

Irrigating the future

*Justice, emancipation and lessons from the past,
a critical discourse analysis*

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Abstract

Confronting ecological crises is leading many researchers and academics to take a renewed interest in the deep past. The archaeological and climatic record are posed as a source of lessons that can be brought to bear on current issues of sustainability. IHOPE, or Integrated History and Future of People on Earth, presents one such effort, a collaborative and inter-disciplinary project with aims to contribute to a better future for humanity through lessons from the past. Such efforts must however be ready to traverse the rough terrain of environmental and social justice discourses, issues that lie at the heart of ecological crises everywhere and without which no meaningful engagement with sustainability can be had. I outline the discursive spaces that exist within such efforts, focusing on the long standing IHOPE-Maya project centred around past socio-ecological change in the Yucatán. I employ dialectic theory and critical discourse analysis to map out these spaces. I conclude that the reliance of IHOPE-Maya researchers on three discourses - resilience discourse, complex adaptive systems discourse and anthropos discourse – place in many ways severe constraints on incorporating social and environmental justice discourses. Moving on I suggest possibilities for creative tensions which could be explored for the benefit of a truly integrated history and future.

Keywords: justice, IHOPE, archaeology, resilience, complex-adaptive systems, critical discourse analysis

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Journeying through the process of writing this thesis has been a very peculiar experience. Ultimately it feels as if the thesis has a life of its own, growing beyond control, becoming unruly. Like any project however it is a result of a group effort, even though only my name is on the front. In the end it has been the moral and emotional support of my lovely friend that has sustained me. Always ready to offer sage advice, comfort and lively discussions over an endless stream of coffee. Never could I have finished this thing without the help of the Sambib regulars, thank you!

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1. Introduction

Adaptation to diverse environments is often cited as humanity's central feature, the extent of this adaptation is said to be unlike any other living creature. Indeed it is common to say that humans create their own niches and thus their adaptive potential is without limits. The onset of multiple ecological crises, where all kinds of environments, from the very local to the imagined global, are under attack by anthropogenic forces, has weakened the belief in this story.¹ At the very least it has forced many to look more closely at the stories we tell about the human and its environment. The historical, archaeological and climatic records are now being scrutinized in an attempt to fill up the multiple knowledge gaps which exist in these stories as well as creating and re-creating alternative stories of the human past. Increasing intellectual power is being put into creating a framework that can approach long term human-environmental interactions, with the purpose of filling in knowledge gaps of both the human past and the functioning of a so-called socio-ecological system. IHOPE, or Integrated History and Future of People on Earth, represents one such endeavour. A stated goal of IHOPE is, through integration across disciplinary, methodological and scalar divides, to bring out relevant knowledge that can inform current sustainability policy and help create a better future (Costanza et al. 2012, 107). There is often an assumption that filling in knowledge gaps and connecting various avenues of research will automatically yield sustainability practices and a better future. However the manifold increase in knowledge on climatic change and its concurrent lack of effective policy during the last 20-30 years has shown that this cannot be assumed. There is a clear need for well grounded knowledge that not only does not reproduce dominant and oppressive power structures but actively challenges them. What would such knowledge look like?

In this thesis I present a case study of the IHOPE research network, by exploring through a critical discourse analysis the space for gathering and articulating different kinds of knowledge surrounding the human past and future. From the outset I will adopt a dialectical approach, particularly focused on issues of justice and emancipation. I am convinced that any attempt at making lessons aimed at modern sustainability issues will need to incorporate notions of justice, they are at the heart of the ecological crisis. Different notions of justice play a tremendous part in framing environmental issues and action. Environmental discourses are closely bound to discourses on justice. (Harvey 1996, 366-402) It is a bond that researchers ignore at their peril.

¹ However in some circles the ecological crisis has in fact strengthened the belief in this story, through unstoppable technological innovation humanity will rise above its environmental constraints and create new environments, of which the environment of climatic change is one.

1.1 Research questions

Any account of the past, especially with the aim of drawing lessons from it, is always a specific framing dependant on the context of knowledge production and dissemination. The lesson depends on who is the teacher and who is the student. That is to say that lessons supposedly drawn from past human societies always exist within a certain discursive space, that at the same time restricts and enables what one wishes to say. In this thesis I will examine some of these discursive spaces, what room they afford to manoeuvre and what possibilities exist for alternative discursive spaces. How are the past and present framed in the lessons of IHOPE and what space exist within those lessons for articulating notions of justice and emancipation? This is the main research question which I hope to answer through exploring the discursive spaces IHOPE researchers employ to frame past and present issues of sustainability.

1.2 Aim

During the autumn term of 2015 I worked as an intern at IHOPE's international project office in Uppsala. Throughout my time there I got to know the people, at least some of them, the methods and the vision behind IHOPE quite well. This is not a place to reflect extensively on my internship or my work there but to illuminate how I have come to write a thesis such as this and not something completely different. In October, during an extensive two day meeting the IHOPE scientific steering committee, which had the aim to start work on a revised science plan for IHOPE, we were asked to find “uses for the past”, that is the various ways past records can be beneficially employed in current environmental and sustainability policy. A couple of us were asked to find examples of the past being used for justice, a category I had myself suggested. Even though nothing came out of that discussion at the time the topic still stuck with me and has somehow morphed into this thesis topic. Along the way I realized that the issue was way more problematic than I thought when I naively suggested the category of justice: it goes into the heart of how we think about environmental changes and the past, knowledge and the role of research in shaping narratives of past, present and future. Now I by no means wish to suggest that by the end of this paper this topic will be exhausted, however I wish to have made a case for the past and its use for a better future and gone some way towards developing a framework in which this can be realized.

1.3 Structure of the thesis

To answer the research questions I must first begin with defining my theoretical and methodological approach, and then I need to clarify and explain my use of certain concepts. Separating theory and

method, in this case, is somewhat tricky as my theory - that is ontological and epistemological standpoints - necessarily influences what sort of method I can fruitfully employ. My approach is grounded in Marxian dialectics, most clearly laid out by David Harvey in his masterpiece *Justice, Nature and the Geography of Difference*. Following this I will try to position dialectics within the wider scope of critical realism and outline how both of these come together in my method of critical discourse analysis. Continuing on from this discussion I will lay out a conceptual framework for my case study, where I examine the concepts of emancipation and justice and how they can be operationalized for a case study such as this. The last part will be focused on the case study itself, where I present IHOPE and especially the IHOPE-Maya project and analyse the discourses employed in those accounts. In the end I will explore some possibilities for alternative accounts and how the discourses used by IHOPE leave room for exploring further questions of justice and emancipation.

2. Theoretical and Methodological Framework

Wishing to answer questions related to justice and future emancipation necessitates a theoretical framework in which these concepts, the relation between them and the relation of past to future, can be clearly and thoughtfully articulated. I believe that dialectics as set up by David Harvey (1996) can provide, or at least guide the construction of, such a framework. The dialectic approach essentially blurs the lines between epistemology, ontology and methodology. On the face of it dialectics seems to present an epistemological and methodological framework – that is what should we aim to know about the world and how can we understand it – but within it, as Harvey explains, run some deeper ontological issues. However for the sake of clarity I will mark my ontological position separately as one derived from critical realism. For the most part these two approaches work together, and critical realism offers some complimentary concepts to the dialectical framework. How these approaches work together will become apparent in the method of critical discourse analysis, which combines a dialectical understanding of the social process with the critical epistemological stance of critical realism.

2.1 The Dialectic approach

As outlined by David Harvey (1996) in his *Justice, Nature and the Geography of Difference* Marxian dialectics can provide a compelling frame for engaging issues of justice. This work provides much of my intended theoretical, and to a large extent methodological, framework. Indeed dialectics, as laid out by Harvey, is much more than a simple tool or method as it holds at its core a very particular ontological stance. Although due to its nature dialectics is hard to pin down into

principles, guidelines or abstractions, Harvey sets up 11 principles of dialectics that in the end yield a vision of the world that is thoroughly relational. (Harvey 1996, 48-57)

The key aspects of this approach, for the purposes of this thesis are as follows: The priority of flows, processes, fluxes and relations over static structures, solid things and stable systems. In here lies the particular ontological claim of dialectics - that is that no structure or thing exists outside of the processes and flows that give rise to, sustain and surround them. The structures that to us appear solid are in fact nothing but these processes and flows. To understand these structures it is thus paramount to attend to the flows and processes that surround them, compel them or dismantle them. Only by understanding these processes can we come to understand the structure. Harvey takes his cue from quantum physics and the fact that electrons appear to us as both a particle and a wave at the same time and argues that the same view should be taken of social structures and material things. (ibid, 50) Thus it is not to deny that the structures we experience as relatively solid and permanent are real but they are constituted by processes and flows. (ibid, 50-51)

All such structures and things which to us appear solid are internally contradictory and heterogeneous - that is they can be decomposed into parts that may contradict each other, even flat out in opposition to each other, and overall heterogeneous and in conflict. Furthermore one cannot by reduction arrive at a stable building block of reality; where one draws a boundary for analytical purposes is thus always arbitrary and dependant on what phenomenon is to be examined and what one wishes to say about it. (ibid, 51-53)

A crucial point for Harvey is that dialectics does not disregard what we may perceive as permanences in the world, even though in the final analysis such structures might evaporate into a muddy a mixture of flows with ill-discernible boundaries. The fact that we do experience these structures as more or less solid and unchanging should propel us even more to examine the processes and flows that come into play around them, because it is only by understanding those flows that we can understand the nature of the structure, its genesis and its future and more crucially it is only by understanding the processes that we can somehow imagine to change the structures or to intervene in them. (ibid, 54-55)

A most interesting aspect of the dialectic approach is that a certain temporality or a temporal orientation inheres in the focus on processes and flows. A process is always a transition or transformation that happens over time, flows are always coming from somewhere in time and

always going somewhere else. Giving primacy to flows and processes over the static world brings this temporal orientation into foreground. Processes, as well as the things and structures they surround, are in a sense always historical. However it is important to stress that this temporality is not any kind of chronology, it is not linear time on which events can be plotted. Rather temporality is inherent in the processes and flows themselves, not external to them but internal. In this kind of temporality change is the norm and stability often merely illusory, and it is the internal heterogeneity – both spatial and temporal – of structures and things that gives rise to creative tensions and transformative potential, always realized through some movement in time and space. (ibid, 51-55) So plotting a process on linear time, while in some very particular projects beneficial, does not provide sufficient insight into understanding the processes themselves and would necessarily involve a simplification.

Moreover this temporal orientation of dialectics is not only a historical orientation but also a future orientation, and here is where the emancipatory, and dare I say utopian, potential of dialectics comes to full force. Because seeing the structures in the world as historically contingent and reliant on a continuing flow of processes allows us to imagine an intervention or redirection of these very same flows. (ibid, 56) Processes, in a strict sense, have no beginning or end, that is when one process can sensibly said to be over another process has already begun. (Ingold 2011a, 51-62) As processes continually internalize each other one would be hard pressed to delineate strictly where one ends and the other begins. Here we can, following Ingold, borrow from Deleuze and Guattari and describe these processes as *lines of flight*. The line of flight is not the sort of line that connects a point to another but "on the contrary, it passes between points, it comes up through the middle." (Deleuze and Guattari, in Ingold 2011a, 83) The line of flight is an essential part of the rhizomatic character of life according to Deleuze and Guattari, and this rhizomatic character shares remarkable similarities with Harvey's dialectics. The rhizome "is composed not of units but of dimensions, or rather directions in motion. It has neither beginning nor end, but always a middle (milieu) *from which it grows and which it overflows*... Unlike a structure... the rhizome is made only of lines". (Deleuze and Guattari, 21-22, my emphasis) Processes and flows, in the dialectic approach, are always overshooting their targets, they serve not only to reproduce the structures in the world but continually spill over into something else, into different spaces and into the future.

This sounds very abstract and not very practical, and indeed a dialectical reading of the world "should generate a perpetual state of motion on our concepts and our thoughts" (Harvey 1996, 58), a state that is likely to cause much despair for the practitioner. What the dialectician should look for,

however, is “a restricted number of very general underlying processes which simultaneously *unify and differentiate* the phenomena we see in the world around us.” (ibid, 58) This can be for instance capital accumulation or any other sort of generative process that can be commonly identified yet can result in a wide variety of observed phenomena. Another key task for the dialectician is to identify tensions, spillages, slippages and conflicts in which potentials for social change might reside and in which we might intervene. Potentials for social change can be found anywhere within the social process, not confined to the realm of discourse, action or any other moment. (ibid, 105-109) However social change can only be registered or detected in the productive moment, that is in the material interactions of society in which social change is expressed. That is not to say that the productive moment is the only one that matters but it is the one where changes are most easily *felt*. (ibid, 93-94) Various theoreticians have in their quest to explain social change given priority to one moment in the social process over the other, but as Harvey argues any such attempt will miss the transformative potential of other moments and will result in a view that is to some extent reductionist. Thus the dialectician must be able to consider all moments in the social process simultaneously even though in a given circumstance one moment may be registered more forcefully than the other. (ibid, 96-113)

2.2 Critical realism

Of course the most readily apparent aspect of critical realism is its identification of a reality existing outside the discursive world of humans and that there is a world that is distinct and separate from how we think about this world. This stance is outlined by the two dimensions of knowledge identified in critical realism, the transitive and the intransitive, where the former refers to theories and discourses and the latter to the object of study. So when our theories surrounding a certain object of study changes it does not mean that the object itself has changed. (Sayer 2000, 10-11) Sayer does acknowledge that things become rather more complicated when studying social phenomena, because unlike the natural scientist the social scientist operates in a double hermeneutic. Not only has he or she to uncover meaning from colleagues, theories and discourses surrounding the object of study (the transitive dimension) but the object of study itself (the intransitive dimension) also has intrinsic meaning. (ibid, 17)

The dual dimensions of knowledge are combined with a stratified ontology in which a distinction is made between *the real*, *the actual* and *the empirical*. As presented by Sayer (2000, 11-12) the real is the domain of objects, and these objects have powers and structures that are distinct from the actual goings on, that is from how some of these structures and powers combine and from what causal

mechanisms are activated at any given time. The distinction between the real and the actual forces us to acknowledge that what did and does happen is not the only thing that could have or can happen. Critical realism and dialectics both share this perspective of potentiality, that what is does not exhaust the potential of what could be.

Within critical realism there is an emphasis on emergence, “situations in which the conjunction of two of [sic] more features or aspects give rise to new phenomena, which have properties which are irreducible to those of their constituents”. (ibid, 12) This is in some ways shared by dialectics, that is structures and properties are emergent from flows and processes and the internal heterogeneity of processes results in creative tension in which new phenomena can arise. However there is a crucial difference between how these approaches conceptualize emergence and it is a difference that highlights much of the disagreement that seems to run between dialectics and critical realism. For Sayer objects have inherent structure and power, that is causal power and structure is located in objects (ibid, 11-13) but for Harvey objects themselves come to be constituted by flows and processes and causal powers arise from the relations. (Harvey 1996, 51-53) Harvey would endorse Ingold's perspective of the order of reality in which things enfold “within [their] constitution the history of relations that have brought [them] there” and in that “we can understand the nature of things only by attending to their relations”. (Ingold 2011a, 160)

2.3 Methods

In order to best answer the research questions I will apply a method of critical discourse analysis on parts of IHOPE material and literature. The question on how IHOPE can provide lessons for a better future, lessons that advance justice and strive for emancipation, is very much a question of discourse. Discursive practices are central to the operation of IHOPE as an academic network.

To analyse the discourses produced by IHOPE as well as the multiple discourses that IHOPE is currently immersed in I will employ a framework outlined by Chouliaraki and Fairclough. (1999, 60-66) It is a refinement of earlier frameworks developed by Fairclough, and I believe it presents a very viable method to get to the bottom of issues such as the one presented in this thesis. In short the method presented by Chouliaraki and Fairclough proceeds in five stages closely based on Roy Bhaskar's explanatory critique:

1. Identifying and articulating the problem
2. Identifying obstacles to tackling the problem
3. Identifying how the problem functions in practice
4. Seeking possibilities to get past obstacles

5. Reflecting on analysis (Chouliaraki and Fairclough 1999, 60)

Discourse as conceptualized by Fairclough is very much in line with Harvey's (1996, 77-95) framework on the social process. There is an understanding that discourses are both constitutive of and constituted by other moments in the social process. Harvey identifies six moments in the social process: power, beliefs/values/desires, social relations, institutions/rituals, material practices and language/discourse (ibid, 78-79) The moments continuously internalize each other, so discourse internalizes various social practices and processes. The reverse is that the other moments are to some extent constituted by discourse yet only partly and there are practices which are thoroughly non-discursive. Discursive practice can as well become sedimented over time and pass from discursive to non-discursive practice. Critical discourse analysis seeks to examine discourses to the extent they are ideological – that is they contribute to and reproduce unequal social relations. Here is the strength of critical discourse analysis to contribute to emancipatory social science. In critical discourse analysis, the researcher is engaged politically and emotionally, all pretence to neutral objectivity is abandoned. (Jørgensen and Phillips 2002, 60-64)

The first stage in the critical discourse analysis framework presented by Chouliaraki and Fairclough (1999, 60-66) is addressing a problem – that is one finds a problematic or a failure that is related to discourse which one wishes to get past or solve. This can be a problem in either the social practice itself or in the discourse surrounding the social practice, or both. In this case it is primarily a discursive problem: the way material practices (humans in environments) are talked about is both enabling and restrictive of normative claims or lessons making one wants to make. (ibid, 60-66)

The second stage is analysing which are the obstacles to this problem being solved, and this Chouliaraki and Fairclough divide into three distinct (yet dialectically related) analyses. First one starts with an analysis of the conjunctures surrounding the discourse in question, that is specifying the context in which the discourse is located and developed. This can be on a more or less broad level, from the immediate conjuncture such as interdisciplinary historical sustainability research at institutions based mostly in the Global North, to a broader conjuncture such as science in the age of climate change. There are no boundaries to the extent of these conjunctures and no points where the level of specificity is too broad or too narrow. The second analysis is an analysis of the discourse as a part of a practice, a moment in the social process. This is to regard the discourse in relation to the other moments and the dialectical correspondence between them. What part does the discourse play in the shaping of these other moments and how do the other moments shape the discourse? The

third analysis is of the discourse as such, its structure and interaction. This means locating it within a wider order or network of discourses, and analysing how the discourse in question draws on different genres and voices (for explanation of these terms see Chouliaraki and Fairclough 1999, 63). and how these are interactively worked through the text. At the end of these three analyses one should have some picture of the text as more or less reproducing or transforming. Is the discourse in question mostly reproducing from the order of discourses surrounding it or does it contain transformative elements that draw on altogether different ones? Now some of the obstacles to overcoming the initial problem should be apparent. (ibid, 60-66)

The third and fourth stage signals the switch from an analytical and descriptive account to a normative and evaluating account. First is to address how the problem functions within the social practice surrounding the discourse, this is a shift from just explanation to evaluation and a shift from “is” to “ought”. Second is to look for possibilities of overcoming the obstacles, and point out paths toward changing the discourse and social practice so that the problem may be solved. Here is when the dialectical thinking really comes into the analysis, as the focus is on the transformative potentials and the dialectic between this potential and obstacles already identified. What are the contradictions and gaps surrounding the discourse? What is it that is not being said or not being highlighted? What are the properties that keep the discourse and its practice open and amenable to change? (ibid, 60-66)

The fifth and final stage is a reflection on the preceding analysis, as one is never discursively unbound and indeed the analysis itself is a part of a certain discursive order. Thus it is important to reflect on ones own positionality and context. One cannot start off completely blank, from nowhere, and always enters into discourse analysis with certain ideas and understanding of the texts in question. Reflection is a way to distance oneself from this prior understanding, to acknowledge them and open them up to scrutiny. (ibid, 60-66)

To focus my critical discourse analysis I start by outlining a sort of emancipatory framework, concepts that I argue are critical for offering lessons for a better future. The purpose is to operationalize the concepts so that I can use them clearly in discussing the outcomes of the analysis along with the potentials and possibilities for transformation. This framework should connect to a broader discourse on environmental justice, emancipation and critiques of modern science. I will establish what I mean by these terms, and what I mean by emancipation and how it ostensibly relates to the practical goals that IHOPE has set itself. Although I would wish to consider the whole

of IHOPE's research and published material it is simply far too much, therefore I will restrict the discourse analysis to the IHOPE-Maya project which is a long standing core project of IHOPE centered around socio-ecological change in past and present Yucatán. My considerations can in some ways be extended to IHOPE in general although not at all applicable to all IHOPE projects or research. The corpus of material that I analyse is a special issue of the *Archeological Papers of the American Anthropological Association* published in 2014 which contains 15 papers from IHOPE-Maya researchers and is today the most extensive output of that project. Along with these papers I also consider a few chapters and articles that are foundational for IHOPE, texts that outline research goals, purposes and vision.

2.4 Limitations of research

As with any research there are several limitations. The foremost in my opinion is that I am only engaging with the texts of IHOPE. I am bound, so to speak, to the discursive moment in the social process and while that can certainly yield a fruitful analysis it can never be complete. Chouliaraki and Fairclough (1999, 61-62) point toward ethnographic methods as complementary to critical discourse analysis and I agree. Ideally I would have liked to have a more holistic approach where I am able to engage with all the moments in the social practice of producing texts like these. There are limits for instance on what I can say about the dialectical relations between the discourse in question and wider institutional and social settings, I can only speculate from what I can infer from the texts themselves and even though the discourse internalizes elements of all the social process this internalization is not complete. I am aware of this limitation, and I do not deny the importance of other moments and aspects.

3. Emancipation

What does it mean to claim emancipation? It is an elusive concept and has a long history of being used by a diverse set of groups claiming diverse conditions, whether ifor abolition of slavery, civil rights, women's rights or the ascendancy of the proletariat. Any definition will always remain a working definition subject to challenges and revisions. A comprehensive definition can be sought in Sousa Santos' (2002) account of modernity which he characterizes as the tension between the “pillar of regulation” and “pillar of emancipation”. Emancipation is a set of logics which seeks a Utopian ideal, to weaken the limitations on social transformation set by the logics of regulation. Emancipation challenges the status quo and “explore[s] new modes of human possibility and new forms of deployment of the human will, and contest the necessity of whatever exists – just because it exists – on behalf of something radically better that is worth fighting for”. (Santos 2002, 3) The

tension between emancipation and regulation is a tension between expectations and experiences, regulation will seek to limit expectation or at least to stabilize expectations while emancipation creates a discrepancy between them by confrontation. So while regulation guarantees society and order, emancipation will continuously seek out good society and good order. Emancipation is thus an incessant challenge to business-as-usual and dominant power structures. However emancipation is not a status that can be achieved once and for all but is an ongoing operation, continuously establishing new norms and power structures that come to be challenged by new emancipatory struggles. (Santos 2002, 2-3) Since we are dealing primarily with science and knowledge generation I will offer a simplified working definition as such: emancipatory knowledges are those accounts that not only do not reproduce dominant and oppressive power structures but challenge those same structures and offer alternative possible futures.

Drawing on the past for lessons in the modern world is not at all straightforward. The past does not yield lessons ready-made, as if just having knowledge of past processes and events furnishes one with the wisdom to tackle problems we face today. Lessons are always imported into the specific context in which they are taught, knowledge of the past is mobilized and employed to various ends and is dependent on the aim of the lesson, in other words lessons exist in a dialectic. So the wish to draw lessons from the past must be accompanied by awareness and reflexivity, with consideration of the dialectic between the lesson or the discursive moment, and other moments in the social process. (Harvey 1996, 176-204) If the wish is also for the lessons to be emancipatory then it is crucial that they do not reinforce and reproduce dominating and oppressive power structures.

One of the key elements in this kind of reflexivity, or rather pro-activity, is to acknowledge how much of the knowledge employed has its tradition in dominant rationalist science and then to find alternatives or break out of this discourse. Technoscience has played both hero and villain in the story of ecological crisis, detecting and alerting us to environmental destruction but at the same time creating the very conditions out of which the ecological crisis is born. Science has proven prone to co-optation by economic rationalism and productivism, because of its demand for disengagement and dispassion. Furthermore economic and scientific rationalism can be traced back the same roots, as far back as antiquity but truly coming into dominance first in the Enlightenment and Scientific revolution and then in the Industrial revolution. This kind of scientific rationalism hinges on an almost dogmatic understanding of the mind/body dualism and all its concomitant dualisms. It puts opposition between reason and nature, with reason located in the mind of the rational human subject and nature seen as Other, unordered and devoid of meaning and value. This rationalism demands

disengagement from its object of study and denial of power and agency of the Other. It is only on contact with the human rational mind that nature can become ordered and made to produce value. Rational technoscience has thus contributed as much in the creation of this crisis in which we find ourselves in as it has in seeking out solutions. (Plumwood 2002, 38-61) That is not to say that science should be discarded and that in an emancipatory framework there is no room for science, far from it, but it is say that we need a certain kind of science, one that is aware of its past and one that is able to embrace a sense of reason that goes beyond the narrow rationalist sense.

There is no denying that the roots of much of historical sciences lie in exactly this kind of rationalistic science. Archaeology and neoliberal capitalism exist in an uneasy relationship (Hutchings and La Salle 2015, 699-720), for instance. Seeking out alternative accounts of knowledge, and embracing plurality of knowledge surrounding the human past, would be a step towards emancipation.

3.1 Justice

In a world wrecked by climate change and ecological crises at all scales, issues of global inequality and justice become increasingly pressing. Issues of who bears the blame and who bears the burden have made any meaningful attempt at negotiating effective climate policies extremely difficult. The crises of climate change cannot be solved without addressing issues of inequality and justice on all fronts. The extreme gap in who is to blame for the crises, who will most likely suffer the most by the hands of it and who will bear the burden of mitigating it needs to be addressed and overcome before we can approach anything resembling a just global society. (Roberts and Parks 2007) how we perceive the origins and nature of injustice will profoundly shape how we can respond to it. (ibid, 138-150)

Injustice in this sense becomes distributional, injustice is not an inherent factor of ecological crises but is the result of the distribution of such crises across a spectrum. The fact that environmental degradation, disasters and costs of cleaning up disasters are not equally distributed globally means that there is nothing inherent in nature or society that is the cause. (Malm and Hornborg 2014, 62-69) Any attempt at a just future must address the distributional nature of the ecological crisis, both how the crisis and its aftermath are unequally distributed globally. Furthermore the distributional aspects of injustice are always historical, results of processes that take place over time, processes of accumulation and dispossession. (Hornborg 2001, 56)

3.2 Difference

Fundamental to any notion of justice are questions of difference and sameness, on what basis do we differentiate between groups and their struggles? On what grounds do we claim universalist notions of justice or do we refrain from claiming them at all? Needless to say discourses of justice are constantly caught in a dialectic with each other and with other moments in the social process such as plays of power, institutions and belief systems. Harvey (1996, 334-365) shows how such dialectics play out over the struggle for hegemonic notions of justice, especially between particularist and universalist notions. He explores if there exists space for a discourse that can attend both to the radical militancy of particular places and the ambition to forcefully articulate and engage in global issues. Such a space can only be gauged by understanding “the relation between social processes of construction of identities on the one hand and the conditions of identity politics on the other”, by a dialectical epistemology. (ibid, 363) Harvey is primarily concerned with *geographies* of difference, how can we explain and engage with differences that are spatially distributed, within and across scales. Yet engaging with material of historical or archaeological nature prompts us to also consider how differences across time are framed. What are the differences between populations separated by a millennia? How are those differences framed and what spaces exist for notions of justice within those framings?

Dominant scientific discourses attribute differences between human groups to the degree to which innate human capacities have been filled. Since we are all of the same species and all endowed with the same essential genetic make-up², we are all manifestly of the same nature, then differences in behaviour, technology, subsistence and so on must be explained by some reference to culture and capacities of the human mind that lies outside those of nature. (Ingold 2011b, 373-391)

This is perhaps best exemplified in historical sciences by what has become known as dual inheritance theory. This dual inheritance is of course 1) genetic heritage and 2) cultural heritage. Humans are said to come with two sets of endowments, passed from generation to generation, one of nature and one of culture. Both are said to operate in more or less the same way. In genetic heritage the genotype is passed on from parent to child and through development is translated into the manifest phenotype. In cultural heritage a decontextualized body of knowledge, a culture-type or a collection of capacities, is passed on from generation to generation through some form of social learning and through development realized in the manifest behaviour of the individual. (ibid) This

² After all differences between human groups cannot be explained by reference to the evolution of the human genome.

kind of distinction underwrites Geertz' famous statement that “we all begin with the natural equipment to live a thousand kinds of life but end in the end of having lived only one.” (Geertz 1973, 45) Yet as we shall see this rendering of difference and sameness of humanity has critical implications for how we frame questions of justice both in the past and present. In seeking alternative accounts of past human-environment interaction and by extension of the modern ecological crisis there is also a need to critically rethink these entrenched ideas of difference and sameness.

4. Integrated History and Future of People on Earth

IHOPE is a global network of researchers dedicated to socio-ecological systems and past environmental changes. Operating under various disciplinary and methodological conditions the projects of IHOPE present a diverse picture of global change research. In fact it is difficult to pinpoint a uniting perspective for all of IHOPE but the core belief is that the past can yield understanding and knowledge that is crucial to any engagement with the many ecological and social crises we face today. Furthermore there is a deep trust in inter-disciplinary and multi-disciplinary approaches: to get to this crucial understanding we need to gather together people from all over the natural and social sciences and the study of past and present environments cannot be the purview of a single discipline.

In a foreword to the book *Sustainability or Collapse?*, a collection of foundational essays for IHOPE, Hans Joachim Schellnhuber (2007, xvii-xxi) compares IHOPE objectives to the Elvish magic of Middle Earth, to peering into Galadriel's mirror seeing what has been, what is and what is yet to come. However there is a clear risk that this mirror is nothing but an ordinary mirror and what one sees in it is oneself reflected back. Any promise towards understanding and action must be carefully articulated and considered.

4.1 Material to be analysed

IHOPE presents an enormous body of knowledge, so diverse that any attempt at a fair and justified synthesis is futile. I can only hope to shed light on some aspects, although aspects that I believe are crucial to the core beliefs of IHOPE and its operation. IHOPE coordinates and works with a number of different projects all over the world, these projects are for the most part autonomous, consisting of smaller networks of researchers interested in a specific topic. These projects differ in size and scale, some presenting a local, grassroots approach while others are attempts at pan-regional or even global synthesis. Despite this there are a few papers and documents that I would consider

foundational or central to the operation of IHOPE. These are papers which attempt to outline a common purpose and approach of the IHOPE community, attempts at synthesis or theorizing above the level of the individual case studies. The earliest such attempt is the book *Sustainability or Collapse? An Integrated History an Future of People on Earth* edited by Robert Costanza, Lisa J. Graumlich and Will Steffen, published in 2007 by MIT Press. This book is the result of a Dahlem workshop held in June 2005 and consists of a number of papers and discussions about the dynamics of a coupled socio-ecological system and how to motivate research that combines a deep time perspective of human-environment interactions. This book has been followed by two papers outlining the general perspectives of IHOPE. The first by van der Leeuw et al, from 2011, appeared in the journal *Ecology and Society* and lays out a framework for integrating history and future and attempts to set a sort of common methodology of IHOPE researchers. The second, by Costanza et al, from 2012, that appeared in the journal *Current Opinion in Environmental Sustainability*, describes the origin of IHOPE and its projects and outlines a general perspective.

While these texts are foundational to IHOPE they do not accurately represent the diversity and vibrancy within the network, an analysis focused only on these text would be unsatisfying. I have therefore chosen to focus on one project within IHOPE specifically, namely the IHOPE-Maya project which is one of longest standing projects of IHOPE. In 2014 the *Archaeological Papers of the American Anthropological Association* published a special issue on the IHOPE-Maya project entitled “The Resilience and Vulnerability of Ancient Landscapes: Transforming Maya Archaeology through IHOPE”. This special issue contains 15 papers by over 30 researchers, with everything from attempts at a general theory of IHOPE-Maya, to detailed case studies of various Maya polities and time periods, to comparative studies of the Maya and other past societies. It is in my view an excellent picture of the diversity within the IHOPE network and the potential of such a concentrated effort. This special issue provides the main material for my critical discourse analysis with other IHOPE papers being used as auxiliary and supportive sources.

4.2 The problem

Can IHOPE draw emancipatory lessons for a just, sustainable future from the history of the Maya? Certainly one of the goals of IHOPE is to “learn from the past to inform future possibilities and help create a better future.” (Costanza et al 2012, 107) How is this to be done? By operating within certain orders of discourse IHOPE at the same time enables and restricts what sort of message they can bring out of their extensive research fields. It is important to understand in which way this happens and if there is room for manoeuvre, so to speak, for articulating emancipatory claims for a

better future. How does this room manifest itself within the discourses that IHOPE draw on? The problem oriented and normative stance of critical discourse analysis necessarily assumes that there is on the first hand a problem, some deficit or hindrance, that as critical social scientists we should seek to overcome. It is not a problem universally acknowledged but rather one that is set up for the purposes of the analysis. This problem is a problem of discourse, as seeking to draw lessons and to communicate these lessons is a discursive practice, and IHOPE operates primarily within the discursive moment in the social process.

On several occasions the authors of the papers come to conclusions that can only be seen as a radical critique of the hegemony of global capitalism. For instance van der Leeuw (2014, 227) observes that the search for “the *economically* cheapest and most efficient kinds of resource exploitation to the detriment of the *socially* cheapest and most efficient ones” and a shift from an economy that “stresses the quality of life to one that emphasizes the quantity of production”, so characteristic of neoliberal dogma, is partly to blame for our current predicament and the impoverishment of current local populations of the Yucatán. Elsewhere Isendahl, Dunning and Sabloff (2014, 51) point towards a compulsive addiction to economic growth as complicit in the collapse of several polities in the Puuc region of the Yucatán, delivering a damning critique of “the growth mantra of contemporary globalized economies”. Both sentiments reverberate within the current environmental justice movement, but neither papers address how their research can mobilize such a radical political action or how these sentiments create spaces for discourses of justice. Herein lies the problem, and it is my belief that despite the authors best intentions the discourses which they find themselves enmeshed effectively prevent such articulations.

4.3 Conjectures and discourses

In the broadest context the whole IHOPE network is of course located within a discourse of sustainability. The perception of multiple ecological crises, resource scarcity and climate change is what in the first place animates the formation of the IHOPE network. (Costanza, Graumlich and Steffen 2007, 3) Furthermore IHOPE position themselves as a part of what they call the global change community (Costanza et al. 2012, 112), that is various groups of researchers and institutions dedicated to exploring past and ongoing environmental change and the socio-ecological system. The network is born out of the work of other groups within this community, the International Geosphere-Biosphere Program and the International Human Dimensions Program especially, but throughout its history IHOPE has attracted researchers associated with various institutions, the one page brief history presented by Costanza et al. (2012, 106-107) contains an impressive number of

acronyms. Currently IHOPE is affiliated with the Future Earth platform (www.futureearth.org).

More specifically IHOPE seek to draw on three strands of research in particular, historical ecology, environmental humanities and future studies, which make up what they call a “Three-Fold Approach to Research Design” outlined on the website, www.ihopenet.org/about. These research strands are in turn themselves composed of multiple disciplinary directions and straddle a divide between traditional academic disciplines. It seems that above all IHOPE puts emphasis on inter-disciplinarity, in their effort to be integrative and collaborative. Indeed the traditional disciplinary divide, between social science, natural science and the humanities, is seen as posing a tremendous hindrance towards understanding and action in the era of anthropogenic climate change. (Costanza et al. 2012, 106-112)

Turning towards the IHOPE-Maya project a slightly different picture emerges, while still advocating inter-disciplinary perspectives the approaches of the researchers are more entrenched in archaeology. Perhaps it is more appropriate to say that the IHOPE-Maya project promotes inter-disciplinary communication, along with communication between archaeology and other disciplines and incorporate feedback when possible but still remains for the most part archaeological. The IHOPE-Maya researchers draw on a wide field of discourses, in fact it is hard to say that there is a single unifying discourse throughout the collection of papers presented in the 2014 IHOPE-Maya special issue of the *Archeological Papers of the American Anthropological Association* (hereafter IHOPE-Maya papers). Each of the researchers of course comes from a distinct disciplinary and personal background and throughout his or her experiences has come to frame and articulate his or her interests in a certain way. However the IHOPE-Maya project does represent an effort of synthesis and translation, indeed it is one of the main goals of the project to bring together these diverse scholars and build up a common language. The researchers hope that this kind of concentrated collaborative effort can bring archaeological and other historical insights to bear on the current discussion on sustainability. (Chase and Scarborough 2014, 1-3)

The contributing authors of the IHOPE-Maya papers are primarily based in the United States and Mexico, with over half in the US alone. This situation seems peculiar considering the desire of IHOPE to foster collaboration, however I will not speculate on the cause of this situation but just note that the IHOPE-Maya project seems very much tied to American universities and research institutes.

4.3.1 Resilience Discourse

The title of the IHOPE-Maya special issue is telling, “The Resilience and Vulnerability of Ancient Landscapes: Transforming Maya Archaeology through IHOPE”. The two concepts of resilience and vulnerability mark the starting point of this effort. Although resilience discourse is not as strong in some papers as in others there is to some extent an allusion to it in each one. Resilience is a concept that originates in ecology in the 1970s, primarily in the works of C.S. Holling, as a reaction against the paradigmatic notion of maximum sustained yield within ecology and resource management in the Cold War era. However, within the last couple of decades the concept of resilience has spread, promoted by Holling himself and others, from ecology to all manners of disciplines, from economics to psychoanalysis, from urban planning to risk management. (Walker and Cooper 2011, 143-147) Resilience as an operational concept has no unifying definition. however it is most often understood as the ability of a system to recover from shocks and maintain relationships in the face of extreme disturbances. It emphasises the open-endedness of systems, as a rejection of the notion of equilibrium, and the capacity of a system to, through transformation, remain qualitatively the same. (MacKinnon and Derickson 2012, 255-256) Resilience is thus an attribute or a capacity of something, a community, an individual or even whole systems. As such resilience is something to be built up, it signifies something that through both endogenous and exogenous processes can be actively managed and promoted. Crucially resilience is a capacity of something, that is while the relations of that something to other things certainly do play a part in building up or eroding resilience it is a capacity that exists outside of those relations. In resilience discourse social systems and ecological systems are linked or coupled, they are not constituted by each other but specified in their essential make-up prior to being linked together through relations that are wholly external to the systems themselves. Thus a discourse based around resilience precludes a thoroughly relational approach such as dialectics. Furthermore when it comes to social relations resilience discourse is fundamentally conservative, it frames social systems as resilient in as much as those systems keep their essentially qualitative nature under shock and disturbance. Any room for imagining a fundamental transformation of social relations is extremely limited within resilience discourse.

Resilience discourse is to a large extent apolitical, its precepts and assumptions borrowed from a natural science not accustomed to making normative claims about social relations. In a way it naturalizes the current dominant social structures, taking them for granted as the natural elements of a reified social-ecological system. (ibid, 254) “Both the ontological nature of 'the system' and its normative desirability escape critical scrutiny. As a result, the existence of social divisions and

inequalities tends to be glossed over when resilience thinking is extended to society”. (ibid, 258)

However taking resilience theory's basic premise, as developed by Holling, at face value has radical implications as a critique of the global system of exchange. In particular it could be mobilized as an effective critique of general purpose money, if resilience theorists would reckon with its central premise of autonomy of systems and subsystems. Clearly such things as general purpose money and infinite commensurability in exchange reduce the resilience of subsystems *vis-a-vis* the systems in which they are nested and vice versa. It would seem that the reluctance to embrace this aspect of resilience discourse can be traced to its co-optation by neoliberal and developmentalist discourses, as well as some measure of ignorance of social theory by resilience theorists themselves. (Hornborg 2013, 116-129)

Within archaeology the burgeoning discourse on resilience has been seen as an ideal opportunity for the discipline to reassert itself and contribute to the discussion on global sustainability. The contributions of archaeology to resilience discourse are many, first and foremost the deep time perspective. This perspective has the potential to unveil the slow processes that operate on time-scales invisible to most other disciplines. These slow processes operate throughout the multiple, linked, adaptive cycles of socio-ecological systems, and understanding these processes is seen as “the key to ultimate system resilience.” (Redman 2005, 70) Furthermore the deep time perspective allows us to make distinctions between short term and long term consequences and benefits of human action. Between those strategies that in the short-term seem to provide much benefit to society yet in the long-term have unintended and undesirable consequences and those that do have long-term beneficial consequences yet might not seem to make much sense considering the short term perspective. Crucially the deep time perspective allows us to discern those aspects of social systems that are amenable to change and those that are not, the assumption is that there are indeed those aspects of human society that have become so sedimented and inalienable that we cannot change them and rather must contend with them in our future planning. (ibid, 70-77)

4.3.2 Complex Adaptive Systems Discourse

The second major discourse I have identified is that of complex adaptive systems (CAS). Although closely related to resilience theory – indeed they significantly compliment each other – CAS discourse differs in some important aspects, taking in perspectives from a wider field of discourses. Complex adaptive systems discourse is perhaps the latest iteration of what can be called complexity science that has historically encompassed such streams of thought as chaos theory, cybernetics and

dissipative structures theory. The rise of CAS discourse owes much to the Santa Fé Institute in the US, founded in 1984, which indeed had some early influence on the foundation of IHOPE. (Costanza 2012, 107) Complex adaptive systems are systems of linked networks which more or less operate under simple rules but give rise to complex phenomena. In the complex adaptive system there is not central control, such a system is fundamentally self-organizing. The CAS is a “system producing complex global emergences that result from the interactions among autonomous agents (individuals, firms, states) following simple local rules of interaction.” (Malaina 2014, 470)

CAS has, similar to resilience theory, made inroads into a vast field of disciplines. CAS as such demands a multi-discipline participation as its ambition is to encompass all aspects of the social and ecological systems. CAS has been especially influential in economics, giving rise to multiple new streams of thinking. (ibid, 470-471) Indeed CAS discourse originates in part from the economics of Friedrich Hayek (Walker and Cooper 2011, 148-150). At the heart of CAS is the model of the cellular automata, a grid of cells which interact among themselves according to simple rules and multiplied over time these interactions result in very complex phenomena. Complexity is thus emergent from the interaction of localized cells which are self-organizing, there is no second-order organization asserting rules or influence on the localized interactions. The emergent properties of such a system are not reducible to the action of a single cell. With increased computational capacity in the last decades these kinds of models have grown larger and more powerful. Even though importing this mathematically based modelling into the context of the social has necessitated the move from the cell to the agent (known as agent-based modelling), the fundamental tenets of the cellular automata remain implicit. This results in a view of the social process as a “simple sequence of interactions and choices based on mechanical rules of adaptation, survival and reproduction of the optimum, where all consciousness and intentionality is rejected or only happens at the end of the chain.” (Malaina 2014, 475) Applying the principles of CAS on social structures furthermore entails an epistemic omission of the observer, which previously was central to complexity science. CAS discourse conceals the observing constructor of the model, who is in the end the one assigning meaning to the otherwise meaningless operations of the cellular automata. Yet social systems are not meaningless as are the cellular automata, the observer is at the same time an agent and observing is acting. “The very nature of the human social system is to be an *observer system*.” (ibid, 476) Social scientists have to operate within a dialectic which is not adequately captured by CAS modelling.

CAS discourse follows the same depoliticisation as resilience discourse, its colonization of social

science disciplines serving to naturalize current structures and normalize a state of continual adaptation and crisis management. By equating social processes with the cellular automata CAS discourse frames society as mimicking decentralized natural processes. (MacKinnon and Derickson 2012, 258-259) Yet this is depoliticisation only by appearances, as both resilience and CAS discourse tend to lock in the current dominant order of capitalist economy and especially neoliberalism. CAS discourse serves to block or neutralize critical perspectives on the dominant global order and its consequences. CAS and resilience discourse are all-encompassing and supremely malleable, as they “internalize and neutralize all external challenges to their existence, transforming perturbation into an endogenous feature of the system and a catalyst to further self-differentiation.” (Walker and Cooper 2011, 157) Furthermore resilience and CAS discourse provide neoliberal hegemony with exactly what it needs, discourses in which chaos and continuous creation of novelty are seen as beneficial in making communities resilient and adaptive. In resilience and CAS discourse disturbance and crisis are the norm and those that are to survive will be those that permanently adapt to a state of emergency. (ibid, 156) Decentralized flexibility and precariousness are the rules of the game. The model of cellular automata is the ideal of the neoliberal policy-maker, autonomous individuals that operate under simple logics (of the market) with little regard for entrenched social structures. (Malaina 2014, 471)

4.3.3 Anthropos Discourse

The third discourse I will bring up is rather more elusive. It concerns continuity and the nature of human-environment relations. This discourse is implicit throughout the IHOPE-Maya papers yet is not explicitly identified, we might call it the anthropos discourse. In short this is a discourse which serves to render human-environment relations all through the past and up to the present in the same language and as being of essentially the same nature, the human person is reduced to the anthropos. It can be seen as related in some ways to the Anthropocene discourse, which has become quite prominent in the last half-decade or so. However the Anthropocene is not mentioned in the IHOPE-Maya papers at all, yet the anthropos discourse shares many of the same features, indeed this specific framing of the human as the anthropos is a prerequisite for conceptualizing the Anthropocene.

At the heart of the anthropos discourse is the belief that human-environment relations can be described in qualitatively the same way no matter when or where, that they can be described in a context-independent way. Human ecology is reduced to a biological and cultural schemata operating inside each individual anthropos, which supposedly operate under simple context-

independent rules that can be known. The anthropos discourse thus compliments both CAS and resilience discourses. Essentially what the anthropos discourse does is to place the ultimate cause of anthropogenic environmental degradation and by extension the current ecological crisis, on the inside of the human, on the fixed rules of human ecology. Thus there is no rupture or discontinuity between past and present, not in a qualitative sense at least, when it comes to human-environment relations. Studying human-environment interactions in the past can provide lessons for the modern world because they are the same and operate under the same rules. The anthropos discourse is predicated on that standard model of difference and sameness in historical populations presented above, on notions of innate capacities and dual inheritance. Human populations are presented as totalities characterized by attributes that are internal to those populations and whose environments is external to them, neither constituted by the other but both prefigured by their essential attributes. Differences within populations are inconsequential because they do not detract from the essential character of populations.

One of the critiques that can be levelled against this discourse is that the anthropos and the Anthropocene discourses does not take into sufficient account how ecological crises are *sociogenic* rather than *anthropogenic*. That is the origins of the crises lie with the organization of (some) human society rather than some inherent attribute of the human as a species. This critique comes most forcefully into its own when confronting the destructive logic of capital. It is argued that far from being attributable to some generalized humanity or human society the origins of our modern ecological crises lie with capitalist property relations, capitalist modes of production and the emergence of fossil fuels as prime mover. This coupling of capitalist property relations and fossil fuels allowed capital to achieve self-sustaining growth, however illusionary, growth that is predicated on the capitalist need for profit and the ever-growing material input needed to achieve that profit. (Malm 2016, 255-278) The point being that social division amongst humans - that the means of production are wholly the property of one class of humans and not others - is what has led us on this destructive path and continues to fuel the fire. "The nature of the divide between humans determines how they – some of them – shatter the rest of nature." (Malm 2016, 288)

Overall what this means is that human-environment interactions, in the past as in the present, cannot be understood, let alone supposed to yield lessons for the modern world, without understanding the specific social relations in which they are immersed. Any historical science that wishes to offer lessons from the past for a better and just future should avoid at all costs universalizing a certain human condition. One should not speak of some general form of human-environmental relations or

interactions as if those interactions took place outside of the social and the ecological, attributing what is the result of a historical contingency to an attribute of the human species in general. (Malm 2016, 271) It is to lump all humans on earth together and present technological progress, with downsides, as a universal human achievement. Thus concealing the unbalanced power relations that lie behind the ecological crisis and the political establishment's inability to address it. (Hornborg 2013, 45)

4.4 *The obstacles and their function in text*

How do these discourses present themselves throughout the IHOPE-Maya papers? They of course are only a part of the many discourses that can be seen in the papers, each paper draws on different discourses but these three are the ones that can be seen as underlying the majority of the arguments presented in the IHOPE-Maya papers. Crucially they determine to a large extent what kind of lessons the authors are able to draw. The collection of 15 papers presented in the IHOPE-Maya special issue cover a lot of ground, they include many different methodologies and terminologies and some are minimally relevant for answering the questions of this thesis while others will feature quite prominently in the following discussion. This critical discourse analysis is not in any way meant to be a criticism on the scholarship of the IHOPE-Maya group, it appears to me to be beyond reproach and besides I do not have the expertise to do so. Indeed the approaches pioneered within the group and IHOPE in general represent an enormous improvement on deterministic cause-effect or reductionist approaches that continue to be popular within research on the interface of earth systems and human societies, typified by Jared Diamond (2006) and his account of societal collapse. The point is rather that the particular discourses that the IHOPE-Maya have chosen to articulate their scholarship through to a large extent dictates what can and can not be said.

In the introductory paper to the IHOPE-Maya special issue Chase and Scarborough (2014, 1-10) set out the objectives of this collaborative effort of Maya researchers: listing what it is that archaeology can bring to the table on current sustainability debates, identifying some weaknesses of past efforts and presenting a way forward for archaeology. They define the resilience approach and how archaeology and resilience theory benefit each other, however resilience is left vaguely defined as the ability to positively adapt to adversity. Yet there is no indication what they mean by positive adaptation. Two other concepts, sustainability and rigidity, are similarly left vague and open ended. (ibid, 1-3) Understanding past adaptation to environmental change, successes as well as failures, has “a direct bearing on modern problems and issues” (ibid, 3), because they are directly analogous examples of past adaptation can be imported into current context without trouble. Interestingly they

see archaeology as data gathering and interpretation effort, providing empirical studies but leaving the theorizing and normative claims to others, making the emancipatory potential that this kind of archaeology quite limited. (ibid, 2) However this is not a view shared by all the subsequent papers.

Resilience discourse is prominent within the majority of the papers, although sometimes not explicitly and in some even not at all. The paper by Isendahl, Dunning and Sabloff (2014, 43-55) is perhaps the most interesting case of explicitly employing resilience discourse while at the same time wishing to address the political economy of the Puuc region of the Maya Lowlands. The authors set up a framework to analyse accumulation and inequality, a framework based on energy “accumulated among certain social segments in a society at the expense of other groups” (Isendahl, Dunning and Sabloff 2014, 45) and the relation between energy dynamics and social development. This is characterized by energy transitions from high-gain to low-gain energy regimes – that is at first the economy operates under a high-gain in energy as resources (in this case access to fertile land) are plentiful and the market can continually expand but as access to resources diminishes so do the returns of energy invested. In this context the resilient society is the one that can most easily transition from one state to the other and dependence on high-gain energy regimes can leave a society too rigid and cause it to collapse. However this resilience is continually bound up with a discourse of management, environments and ecology are something to be managed and past humans “dealt with” environmental change and indulged in decision-making, in much the same way we picture ourselves to operate in the modern capitalist world. This is entirely consistent with resilience discourse in which resilience is always measured and defined by some outside agency which operates detached from the environment in question and thus can imagine it as something to be managed. (MacKinnon and Derickson 2012, 259-261) Resilience discourse brings the knowledge from empirical studies to the service of the policy-makers.

The factors that led to the abrupt florescence and collapse of polities within the Puuc region are all framed in management and economic terms: land as a “key resource”, the “effective management” of water, “maximization”, “diminishing returns”, “economic growth”, “investments” and so on. (Isendahl, Dunning and Sabloff 2014, 44-45) The economy and socio-ecological system of the Maya is thus couched in modern terms, the assumption being that it can be analysed using the same terms and tools as we would analyse markets and economies of today. This is part of the depoliticisation of resilience discourse that naturalizes and normalizes the current dominant discursive order at the same time as it is criticized. This paper is an example of the tension that emerges when one wishes to articulate emancipatory knowledge, but at the same time, it does so

through discourses which seem to counter or minimize the emancipatory potential of the message. As mentioned in chapter 4.2 the authors identify the growth mantra of global capitalism as a threat to planetary sustainability, yet reliance on discourses of management and resilience prevent them from drawing wider conclusions about the nature of the capitalist system and the destructive logic of capital – what is recommended is not to resist the capitalist system but to *build* resilience. (ibid, 43-55)

In a paper by Scarborough and Valdez (2014, 124-141) resilience is again used to analyse the economy of the Maya, this time what the authors term alternative economy. This economy is based on the unit of the household and the close community, and the relation between household and centres, both minor and major. Households were primarily engaged in the production of foodstuffs for immediate consumption and to a lesser extent in the production of tools to be shared among their immediate neighbours, so not in commodity production for market exchanges. Yet it is clear that some neighbourhoods and households did specialize in the production of certain crops, and the nature of the tropical, humid environment necessitated a highly scheduled and rapid exchange and consumption of any surplus lest they spoil. This exchange was organized through period markets at minor centres, which served not as centres of accumulation but of consumption and ritual. Although some larger centres certainly did function as centres of accumulation, where the means of production were appropriated by the elite, this pattern is not as evident in the Maya Lowlands as in other ancient civilizations. It seems that the core-periphery relationship in many Maya communities was rather inverse, the hinterlands being the controlling force and centres more or less only serving as scheduling and information dispersing units. (ibid, 126) Given the mosaic, tropical environment of the Maya Lowlands it seems evident that Maya communities operated under principles of self-organization, merely mimicking the environment around them.

Here resilience and CAS discourse appear, with centres assuming the role of the cellular automata tasked first and foremost with sending and receiving information, much like a computational unit, not as means to regulate production, consumption and exchange but rather as emergent from the self-regulation of households which in turn are also more or less autonomously operating on the simple logics of the complex adaptive system. Any notion of power, identity and ritual is construed as being overlain on top of a substrata of a naturally organizing economy and can thus be dismissed as insignificant, non-controlling factors of this economy. As the authors frame it the “Maya adapted to its [the tropical ecology] rhythms and tempo by altering the engineered landscape in a manner that best accommodated human societal supply and demand”. (ibid, 133) Not only is human society

seen as operating on the logic of supply and demand, thereby naturalizing the current hegemony of neoliberal economics, but this economic logic is also seen to exist somehow outside of ecology; human society involves the adaptation of economy to ecology, and vice versa, through engineering. The logics or blueprint of an economic system pre-exists in the cultural or biological make-up of humans and the diverse forms of human society and habitation are simply the result of the performance or execution of these blueprints in different ecological settings. Thus it is possible to speak of the “ritualized economy” (ibid) as if the economy was something apart from ritual. The lessons offered suggest that rural hinterlands “could link into a self-organizing and malleable matrix interfacing with a set of mutually beneficial urban aggregates” (ibid, 135), breaking with the structured hierarchy of modern urban/rural divides while at the same time allowing cities to “continue their coordination and regulation of Western institutions.” (ibid) While providing a pertinent observation and admirable lessons, this resilience approach disregards the ultimate processes that create and sustain both rural and urban areas – that rural and urban are ultimately in a dialectical relation with each other, and the processes that give rise to one also give rise to the other. The rural and the urban are not self-contained entities existing in external relations to the other but both are processes, they are constituted by the flow of goods, people, and information which has no beginning or end but which give rise to or undermine those permanences which we come to call city and country.

Another way in which these discourses function is to establish a degree of commensurability – that is, through a common language of resilience or adaptive systems the Maya can be compared to other cases regardless of geographic or temporal distance. There is no boundary on comparative analysis, each case can potentially be compared to any other case or any other model of a case once a common language of concepts and tools has been identified. (Tainter 2014, 201) “Only in the context of such a [comparative systemic] framework is it possible to achieve the kind of modeling that allows us to view, analyze, and experiment with the various scenarios developed by the Maya”. (van der Leeuw 2014, 222) For instance, Chase et al. (2014, 11-29) discuss how to handle variability within the Maya Lowlands by way of “[i]dentification of types and degrees of resilience, stability, rigidity (integration, hierarchy, conformity), and pan-regional interaction... Such considerations... permit the ancient Maya to be more directly compared to the developmental trajectories of other civilizations.” (Chase et al. 2014, 24) Such a standardized conceptual framework allows cases to be compared with relative ease. Variability exists thus not in the particulars of each given case, but rather in its position on a scale or axis that has been rendered context-independent and through which the case has been made commensurable to potentially any

other real or fictitious case. A good analogy, made by Scarborough and Valdez (2014, 124), is that diversity of historical cases should not be seen as apples and oranges but rather in terms of their “degrees of similarity or “kinds of roundedness””.

What this amounts to is the move from history as a source of stories to history as a laboratory, from diversity to variability. History, shorn of stories, now allows us to test hypothesis and models for the purposes of policy making. “By examining the ecological and climatic variability that exists in this region in relation to the various cultural responses that are evident in the archaeological record, it becomes possible to use these long-term temporal data to inform modern policy debates.” (Chase et al. 2014, 25) This point is echoed in a paper by Nelson, Chase and Hegmon (2014, 171-182), they claim that in order to bring understanding of the ancient Maya to a wider audience the collaboration of the IHOPE-Maya group must, to some extent, be a process of “identifying principles that operate across cultural contexts” (ibid, 171) and search for commonalities, through resilience theory. Indeed analysing Maya cases through resilience theory can get us close to knowing “the principles that govern socio-ecological change.” (ibid, 172) This is also an allusion to the complex adaptive system that operates under simple rules, or principles, that gives rise to socio-ecological forms and change. The seamless transition from resilience to CAS modelling is underscored by the end of the paper, where the authors identify the ability to formalize resilience in mathematical models as a key tool in further understanding the underlying principles of collapse or transformations. (ibid, 177)

Taking this line of thinking a step further Gunn et al. (2014, 101-123) develop a model of sustainability and agent risk based on the rise and fall of the Calakmul polity in the Maya Lowlands for the purpose of comparison with the European Rhône river corridor. Sustainability in the central Maya Lowlands, and elsewhere, requires the rendering of three variables - landscape, climate and people - and the causal relationship between them. These are the “underlying variables controlling Maya Lowland society” (Gunn et al. 2014, 102) and the causal relationship between them represents the simple logics of the complex adaptive system, which supposedly give rise to societies of endless variety. Sustainability in essence is thus found in some combination of these variables, that a right mixture of climate, landscape and people will lead to sustainable societies while wrong mixtures lead to unsustainable ones. History thus provides the material that allows one to experiment with these different variables, the alchemist's laboratory where it is possible to find the “just right” combination necessary for sustainability. In the final analysis Gunn et al. (2014, 116) suggest that the polity of Calakmul would have fared better by keeping resource use and population within a *sustainable budget*. If only they had balanced the books!

Iannone, Pruger and Chase (2014, 155-170) provide examples of such books balancing through case studies of three minor hinterland centres in the southern Maya Lowlands. Resilience is heavily associated with innovative capacity as an attribute of a community. Hinterlands are argued to be either creators of innovation or passive receptors of innovation from heartland centres, although as the authors note most likely they are both. Each of the three cases vary in their resilience and sustainability. Resilience is specifically attributed to communities that are politically dispersed and show minimal hierarchical organization, too much integration into a hierarchical relationship with a distant centre can lead to hypercoherence and severe limits to possible crisis responses. Thus the ideal community is the one that is highly flexible and shows considerable innovative capacity and ability to respond to crisis in different ways. Factors of resilience are internal to the communities in question.

This modelling view inherent to CAS discourse leads seamlessly into the anthropos discourse since now any aspect of human ecology, in time and space, has been made commensurable with any other and diversity reduced to variability. It now becomes possible to speak of the “globalized society” of humanity as us. We “are all trapped in the same global ecosphere and ecosystem resource base.” (Gunn et al. 2014, 111) This sentence is indeed telling, we humans are trapped and bound by the external ecosystems around us, and as for any other creature it must be our wish to break free from these confines. The story of climate change becomes the story of humanity's inevitable march towards breaking free from the prisons of their ecologies. All the steps along the way to the current wrecking of the climate differ from the starting conditions only in degrees, not in kind, in their roundedness, not in the nature of their fruits. In the globalized society of the anthropos there is no life, it is a world “detached from the domain of lived experience...The global environment is not a lifeworld, it is a world apart from life.” (Ingold 2011b, 210)

The anthropos is a problem-solving creature which encounters the world it occupies as a series of continually generating problems. A solution to one problem inevitably leads to other problems further down the line. This is essentially the account given by Tainter (2014, 201-214) of human society's struggle for sustainability throughout history. Tainter defines sustainability as concerning “the long term success of problem-solving efforts” (ibid, 202) and equates sustainability with continuity. This is a rather conservative view, which is entirely consistent with resilience discourse, as it privileges the dominant social structures and frames the maintenance of those structures as sustainability. Therefore unsustainability is sided with transformation. Human societies maintain

their continuity most often through investing in complexity – that is as humans encounter problems (of population, sustenance, environmental change etc.) they “often respond by developing more complex technologies, establishing new institutions, adding more specialists or bureaucratic levels to an institution, increasing organization or regulation, or gathering and processing more information.” (ibid, 202) The innate nature of humans as problem-solving creatures and the innate tendency of humans to increase complexity when faced with problems is thus one of the driving factors in the development of civilization over the last 12000 years. Here we have again arrived at the human society as the cellular automata of CAS discourse, the autonomous problem-solving unit and the context-independent problem-solving mechanism of complexity. However, Tainter realizes that increasing complexity is not free, that living systems differ fundamentally from non-living systems because “increasing complexity carries a metabolic cost.” (ibid, 202) That in order to maintain complexity in living systems it takes energy and the more complex the system the more energy it takes just to maintain current levels of complexity. The cost of complexity thus increases as societies encounter more problems. “In problem-solving systems, over the long term inexpensive solutions are adopted before more complex and expensive ones” (ibid, 203) and as problems continue to be encountered the available solutions grow ever more costly and ineffective leading to stagnation and unsustainability. This is the essential process behind collapse and transformation, and the current ecological crises we face are of the same, although intensely magnified, nature.

Even though the focus on the metabolic is very welcome, this approach fails to acknowledge the very specific nature of capitalist economic systems. This is a recurring problem throughout the papers in this special issue and stems from the three discourses already identified. Because human societies are seen to operate on innate, context-independent principles or logics, such as problem-solving through complexity, then any specificity or particulars of various economic systems can be construed as being overlain as a layer on top of the innate economic nature of humans, which usually happens to mirror dominant neoliberal theory. Thus these specificities can be dismissed as merely idiosyncratic cultural constructions that only serve to obscure the true nature of humans that can only be understood by stripping these layers off. There is no need to attend to for instance capitalist property regimes or the role of ritual and identity, because in the final analysis these constructions are just the variable forms of complexity and do not differ in their nature from each other. These discourses make it impossible to address divides within human societies that indeed do critically bear on their ecology.

Perhaps the most interesting and important paper is the final paper in the IHOPE-Maya special

issue, by van der Leeuw (2014, 215-231). The paper provides much of the theoretical foundation for the continued study of the Maya in terms of resilience and CAS, as well as a synthesis of the preceding papers. The author is motivated by similar concern as that motivating my own thesis, which makes the paper an extremely interesting read. It starts with a lament about the deficiencies of traditional science in framing issues of past and present, that “our scientific tradition, and the institutional framework that underpins it, have handicapped our scientific communities in thinking freely about the future...science has emphasized thinking about origins rather than emergence, about feedback rather than feed-forward, about learning from the past rather than learning for the future.” (ibid, 215) This is caused, van der Leeuw goes on to say, by the way our intellectual traditions are under-determined by observation but over-determined by past experiences. A new scientific tradition would need to abandon the persistent “ex post” or origins focus approach in favour of an “ex ante” or emergence approach. This new scientific tradition, currently manifested in CAS discourse, “would need to increase the number of dimensions of the phenomena that we consider, and look for a range of more complex interpretations”. (ibid, 217) Human beings can only perceive a limited number of dimensions that constitute the environments around us, we inevitably fail to see the full dimensions of our actions and we act based on very limited knowledge that hinders our ability to make rational decisions for the long term. Furthermore, our actions increase complexity and dimensionality of the environment, leading to unintended consequences down the line. The more we know about the environment the more we are able to impact it and the less we understand it. (ibid, 217-219)

While these arguments are in many ways convincing – indeed the critique of the Enlightenment ideals of domination and subjugation that still form part of the hegemonic discourses in science and policy making is extremely refreshing - it is not entirely clear how this new scientific tradition will deliver us from the precipice of disaster. Does it hold emancipatory promise? Like Tainter in the preceding paper, van der Leeuw puts the focus on society's problem-solving and information-processing capacities. Human beings are genetically endowed with information-processing capabilities that surpass any other animals. It is by our abilities to categorize, make abstractions, recognize patterns and to communicate this information through symbolic devices that we organize the world around us, “infuse it with structure and meaning, make it possible for us to understand where we live and or know things about it, intervene in it”. (ibid, 220) This ordering of experiences through information-processing capabilities is what generates knowledge, and once generated, knowledge allows us to see and solve ever more problems, i.e. to make even more order out of our experiences. Thus our innate problem-solving and information-processing capacities work as a

positive feedback cycle in which we continuously accumulate more capacity to process information, the “information-processing system grows as a function of the problems a society encounters on its path”. (ibid, 223) It is this capacity that allows us to process ever more energy and materials, to grow. Far from being a critique of Enlightenment thinking this account upholds and restates the domination of mind over body and culture over nature. The information-processing capabilities that are supposedly genetically encoded must be located in the mind, where the raw materials of sensory experience is ordered into meaningful patterns and categories. The body and its senses are thus no more than a vehicle for a mind that in principle could perform its functions independently of the body. Nature is relegated to a meaningless provider of raw materials that is fundamentally unordered prior to the processing of this raw material by the human mind.

Furthermore the focus on information serves a similar depoliticizing function as Tainter's focus on problem-solving. The existence of society “is dependent upon flows of information that allow the needs of the individual participants to be met by distributing resources”. (ibid, 220) Information and its flow thus come to stand for all sorts of cultural aspects, such as relationship, ritual and identity. Much like the specific forms of economy and ecology that can be stripped away to reveal the essential problem-solving nature of human society, so can the specific and diverse forms of cultural organization be stripped away to reveal the information-processing capacities of humans. The specificities of culture are but a layer of meaning put over the essential nature of human societies and their ecologies. What becomes important in this account is not so much what the information says, the qualitative content, but rather the context-independent notion of information processing and its relation to ecology, the quantitative capacity. Again the framing of inequalities and divides within societies is precluded. Relationships of power are culturally constructed layers that can be safely disregarded because they serve only to obscure the true nature of human ecology.

The result of these discourses, as apparent in the paper by van der Leeuw and other papers in the special issue, is to frame climate change as the unintended consequence of some transcendental nature of human society. This is the essence of the anthropos (and by extension the anthropocene) discourse. Problem-solving by human society inevitably has unintended consequences, and as those societies exhaust the cheap or easy (in the short term) solutions they face the risk of being overwhelmed when all those unintended consequences come back to haunt them and no easy solutions are left. Societies “are inevitably headed into a trap of their own devising.” (van der Leeuw 2014, 225) If climate change is an inevitable consequence of civilization and its development, it not only becomes impossible to address questions of justice because there is no way

to tell victim from perpetrator but questions of justice become entirely irrelevant to the conversation. There is no way to attribute blame to anyone except on society as a whole, on us as humanity, even though it is obvious that only a part of humanity has lead us down this path. For instance it makes little sense to speak of how various resources, such as oil and uranium, “did not become part of *our human way of life* until complex scientific knowledge and technology were available” (ibid, 227, my emphasis) when for a large portion of humanity these resources are not a part of the way of life at all and never have been.

4.5 Past the obstacles

Now that the broad outlines of the obstacles that inhere in resilience, CAS and anthropos discourses have been sketched through their use in the IHOPE-Maya papers, it is time to explore in what way these obstacles can be overcome and what sort of creative tensions exist within the discourses.

4.5.1 Scalar tension and knowledge

One major tension within these texts, and within IHOPE in general, is that between the local and the global. We have seen that the IHOPE-Maya project places considerable emphasis on being able to cross this divide, that by means of analogies and comparative studies it is possible to bring local cases to bear on global society. It is one of the drivers of the IHOPE project, to unpack various local or regional cases that thus far have been locked away in idiosyncratic crates and bring them to the attention of policy-makers on the supra-local scale. This can really only be done through the use of generalized common language and the concomitant reduction of diversity to variability. There is reason to believe however that this drive towards the global as the domain of scientific knowledge and political action is fundamentally mistaken and deserves critical rethinking. It is a drive that is predicated on a view of the local as holding only incomplete and inherently limited knowledge, and on the global as the realm of total knowledge. It relegates the knowledge born of lived experience to a level below that of representative knowledge born of a cognitive reconstruction by a being that has itself stepped outside of the world. (Ingold 2011b, 209-218)

In the discourse of the global society, the anthropos and the complex adaptive system, the local centres of diversity and difference “from which each perspective is taken is converted into a boundary within which every local view is seen to be contained.” (ibid, 216) The idea that we can escape these confines and ascend to global knowledge “results from a privileging of the global ontology of detachment over the local ontology of engagement.” (ibid) It is not so that forms of local knowledge are somehow a limited and deficient, presenting only a part of the picture and that

with a global perspective we can get past those limitations and towards the full picture of the world. It is rather that the two are knowledges of a different kind, each one holding within itself the seed of the other. The local and the global, or the sphere and the globe as Ingold says, “are caught in the dialectic interplay between engagement and detachment”. (ibid)

A key observation made by van der Leeuw (2014, 219), although it is uncertain the author realizes the full significance of it, in the final paper of the IHOPE-Maya special issue, concern the difference between knowledge and understanding. It seems as the more we learn about our environments the less we understand them and the more knowledge we gather the more we influence them. Knowledge here stands for a particular kind of knowledge, classificatory and primarily based on a positivist epistemology, it is a kind of knowledge that is found throughout IHOPE papers. In this epistemology humans are primarily cognitive beings, we make sense of our world by means of abstractions, classification and pattern recognition. And as we engage with these processes we grow our knowledge base, in fact knowledge in this sense follows something of an exponential growth curve because the more we abstract and classify the more knowledge we accumulate and in turn we can abstract to ever higher levels and define into ever more categories. For such a knowledge to grow it need only to encounter a problem that needs to be solved, having solved the problem knowledge has grown and so has the number of potential problems it can encounter. This particular kind of knowledge is strongly complicit in what Ingold describes as the genealogical or taxonomical models. (Ingold 2011a, 157-158) But such knowledge has not yielded understanding. This is knowledge of abstraction, knowledge that is independent to all contexts and home to none. Understanding of an environment can only come through the processes of dwelling within it, to know its context not its contextlessness.

But this does not mean that true understanding cannot be brought beyond the context of dwelling, that is be shared. Such sharing though does not take the form of abstraction from context, of classification into arborescent categories, but of storytelling. It is through laying down, picking up and weaving together the threads that constitute the stories we tell that understanding is shared. Through storytelling and listening one does not make abstractions to a higher form of knowledge or render conceptual patterns but one *relates* “the occurrences of the past, retracing a path through the world that others, recursively picking up the threads of past lives, can follow in the process of spinning out their own.” (Ingold 2016, 93) Exploring the connection between understanding and storytelling might reveal a path out of this thicket of scalar mismatch and knowledge integration. Rather than abstracting knowledge from the past and applying it to modern context by means of

analogies or models, a truly integrated history and future could be seen as a project of storytelling.

Archaeology can provide immense potential for emancipatory knowledge in the current atmosphere of crisis and environmental degradation. However this is archaeology of a peculiar sort, one that critically questions the hegemony of global capitalism and modernity. For this to happen archaeologists need not to rely on the methods and concepts of other disciplines, such as systems ecology or economics, but bring out their own. (González-Ruibal 2013, 1-29)

4.5.2 Capital and Power

Engaging with notions of capital and accumulation is an important step towards an emancipatory framework of environmental change, to be able to articulate notions of injustice and inequality one must have some sense of the processes that generate those situations. Harvey claims that capital accumulation is the primary process that generates environmental injustice and conflict, and a proper dialectic understanding of this process is essential to any project wishing to engage with environmental justice issues. A sustained quest for environmental and social justice must engage directly with the processes that give rise to geographies of injustice. A purely problem-solving approach, where the focus is squarely on the symptoms but not the underlying disease cannot hope to provide a basis for political action towards a better future. (Harvey 1996, 397-402) Embracing Harvey's concerns Alf Hornborg establishes a topology of accumulation that allows us to conceptualize accumulation across space and time. This topology contains 5 major strategies or modes of accumulation, not mutually exclusive and not strictly bound to specific time periods or places although some modes characterize some periods more than others. (Hornborg 2001 57-58) Hornborg shares a focus on energy and material flows with many of the IHOPE-Maya researchers, although Hornborg's typology presents a much more nuanced picture than the high-energy gain versus low-energy gain, information-processing or complexity models presented in the IHOPE-Maya papers. Rather than seeing society as a unified entity, that operates within a totalizing energy regimes, Hornborg's typology allows us to see processes of energy transfers and distribution within a society and the extent to which these processes are drivers of socio-ecological change. (ibid, 65-87) This topology provides an extremely powerful guide to viewing socio-ecological change in the past, with its processes of unequal distribution and unequal exchange become central to investigating human environment interaction.

When one's primary research material is the archaeological record two concepts become key in this approach: those of landesque capital and ritual capital, without which no meaningful discussion of

long-term capital accumulation would be possible. The view of landscape as the physical manifestation of past human activity, or at least those parts of the landscape that have been the sites of human production and consumption, becomes a view of accumulative landesque capital. Landesque capital is investment into intensification of agricultural production that results in a permanent or semi-permanent change in the character of a landscape. Thus it represents embodied labour, or labour that has been invested into the land for saving time and space in the present and future. Ritual capital on the other hand refers to those investments that essentially ensure the continuing cooperation of labour and reproduction of social relations. These investments include temples and monuments but could also be expanded to include investments into bureaucracy, military and certain kinds of technology all of which are integral to the formation of early states and centralization of power. (Hornborg 2013, 49-51) These concepts allow us to see how capital and its accumulation can be gauged within the archaeological record and through past and present landscapes. Furthermore conceptualizing capital primarily in terms of land and labour, as a “strategy for locally saving labour (time) and land (space) through the appropriation of embodied labour and land from elsewhere in the social system” (2013, 49) allows us to see those remnants and landscapes as manifestation of power relations.

For instance such research could be focused on how rulers were able to appropriate surplus labour and goods through their control of artificial water sources and what role water and ritual played in maintaining unequal relationships of exchange and power. This illustrates how collapse of the Maya was not a naturally occurring phenomena but rather a result of specific social structures and how ultimately environmental changes were filtered through these social structures. (Lucero 2002, 814-826) Or to highlight the dialectic between ritual, politics and surplus, how each was constituted by and constitutive of the other. Rituals, especially water rituals, were a powerful tool of legitimation and appropriation by Maya elites. Exploring these relationships reveals how local, community based rituals were progressively integrated and coopted by urban elites as means to extract surplus from dispersed hinterland communities. (Lucero 2003, 523-558; Lucero 2007, 407-427)

4.5.3 Continuity

One of the most interesting points left over from the analysis of the IHOPE-Maya has to do with continuity of the past and the challenge presented by global capitalism. It can be summarized by this question: Has the rise of global capitalism and fossil fuels fundamentally altered human-environment relations? Here lies a critical problem for any sort of historical science that wishes to address problems of the present and future – the issue of continuity of processes, of whether or not

the rise of global capitalism and the fossil fuel industry posits a break with the past or not. It seems that to be able to draw lessons from the past, one must view the past as being essentially the same as the present, and in this case that would mean that the nature of human-environmental relations has not been fundamentally altered by modernity. There are differences for sure, between past and present, but those are said to be differences of degree rather than kind (Isendahl, Dunning and Sabloff 2014, 44). Yet for others modernity with its mass alienation from nature presents such a stark picture that drawing lessons from deep past situations seems pointless as such lessons would lack the force to face global capitalism head on. Indeed writing environmental history for a longer period than the last 200-300 years seems an inherently problematic task that reduces the ability to make normative claims about the present and results in more or less descriptive accounts. (Hornborg 2013, 63-82) How we come to understand the crisis and our ability to act is dependant on how we think about this anthropos. There is a great need within science to critically engage with the question who this creature is. (Palsson et al. 2013, 3-13)

By viewing human-environment relations as being essentially the same in the distant past as they are now, and by extension the same in all the different places in past and present, one ends up with a view of a general human-environment relation from which one can draw general principles but which prevents one from seeing the very unique problems posed by global capitalism, alienation and fossil fuels. This is knowledge without understanding. But it becomes highly problematic to argue for a general human-environment relationship, a relationship that can be viewed outside from its local, everyday, lived-in context. Indeed that would be to posit that there exists some form of human-environment relationship that is devoid of both humans and environments.

Asserting that human-environmental relations have remained fundamentally the same throughout history hinders the ability to address the root cause of anthropogenic climate change and thus to offer any lessons on just mitigation strategies. Because doing so denies the extent to which capitalist property relations, mass alienation of humans from nature and other humans, and self-sustaining growth powered by coal does indeed signal a new order. The origin of capitalism and by extension climate change is predicated on "a complete transformation in the most basic human relations and practices, a rupture in the age-old patterns of human interaction with nature." (Wood 2002, 95) Human ecology cannot be understood without attending to the social relations among the human. However through the ascent of capitalist production, along with a very specific concept of technology, human ecology has come to be seen as breaking with human sociality. (Ingold 2011b, 312-322) "The modern semantic shift from technique to technology, associated with the ascent of

the machine, is itself symptomatic of the disembedding of the forces of production from their social matrix, transforming the correspondence between forces and relations of production from the internal to the external, and setting up the now familiar opposition between technology and society." (Ingold 2011b, 318) And this is indeed the rupture that lies at the heart of our current crisis. Yet if technology and ecology have become disembedded from the social matrix it is only so by appearances, although appearances continually reified by much of current science and academia. The machine is immersed in flows of social relations, although relations of a very different nature based not on mutualism but on dominance – dominance over nature and over other human beings. The machine, of manufacture or extraction or any other process machines are involved in, is dependent on flows of signs as well as materials, it does not run on its own. (Hornborg 2009, 239-254)

Stressing rupture or discontinuity does not entail fear that archaeology or the deep past become immediately irrelevant to the discussion on modern sustainability. Such a fear is, after all, predicated on viewing the past only as a source of analogies and data for model building – on the reduction of diversity to variability. Here again we encounter the potential of storytelling. A return to history as a source of stories – such as the one Alf Hornborg (2001, 65-87) tells of the Inca emperors and *Spondylus* shells – would alleviate any such fears. Furthermore storytelling resists the distinction between an origins approach (the “ex post”) and an emergence approach (the “ex ante”) felt by many of the IHOPE-Maya researchers. First, because that distinction is itself a result of the particular way of thinking about the past presented above and, second, because stories of this kind have no beginning or end. (Ingold 2011a, 156-164) To tell a story of this kind “is not to represent the world but to trace a path through it that others can follow” (ibid, 162) and in following these paths we “weave stories from the past into the texture of present lives.” (ibid, 164)

4.6 Reflection

Attempting to analyse discourses, to draw out the threads that run through them and to envision spaces for creative tension and transformation is bound to be a hazardous task. For one critical discourse analysis can never be truly objective, the very method itself is predicated on first articulating some problem or other. The work presented here is no different, as is apparent, I start out with a rather specific problem that I project onto the material prior to actual in-depth engagement with it. There is always a risk that this initial problematization is ill-founded, of course as a researcher I limit, to the best of my abilities, any bias or blind assumptions that may influence the task at hand but in the end there is no escaping the fact that the method I employ is very much a

method of interpretation. Also inescapable is the fact that critical discourse analysis as such is of course an order of discourses itself. The choice of method and its execution are resultant from a play of discourses which I find myself both at present and in the past. The choice of material is also an act of interpretation immersed in discursive interplay, I have drawn from a variety of streams of thought, some more than others. From the start I take a Marxian approach, which is bound to colour any assumptions or conclusion I draw. However this is not to say that this is done blindly and entirely arbitrarily, there are reasons for making this or that argument and I hope that in the course of this thesis I will have articulated them clearly and convincingly. Whether that is a fool's hope or not remains to be seen. When pointing towards discursive spaces for creative transformation I do not pretend to offer any kind of panacea, one is always bound by some discursive constraint or other.

5. Conclusion

It is clear that the discursive room for manoeuvre in which one can articulate notions of justice and emancipation is a tricky and highly contested terrain. However it is a terrain that must be traversed by anyone that wishes to address the ecological crises we face, there is no shortcut and any attempt to circumvent this terrain is bound to carry a limited message. It speaks to the nature of the crises faced by societies around the world, that social and environmental justice have become central battlegrounds for any prevention or mitigation strategies. Whether these strategies take the form of lessons drawn from past societies, the output of climate models or any other form, questions of environmental justice are inescapable.

IHOPE presents a significant effort in bringing knowledge of the past to bear on current sustainability issues. A largely collaborative, inter-disciplinary project it is composed of networks of researchers working under a common goal of offering lessons for current and future policy-makers. These lessons are generated through a holistic framework that aims to enable integration of past and present and of social and ecological systems. It is an effort to gather together research and scholarship that previously had been fragmented and largely idiosyncratic. To do this the IHOPE-Maya project adopts a common language, primarily from systems ecology, in which to express findings and articulate lessons that can be relevant to the current sustainability debates. However it seems that this effort is either unaware of the need to engage with discourses of environmental and social justice or is attempting to circumvent that admittedly rocky terrain. The result is a serious constraint on what kind of lessons the IHOPE-Maya are able effectively generate.

I have identified three discourses through which these lessons are articulated; resilience discourse, complex adaptive systems discourse and what I have termed anthropos discourse. Combined they present a powerful image of coupled socio-ecological systems in the past and present, a picture with unmistakable lure. Yet as I have shown it is a picture that is incomplete and moreover it is a picture that effectively covers over issues of environmental and social justice thus preventing a truly emancipatory understanding of the past and its relation to the present.

There exists space for a critical re-articulation and re-examination of IHOPE-Maya premises, one that could more fruitfully incorporate environmental and justice issues and thus offer truly emancipatory lessons. Several of these spaces have been pointed out here, doubtless there exist more, however its unlikely such a re-examination would be painless. I have argued that through a dialectic understanding, as demonstrated by David Harvey, would facilitate the opening of such creative spaces. Adopting an explicitly Marxist approach immediately puts emphasis on capital accumulation and class relations, an emphasis that forces open any notion of a total and unified society. The result is a move away from thinking about differences between societies as commensurable wholes to thinking about difference *within* societies and how these difference are materially expressed in ecology and cultural landscapes. This move also forces a confrontation with the supposed continuity of historical processes, a reckoning with the birth of industrial capitalism and its coupling to fossil fuels as prime mover. Lastly I argue for a shift to storytelling, that the confrontation with continuity forces us to rethink the role of deep past scholarship and through an exploration of storytelling this confrontation can be settled. Storytelling, as I present it, is a knowledge of a certain kind, not a classificatory knowledge based on abstraction but a thoroughly relational understanding where we relate the threads of our present lives with the threads picked up from the past.

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