed at an ecological model to explain uneven development, unequal exchange, and regional subordination as the consequences of the relations between extraction and production, a resulting imbalance of 'embodied energy' flows, and its subsequent long-term differential incorporation in social and economic formations. His main objection to Marxism, which was his principal discussing partner, was that the labour theory of value, conceived as the amount of labour 'embodied' in goods, was incomplete and had to be supplemented. Inspired by Odum's concept of embodied energy, he suggested a corresponding 'energy theory of value'. As with Sætra and Odum, no great effort was made to understand the theory of value as theory of price determination, the terms of trade did not appear in his work, and his understanding of the unequal exchange theories of those preceding him accordingly left something to be desired.

Bunker considered four types of unequal exchange: (1) a wage-differential, presumably higher in industrial centres, would entail an unequal exchange in terms of the hours of labour needed for each to produce lot of goods of equal value; (2) the embodied energy in raw materials was lost, or unremunerated, when exported (and somehow in a different way than had it been processed domestically); (3) both the 'intrinsic value' of the resource and the intrinsic value added by labour was retained in the core in a self-organising, self-perpetuating upward spiral; (4) the outflow of embodied energy, to which was added an inherent instability of demand for raw materials, left the periphery and its diminishing natural values increasingly helpless and exposed to the above processes. The two former concerned transfers in terms of respectively Marxist and ecologist unequal exchange, while the latter two concerned the respective self-reinforcing processes in industrial ('productive') centre and primary producing ('extractive') periphery. The identification of development with manufactures and underdevelopment with raw materials is obviously crucial to this model and its shortcomings are the same as its predecessors in this branch of interpretation. The links found to specific ecologies was promising but more infrequent than one could have wanted, even in later writings where the energy embodied approach was abandoned, along with most references to unequal exchange, as too blunt. Bunker's strongest analytical points were instead when relating underdevelopment and environmental disruption to social relations and the weak autonomy of the state bureaucracy.

Similar strengths and weaknesses have been found in Joan Martinez-Alier's approach, although in his case the prospective strengths may outweigh the weaknesses. Whereas he considers himself sprung from the German tradition, he was also engaged in environmental movements in Franco's Spain, and related how his interest in ecology was awakened in Peru in 1973 from the vogue for calorie counting. Having written a well-reputed book related to the latter, on the forefathers of energy economists, his later effort was more akin to small-peasantry environmental struggles. Synthesising his concerns he wanted to explain how the clash between economy and environment (studied by ecological economics) gave rise to the 'environmentalism of the poor' (studied by political ecology). The latter referred to various forms and expressions of local and global resistance to the abuse of natural environments and the loss of livelihoods. One of his central points was that environmental 'externalities' falling on poor and powerless were cheap even when 'internalised', and that this gave rise to a tendency for their global re-localisation to such regions, whatever the level of environmental 'consciousness'. The reintroduction of such struggles over 'environmental entitlements', over 'the loss of access to natural resources and environmental services', over 'the burdens of pollution' and over 'the sharing of uncertain environmental hazards' into the traditional notion of class struggles was a most important addition, with significant implications for

unequal exchange. Introducing this concept via a political movement advancing the notion of 'environmental debt', he has been less successful in making it a valuable interpretative tool.

Environmental debt was said to consist on the one hand of ecologically unequal exchange and on the other of the disproportionate use of environmental space. The former was curiously identified only with exports, referring to non-renewable and, the reproduction or maintenance of, renewable resources, to related irreversible damage and environmental pollution, and to genetic materials. Environmental services, defined as imports, consisted of polluting impacts caused by imports of toxic waste and the free disposal of the atmosphere. The reason why Martinez-Alier did not define unequal exchange as an exchange was apparently that the powerful were taken to have already 'internalised' all environmental costs and services.

In spite of references to Prebisch, Innis, Emmanuel, and many others, there is an unfortunate lack of theoretical clarity in his work. This is unfortunate since the approach to relate relative power relations and strengths of environmental movements to the relative 'internalisation' in prices, would be one of the more coherent expressions of a useful theory of ecological unequal exchange. There was little said on prices and their determination, nor on the relative mobility of labour and capital, whereby he could avoid taking any stance on the international equalisation of the rate of profit, or on the problematic of an economic foundation of international solidarity. As in common dependency literature, the 'villain' can still be presented as the 'monopolistic' multinationals and state apparatuses, and the problematic of some foundation or not for international solidarity among the great masses of peoples was not theoretically or historically enlightened. One may suspect that greater familiarity with the problematic of the unequal exchange literature, either in the versions of Emmanuel or Lewis, would have brought interesting revelations – deeming from an apposite application of Maxwell's demon to national borders, installed to maintain a consumption differential. This is as good an image of the fundamental problem of what the most illuminating theories of unequal exchange, ecological or not, have been about.

What is still lacking is historical flesh and concreteness – and more fearlessness of spirit than is common. Martinez-Alier's own historiography of environmental movements, focusing so heavily on the small peasantry, unfortunately avoids any confrontation with the small-peasant, small-business 'ecologism' in the *developed* countries of the past. He is notably silent on that attempted German alternative ideology to capitalism and communism, studied in Bramwell's (1989) well-known work (by Martinez-Alier even in manuscript form). Furthermore, though complaining of the lack of historical studies on ecological unequal exchange, suggesting a long-tradition of material transfers, neither he nor any other exponent of ecological unequal exchange, has made use of the available economic historical evidence, suggesting that net-material or energy transfers between developed and underdeveloped countries could only have become significant in the post-World War II period, not in the preceding centuries or so often suggested in popular, politically biased and mythological literature. There is simply both much more already done, and much more remaining to be done in this field than most theorists of ecological unequal exchange seem to have realised.

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