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# A critical reflection on the hegemony of technology and possibilities of including ethics in public consumption

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**Abstract:**

Motivated by the phenomenon of one laptop per child in education at high-school level in the Swedish public sector, this master's thesis elaborates on the question of ethics in public consumption. My research aims to show that collective actors such as municipalities can be seen as (un)ethical consumers and that they need to become aware of this. What I find problematic is the underlying processes of production and waste that the consumption of IT-products generates and their effects on the natural world and its inhabitants. I have framed the use of IT-products in education in the narrative of progress and reason, a narrative that can be found in the humanities and the social- as well as the natural sciences. My theoretical framework is mainly based on the concept 'remoteness', the separation of humans from nature and earth others through centrism, which Val Plumwood uses in her critique of rationalism. I also consider technology fetishism and have derived my general approach from world-systems analysis. As an analytical tool I have identified a discursive ideal type that I call 'the hegemonic IT-discourse' which I relate my empirical material to. By doing interviews with officials with relation to IT in education in the public sector, I wanted to find out whether or not questions of social and ecological sustainability were included in how they talked about computers for students. I suspected their focus would mainly be on economic gain in the local context and my results show that it is so, even though some arguments on ecological sustainability were used. My research shows that actors in public consumption need to somewhat move focus from immediate local economic arguments and also include arguments that promote actions that take responsibility for how local cultures affect global power relations and possibilities to sustain a good life on earth.

**Keywords:** Ethics, IT, Social and ecological sustainability, Progress, Hegemony, Discourse, Remoteness to Ecoharms, Technology Fetishism.

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First and foremost I should thank life on earth for inspiring me to write on this matter, the wind, trees, the sea, insects and animals. But also all the meetings that I were in at different points in life, occasional meetings with people I didn't know, in the subway, on the bus or on the street which gave me insight into so many lives and how to look at things from different angles. I would not have written this thesis either, if it was not for all the people whom I knew a while and those who are still my friends, people who shared their wisdom and their stupidity, anger, frustration, peacefulness and love. Thanks go also to my supervisor, Alf Hornborg, for being a person who is inspiring and energetically critical. I also want to thank course director Vasna Ramasar who guided me with her clarity and peaceful energy and made me braver in the end. Many of my co-students gave me constructive critique on my work and for that I am grateful as well. I thank my interviewees for taking time to share their thoughts and for giving me the authority to use them in a theoretical context of my choice. I thank my co-habitator Roger Sundh for being patient at times of aggressive frustration and for the many intellectual discussions at breakfasts. My grandmothers provided me with history and insight into lives so different from and alike the time I live in. Lastly, I want to thank my mother Brita and my deceased father Lars and my sisters Åse, Maria and Louise for providing knowledge, thoughts, excursions in nature, comfort, trust, argumentations and love.

My hope is that this thesis can add to the ongoing collecting of insights into how we can become better humans, for my sisters' children – Johannes, Tuva and Isidor – but also for all the children and adults whom I do not know yet, who live, or will be living, on this planet.

Petra

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# Introduction

## ***(Un)ethical aspects of Information Technology***

Social and ecological ills need to be taken more seriously. The environmental debate seem to have been rendered greater respect than before through the subject of climate change, maybe because it is perceived as a common threat, not just to some but to humankind as such. Ulrich Beck describes how the awareness of polluted air, soil and water can be perceived as a common threat since most of us eat and breathe and therefore can not stop pollution from intruding into our bodies (1998, 57). This is not really true though, since people with a good social and economic standard of living are much better off than people with a poor standard of living in regard to for example catastrophes due to flooding or heat waves (Roberts and Parks 2007, 72). Inequalities in sufferings from climate disasters not only apply when comparing nations in ‘the global north’ with the ‘global south’ but also internally within nations (2007, 98).

Whether or not we can hinder or slow down a further temperature rise and any negative consequences in relation to it, there are other implications related to the capitalistic world-economy and consumerist culture that need to be focused on. Those are questions of an ethical character, seemingly independent from climate change issues but closely tied to the latter due to ecological effects of capitalism and excessive consumption. Emissions of dangerous substances, species on the verge of extinction and overexploitation of natural resources and, not least, exploitation of farmers and workers in the production industry are negative consequences of the global market economy which are distributed in a very unequal way (see for example Roberts and Parks 2007; Hornborg, McNeill, and Martinez-Alier 2007; Plumwood 2002). One popular way of underlining inequalities in the world is by referring to the uneven distribution of riches among the global population. Another way to look at it can be to estimate emissions of greenhouse gases into the atmosphere. According to Roberts and Parks “the richest 20 percent of the world’s population is responsible for over 60 percent of its current emissions of greenhouse gases” (2007, 10). A third point is the phenomenon of wealthy nations off-shoring, that is, moving their production for consumption to poorer nations, thus at the same time off-shoring their ecological impacts and social exploitation (Roberts and Parks 2007, 161; Beck 1998, 59).

In Swedish high schools most students receive their own laptop from the school. This made me think of the enormous amount of electronics that the Swedish society (among others) consumes and the equal amount of e-waste it must generate and it motivated me to focus specifically on IT (information technology) in relation to sustainability questions. The United Nations University just released a study showing that Europe produced a total of 2,6 million tons of e-waste comprised of small IT and screens during 2014 (Baldé et al. 2015, 25). This number was part of the total amount of domestic e-waste which was 15.6kg/inh. (2015, 25). For Sweden the same (but higher) number was 22.2 kg/inh. (2015, 66) and lastly, the same number for the U.S. was 22.1 kg/inh. (2015, 64). Being part of the unequal world-economy discussed above, electronic products such as computers and cell phones are often produced under appallingly bad circumstances. Both in for example getting minerals for micro chips and in factories for assembly workers are brutally exploited (on extraction of coltan see for example Mantz 2008). Another problem related to the increased use of electronics is the large amount of e-waste which is sometimes exported to places where proper knowledge on disassembling and/or disposal of it is of poor standard or there is a total lack of knowledge. In such cases, workers are exposed to hazardous substances possibly causing deadly illnesses (Baldé et al. 2015, 51), for example in performing “open burning [...] to recover such metals as copper, steel and aluminum from wires, capacitors and other components” (Shluep et al. 2009, 55). Earth too is affected by the production and waste management of electronics. According to a report from UNEP, the United Nations Environment Programme, the increased demand for electronics has caused scarcity of raw materials needed for the products which has in turn extended the amounts of land used for mining. The report states that:

The environmental impact/footprint of the primary metal production is significant, especially for precious and special metals which are mined from ores in which the precious and special metal concentration is low. Considerable amounts of land are used for mining, waste water and sulfur dioxide (SO<sub>2</sub>) is created and the energy consumption and CO<sub>2</sub> emissions are large. (Schluep et al. 2009, 10)

Shluep et al. further argue that it would be possible to save both land and energy if electronic products were to a greater extent being recycled.

The global market of consumption is thus built on and reproduces unequal power relations (of course the word “power relations” might be said to be meaningless without inequalities). I aspire to bring these thoughts about the ecological, economic and social aspects of the world into the minds of people who may not be thinking about them in their everyday lives. I believe this needs to be done to bring forth a discussion among those who might just be able to affect the discursive cultures inside which choices are made that affect consumption patterns and therefore earth and its species, including humans. As a contemporary Swedish example of what I see as the hegemony of technology I will use the phenomenon of ‘one-to-one laptops’ in education. The use of computers in education is not at all a new phenomenon, but to hand out a personal laptop to every student in high school is relatively new (ca.10 years). To bring this seemingly (and in many factual ways) good thing into the spotlight and to problematize it, I framed it in what I see to be a link in the philosophical, or ideational, chain that ties together supporters of technology in the past with contemporary technology-fetishism, namely the idea of Progress. Val Plumwood stresses that, a centric culture, which only recognizes the importance of the centre and does not accrue the same importance to actors peripheral in relation to the centre (nature or people being considered others), makes a hot-bed for ecological and moral blindness (Plumwood 2002, 119). Therefore I believe there is a great need to draw attention to the role of the local in activities and processes that have effects far away in space and time, that is, to reflect on a global problem from a local perspective.

### ***Research question***

Responsibility to influence a given organization or corporation and their business, is generally deemed an individual enterprise, where the customer/consumer is assumed to influence circumstances surrounding businesses investments, production and waste management by her or his daily choices as a pushing factor. But organized actors are commonly more powerful than single individuals (Mont et al. 2013, 40-41). My bachelor’s thesis dealt with the subject of ethical consumers, not *why* people chose to purchase in accordance with certain values, but rather *how they reflected on others reactions* to their consumer choices. Thus I see my master’s thesis to be an opportunity to expand the idea of ethical consumption and move focus from the individual citizen to collective actors in the public sector, namely municipalities. To support my theoretical reflections in relation to the global market and the idea of consumer power I want to explore if politicians and civil servants reflect on negative social and ecological consequences of individual laptops for



students. My starting point is that they do not sufficiently consider questions on e-waste or ecological and social aspects of an increased digitalization and how it affects global pollution. Nor do I think health effects or direct social implications related to the increased use of these computers are being reflected upon among those responsible for demanding and promoting digital educational material. To depart in the narrative of progress, techno-optimism and the demand for economic growth might be a way to illuminate priorities and conscious or unconscious relations of power and open up a discussion on how to change these.

By regarding the municipality as a collective consumer and as such a possible ethical consumer, I will investigate reflections that precede choices of products for work in the public sector. When I refer to ‘municipality’ in my writing, I refer to it as an institution which includes politicians and civil servants dealing with the issue of carrying out (paid or unpaid) work that serves the public, that is, the people living in the municipality. The phenomenon I choose to study is the increased use of computers and other IT-products in the public sector and if this is at all discussed in perspectives that include social and ecological concerns and if so, *how* this is discussed by the personnel in charge of decisions.

My research question is therefore as follows:

- Is there discursive room for employees and politicians in the public sector related to IT in Swedish education, to make consumption choices that decrease social and ecological harms in the world?

To explore this first question I will focus on a couple of sub-questions in my research:

- What arguments are used to justify the use of Information Technology in contemporary Swedish schools?
- What do politicians and civil servants with a professional relation to IT in education know about issues on ecological, economic and social concerns in relation to IT?
- What associations are made by the same politicians and civil servants on hearing the words ‘sustainable/sustainability’ and ‘progress’ or ‘development’?

### ***Aim of the study***

The aim of my study has been to critically reflect on what I see as an immoderate trust in technological solutions, specifically in relation to Information Technology (IT). The research

questions will be answered by analyzing what discourses are used to describe a municipalities' activity in relation to IT. Does the used discourse include reflections on ecology, fair trade or health issues? Or are the discourses used solely tied to techno-optimism and economic gain?

The purpose of my study is not to bring forward any immediate solutions but to work as an eye-opener or to start a debate on a common responsibility for a fairer world. As has been shown by others there are political documents and actions taken for a fairer and healthier world; by cities (Fairtrade City), municipalities and private businesses at different locations in Sweden (Regeringskansliet UD 2010; Nyberg 2010). If I can illustrate and problematize the discourse/discourses that dominate municipalities' agency regarding IT-products in the public sector, then this might help actors in the public sector to become conscious of discursive and cultural barriers to the implementation of political goals set to meet demands on social and ecological considerations for sustainable development<sup>1</sup>. With an increased awareness of these patterns, prevailing discourses can be challenged and collective consumers can use the power given them through tools such as public procurement processes to take the common ethical responsibility needed.

### ***Structure of the thesis***

Following this introduction of my topic and research question I shall continue with a brief outline of the following sections. Starting out is a section where I defend my choice of research methodology including a definition of discourse that I ascribe to. After that I present a reflection on my social and academic position followed by my conceptual framework that works as the 'spine' of my thesis. I then go on to present my data and finish that section with a discussion on my empirical results in relation to my theoretical framework. The whole thesis is concluded with a discussion on whether my questions were answered or not, how the topic can be studied further and if it can be elaborated on and, finally, a discussion aimed at the public sector on how it could get somewhat closer to ethics in public consumption.

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<sup>1</sup> It could be argued that the concept of sustainable development is itself just a veil used to promote business as usual. However, I recognize that the term is widely used and therefore part of public as well as private debates on development and that directives and actors in the public sector might respond to this idea.

# Research methodology

## ***Social science – objective or subjective research?***

Traditionally social science lives ‘in the shadow’ of the natural sciences. As an example, two of the forefathers in sociology, Auguste Comte and Emile Durkheim, strived to make sociological research results more ‘scientific’, following the procedures of research that were used in the natural sciences. Social facts were to be seen as things and be studied objectively without reflections on any personal (social) experiences in the studied individual (see for example Andersen and Kaspersen 2007, 57-59, May 2001, 20; Pascale 2011). I don’t agree with the idea of the researcher as being detached from the world she or he is studying. But I do agree that it is possible to be reflexive: to acknowledge one’s own social position, previous knowledge and biased thoughts. Reflexivity in research is important for the reliability (in a non-positivist sense) of the theoretical and practical outcome of the research, that is, for the reader to see who the researcher is and acknowledge that research too is based on knowledge constructed from a specific point of view (Esseveld 2008, 189-190). The acquiring of knowledge can certainly be ascribed to the individual researcher’s hard work, but should also recognize her or his supportive social networks (Sismondo 2010, 44) and socialization processes (2010, 109). Another early critique of the social sciences relates to what condescendingly has been called ‘armchair research’<sup>2</sup>, which probably is what Wallerstein refers to as “library work” and “archival work” (2004, 7). Theoretical aspects and abstract reflections were to be based on empirical aspects of everyday lives and primary data gathered by doing interviews, observation or surveys. The concept of ‘getting out there’, to make contact with ‘the field’, could be seen as tied to an anthropological research history when the scientist was studying a subject presumably very different from (him)self through the method of participant observation to write ethnographies (Kuper 2010; Wallerstein 2004, 7; Sjöberg 2008, 32).

However, due to my choice of topic I consider interviews to be useful. By applying a case study approach (Lindgren 2008, 126) and using interviews to gather data I expect to get the

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<sup>2</sup> Through a search of the Internet I found an article about “armchair theorizing” ([http://en.wikipedia.org/wiki/Armchair\\_theorizing#CITEREFNadel1956](http://en.wikipedia.org/wiki/Armchair_theorizing#CITEREFNadel1956)) which corresponds to how I relate to the expression. Wikipedia also offered an article about a popular science magazine printed during the 1930s called “Armchair science” ([http://en.wikipedia.org/wiki/Armchair\\_Science](http://en.wikipedia.org/wiki/Armchair_Science)). In any case the critique suggests that research can not, or should not, merely rely on reading and analyzing texts but also keep in touch with the ‘physical’ reality. [both links were accessed April 30, 2015]

insights I consider important for this study. As a citizen of the society I am studying and through my interest in political, ecological and philosophical questions of society I already have a few ideas on what discourses are drawn on in the debate on computers and other digital equipment in Swedish schools. But doing interviews with people who work as politicians, heads of schools and IT-units or as responsible for a public procurement process gives me an opportunity to gain insight into what discourses are actually used in talking about IT in the educational area – from their perspective. Thus I consider my interviewees to hold an insider position in this question (Hill Collins 1986, S25).

### ***Interviews as structured conversation***

Interviews can be done in different ways depending on the researcher's aim with her or his study. I chose what is called a semi-structured interview which means that I performed the interviews in relation to a list of questions that I constructed beforehand. The list was not only for me to remember what to ask, it was also to make sure that I got answers that would make it possible for me to answer my research question and allow for a certain amount of comparability (May 2001, 151). The questions were constructed so that my interviewees could elaborate on their experiences of how the questions of IT in education are worded in everyday conversations at their workplace and for them to reflect on their own knowledge and associations to the words 'sustainability' and 'development'. As I have already stressed, I reject the idea of absolute objectivity, unpolluted by subjectivity, and this of course affects my approach in interviews as well. By referring to feminist perspectives on research methodology, Tim May addresses this assumed dilemma in interviews, the demand for scientific "objectivity" versus the need to establish a trusting relation (2001, 155). Thus, if I expect someone to share her or his sometimes personal story, then I as a researcher can not reject dialogue (2001, 165), it is a matter of give and take. My own experience is also that I get the richest responses to my questions if the interview takes on the style of conversation. Though I don't believe in detachment, I do believe that it is important to reflect on how I affect the interview by my speech and my person (May 2001, 155). Thus I also tried not to influence my interviewees in their answers too much, for example by not telling them my point of view on the questions before they answered (unless I was asked to elaborate on the question before they *could* answer).

Most of my interviewees expressed beforehand a great uncertainty in whether they were 'the right person to answer my question' and that they didn't think they knew enough to help

me out in my research. This could be related to two of three “premises” that Tim May suggests “need to be fulfilled to accomplish successful interviews”, namely “*accessibility*” and “*cognition*” (2001, 156-157, italics in original, my translation from Swedish to English). ‘Accessibility’ refers to the expected knowledge my interviewee possesses and ‘cognition’ refers to norms and expectations on certain behavior in certain social situations. I felt sure on the ‘accessibility’ point since I had done research on who were in charge of or taking part in discussions and decisions on IT-products in public schools in the municipalities. My choice of interviewees is thus what Johannessen and Tufte refer to as “a *strategic* choice” to make sure my selection is “*adequate*” (2003, 84, italics in original, my translation from Swedish). This choice was done by viewing information on websites and through my first phone call to a unit for public procurement in one of the municipalities. My interviewees’ hesitation on that point could therefore be seen as a manifestation of preconceived ideas on who could talk about sustainability questions. The second point, ‘cognition’, was also something that was felt at times since a few of my interviewees expressed some degree of suspicion or hesitation on being asked to take part in my research by being interviewed. This might be due to the interview as a method being related to journalists, and to gain their trust I had to explicitly state that the focus of my study was not to criticize a certain municipality or school and that I would not cite their names in the analyses.

### **Who did I ask?**

Besides getting information from municipality websites I asked people ‘inside’, for example local politicians, for suggestions on whom to interview. I also received suggestions on whom to contact for further interviews by some of my interviewees during and after the interview session. I have thus interviewed politicians and civil servants from three different municipalities in southern Sweden. My interviewees were between 40 and 60 years old and looked like they were Nordic. The fact that all were men could be a reflection of traditional choices or ideals of profession, for example technology traditionally seen as something men do or have knowledge in, and their position as heads of different departments (which is rather a reflection of leadership biased to the advantage of men)<sup>3</sup>.

George and Bennett point out that “researchers’ foreknowledge of the values of variables in cases – and perhaps their cognitive biases in favor of particular hypotheses – necessarily biases the selection of case studies” (2005, 24). This is true in my case as I insist on the

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<sup>3</sup> For a more detailed overview of my interviewees please see appendix 1

capacity of language use to hinder or set about social changes and I acknowledge the municipality as a consumer of IT-products. But as George and Bennett also point out, an instructed choice can make for a strong research design (2005, 24). Though I am merely applying a case study *approach* and am not looking to perform process-tracing or explicitly test or build theory (ibid.), it would be useless for me to choose a case that I did not expect to be related to my suspicions on a hegemonic discourse. The interviews were all performed in Swedish and so was the transcription of them. The reason for this was that Swedish is my native tongue and presumably my interviewees' too and I didn't want them to feel uncomfortable having to reflect on my questions in another language. The understanding of and quotes from the interviews have been translated by me into the English language and in this regard my language skills could be a limitation when I depict my analysis.

### ***Defining discourse***

Discourse could be described as a “fixation of meaning within a particular domain” (Jørgensen and Phillips 2012, 141) and “a particular *way* of representing the world” (2002, 143, italics in original). Discourses are, in my point of view, made up of implicit and explicit symbols and patterns in spoken and written text all around us in different parts of society; for example pictures, manuscripts in movies and songs, texts in political publications, formulations of texts in laws or in newspaper and magazines etc. (see for example Jørgensen and Phillips 2012, 1). My belief is that language, whether it is spoken, written or symbolic, guide our thoughts and acts in both conscious and unconscious ways (on the importance of including language as part of social research see Pascale 2011). Jørgensen and Phillips (2012) point out that language “is not merely a channel through which information about underlying mental states and behavior or facts about the world are communicated, on the contrary, language is a ‘machine’ that generates, and as a result constitutes, the social world” (2002, 9). By this they mean that even though there is a physical reality which exists whatever our perceptions and experiences of it are, meaning of the same reality is created by discourse (Jørgensen and Phillips 2012, 9). So from this perspective, if we want to change how ‘reality’ is perceived and treated, discourses about social ‘reality’ need to be changed first (though this is also a dialectical process).

Jørgensen and Phillips also point out that by talking of different discourses there is always the problem of determining where one discourse ends and another begins. They acknowledge this as both a practical and a theoretical problem and suggest that discourse

should “to a greater extent [be treated] as an analytical concept, that is, as an entity that the researcher projects onto the reality in order to create a framework of study” (Jørgensen and Phillips 2012, 143). The problem of circumscribing phenomena during the research process is not new. The methodological tool ‘ideal type’ goes back to the sociologist Max Weber who constructed this tool to approach an exclusion of values in the scientific process (‘objectivity’). Whatever the phenomenon to be described and/or analyzed, a demarcation has to be done for the project to be feasible and ideal types are used at the expense of the ‘real’ world’s complexity and heterogeneity. The ideal type is a “mental construction” where the researcher put together scattered characteristics of a certain phenomenon to form a seemingly homogenous object for study (Månson 2007, 73, my translation to English).

### **A hegemonic discourse on IT and sustainability**

The aim of this thesis is to investigate how what is said shapes certain cultures and thereby decisions that affect the possibility of living, or not living, in accordance with the ideals of economic, ecological, and social sustainability. As part of my research I have defined an ideal type, a discourse on IT and sustainability that I recognize as present in public debates (in news media) and in how official agencies present themselves (in policies and other information on their websites). I shall call this discourse *the hegemonic IT-discourse*.<sup>4</sup>

The hegemonic IT-discourse, which is represented by faith in technology as the solution to (most of) our problems and non-problems, is characterized by the idea that with reason and ‘innovative technological solutions’ the human race can proceed as before with continued growth in economy and lives in abundance – at least for some (on Ecological modernization, see Hajer 1995). As Hornborg points out “[t]he language of policy and management [...] tends to avoid questions of power, conflicts, and inequalities” (2013, 7). Those who critique discourses on technological development and economic growth are often perceived as antidemocratic and backwards while to promote investment in technology is seen as rational and progressive (within neo-liberalism free trade and economic growth is generally seen as promoting democracy and peace, see for example Lamy 2011, 116; 126).

This discourse could be seen as hegemonic since Information Technology (or Information and Communication Technology) has been normalized into the modern

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<sup>4</sup> I want to acknowledge here that I agree that energy efficient technology is a good thing and that much technology is very useful (and fun) for humankind. However, I find it urgent to recognize the discursive tradition that is being drawn on here and how it reproduces a culture that neglects unequal socio-economic relations.

industrialized society and become hard to question, its meaning “is fixed”, thus “excluding all other meaning potentials” (Jørgensen and Phillips 2012, 190). This is done implicitly and explicitly, in most everyday doings such as studying, driving (GPS), communication and medication (for example computer programs to assist medical doctors in their work and interactive so called “serious games” to help patients with treatment of their illnesses – see for example Hake 2005). Thus IT is commonly referred to as something in no need of explanation or definition and without much questioning of whether people need, understand and/or can use the technology or not. Using IT in areas where it has not previously been used is seen as ‘innovative’ and technology and other products that are programmed to interact with the user are called ‘intelligent’, whether it be refrigerators, ovens or lawn mowers (see for example Runesson 2003). Smart phones are now so common that most people assume their existence. Even cities can be smart: through an application in a smart phone, city planners might be able to communicate with citizens and also govern the latter to evaluate emotional experiences of certain geographical areas (SP Hållbara städer-bloggen). In the hegemonic IT-discourse, being ‘progressive’ is also important, to stay in the forefront in competition in the global market economy. Sustainability issues are incorporated into this discourse as well. Sweden’s innovation agency, VINNOVA, for example, has as mission to “promote sustainable growth by improving conditions for innovation” (Myrehed 2014, my translation) and Business Sweden, the Swedish trade and invest council, says that “energy and environmental technology is not only important for sustainable development. It is also a sector with good international business opportunities” (Business Sweden, my translation). An actor who claims to have innovative solutions for problems tied to sustainability are commonly using some kind of (new) technology that is supposedly saving energy or cleaning air, water or earth (not to mention environmentally friendly cars). The Swedish environmental protection agency argues that “cutting edge technology”, of which IT is one, can be used to reach environmental goals set by the government (Andersson 2015, my translation). The focus on sustainable development can be seen as responding to the so-called Brundtland report from 1987, which stressed the need for sustainable development<sup>5</sup>. Thus ‘sustainability’ is a word commonly used to implicitly refer to for example a municipality’s activities as responsible from an economical, ecological and socially ethical perspective. However, when the words ‘sustainable’ and ‘sustainability’ are used to define a public or private enterprise of some sort, it is seldom explicitly stated *how* it is sustainable and *what* is

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<sup>5</sup> I will present the concept of sustainability and discuss this report further in the section on the framework for my study.



being sustained. Environmental concerns (energy efficiency) are commonly used in the hegemonic IT-discourse to promote investment in IT-solutions. But what is neglected in such discussions are the negative ecological as well as social effects of production and waste on a global level.

## **Framework of study**

In the following I will present my social and academic standpoint of which some will relate clearly to what I stressed in the section on discourse since the concept of discourse is so closely tied to social constructivism (and critical realism). After that I present my conceptual framework, that is, theories and concepts that I relate my analysis of IT in education to.

### ***My social and academic position***

I grew up during the 1970s to the 1990s, in a time when ‘working class’ became hard to define and was transcended by the now widely used concept of middle class in Swedish society (on social class, see for example Macionis and Plummer 2008, 316; Engdahl and Larsson 2011, 234-237; Wallerstein 2004, 35-36). My grandmothers<sup>6</sup> both grew up in the working-class area of the inner city of Stockholm during the 1920s to the 1940s, none of my parents had (at first) an academic education and I have been supporting myself through so called unskilled work before going into academia. Thus I would say that my social history is in the working class history of Stockholm. My social identity is also in a legacy of women (my grandmothers, my mother and sisters) who strive(d) to support themselves and their family by getting a job outside the home when their husband could not manage to get enough income or structure for this, but also to develop an identity outside the role of motherhood and/or being someone’s wife (on body-politics, see Eduards 2007). Some might argue that social background is irrelevant in writing a thesis. I would rather argue that it has shaped me as a social being and as such a researcher with a specific interest in power relations, such relations which might be forgotten the more people get a wealthier life and the further away such realities come from Swedish everyday life (I will discuss remoteness in the theory section below).

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<sup>6</sup> I don’t mean to exclude my grandfathers: the story just becomes too long. One of them grew up in another part of Sweden, educated himself to metal-industrial worker and moved to Stockholm (working class area) and the other I don’t know much about.

My academic background and identity is largely in sociology and this thesis was written as part of a programme in Human ecology. Human ecology, or political ecology (Moran 2010, 44), is much like sociology focusing on relations and (power) structures. In sociology the main object of study is the relation between the individual and society (see for example Macionis and Plummer 2008) and human ecology has as its main object of study the relation between nature, society and humans. Hornborg points out that there is a “growing recognition, in several disciplines, of the extent to which environmental changes and societal processes are intertwined” (2007, 3) which is important since a transdisciplinary analysis is needed to integrate a wide spectrum of “perspectives on conflicts of interest between different social groups” (2007, 3). In practice this means that researchers need to look at socio-political and ecological problems from a holistic perspective, that is, to accept that all things in the world are attached to one another by social (economical and political) and ecological phenomena.

As I have already touched upon in the methodology section my understanding of the social world is that it is in constant transformation and relative to historical, cultural and geographical positions. In the words of Berger and Luckmann, I understand that “the reality of [my] everyday life is organized around the ‘here’ of my body and the ‘now’ of my present” but I am also aware that it is affected by “phenomena that are not present ‘here and now’” (1991, 36). Some criticism aimed at social constructivism concerns the relativism that occurs in acknowledging a multiplicity of ways to understand the world (see Jørgensen and Phillips 2012, 196-203). However, as critical realism does, I acknowledge the existence of a physical or social realm of the world that exists whether or not there is a socially constructed *understanding* of it (Sayer 2012, 11; Klintman 2000, 29). My choice to relate to the just mentioned perspectives emanates from my great interest in social structures, how they affect us but also how we in a dialectical relationship affect them as individuals and groups by what we say and do (on realism in short see May 2001, 23; on the merging of interpretivist and structuralist social science see Chouliaraki and Fairclough 1999, 1). Social science can be seen as one of many ways of taking a collective responsibility for processes in human society (in my case a part of the Swedish society), in depth try to understand, analyze and explain it from certain perspectives and, if found problematic, possibly suggest changes. My thesis could thus be said to have a normative aim (Sayer 2012, 169).

## ***Theoretical and conceptual framework***

Before introducing the theoretical framework I relate my empirical material to, I shall start out by defining some words and concepts that I use in this thesis, concepts that might contain different meanings in different contexts, for example depending on if they are used in an academic context or in everyday language.

In my writing and analysis of society there is one theoretical concept that I find very useful to rely on and it is *hegemony*. ‘Hegemony’ can be used as a theoretical concept for analyzing dominant cultures in different spheres of life in one country or cultural relations between different countries. The concept of hegemony is commonly tied to the Italian Marxist Antonio Gramsci who used it to analyze relations and movements at work between social classes in his contemporary Italy (Forgacs 1999) and it is often used in discourse analysis to reveal assumed power relations, which is also how I relate to it. *Sustainability* is another word I use and is one of these words that have changed meaning in everyday language now suggesting caring ethics in relation to earth and people. The word ‘sustain’ means to ‘support’ or ‘keep alive’, some kind of long time existence. This word has thus been used to create a concept which contains different meanings depending on in which context it is used. In text and talk about environmental questions it is often used to signal a concern with a way of living; producing and consuming in ways that harm the natural world as little as possible. The concept of sustainability became widely used after being articulated in the Brundtland report, a commission appointed by the UN and chaired by Gro Harlem Brundtland in the 1980’s (SOU 2004:104, 32; Brundtland 1987). The report states that “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987, 41). But as the Royal Institute of Technology website writes, the understanding of economic sustainability is split into (at least) two camps where one does not approve of economical growth at the expense of ecological and social sustainability and another sees economic sustainability simply as economic growth (KTH). The Brundtland report concludes further that “the strategy for sustainable development aims to promote harmony among human [beings] and between humanity and nature” (1987, 57). As must be understood by now, the process to reach this understanding seems far away. When I use the word in my text, I try to refer to either parts of the concept, that is, ecological, social or economic, or all of them at once. Frankly, I do not see them as separable.

Contemporary (as well as past) world economies presuppose consumption of commodities and services. ‘The Market’ can be said to influence every single part of our lives, whether it be foodstuffs, clothing, transportation of people and goods, electronics, furniture, or something else. Related to sustainable development is thus the phenomenon called *ethical consumption* or *political consumerism*. This is when an individual or a group decides to buy or not buy something with reference to certain ethical principles, commonly to avoid health dangers, exploitation of other humans or animals or to protect the natural world (Lindén 2005). As I mentioned earlier, taking responsibility for ethical questions through consumer choices is commonly ascribed to the individual actor. But as Nyberg (2010) shows in her study, this responsibility can be taken on by collective actors as well. As for my study, one of the tools given to actors in the public sector is public procurement. The public procurement law in Sweden was implemented due to a directive from the European Union. On EU level the directive seeks to secure the free movement of commodities and services while at the Swedish national level it is supposed to encourage an objective and effective competition among firms as deliverers of services to the public sector (Nyberg 2010, 15). Public procurement works somewhat like an auction where the item to be sold is actually a service or item that for example the municipality wants to buy from the bidders. The municipality states certain requirements that need to be fulfilled for the bidders to sell their service. The requirement most commonly thought of is perhaps that the firm that sells the service or commodities at the lowest price wins. But the law actually does allow for the inclusion of environmental and social considerations (Nyberg 2010, 15-17). Nyberg notices that environmental concerns are more accepted to include than social concerns and suggests that this has to do with troubles in defining what to include in social concerns (2010, 16). Hopefully this will change though, since a reformulation of the Swedish law was made in 2010 which now states that social concerns “*should*” be included in the procurement requirements, instead of the earlier formulation that social concerns “*can*” be included (Nyberg 2010, 17, italics in original, my translation from Swedish). Nyberg points out that her study shows that civil servants who work with public procurement relate *ethical* concerns to a global context and human rights questions, whereas *social* concerns are related to a local context (2010, 20, italics are mine). So, if a municipality were to include environmental as well as social concerns in their requirements when buying IT-products, they could be called ethical consumers. Klintman (2013) observes that peer pressure is of great importance for how final consumption choices are made whether or not the actor’s intention is to take

environmental or social factors into concern from the start (2013, 82-85, 128-129). If the peer pressure is on immediate, local economics, this will probably be what the actor goes for. Schor's (1999) study (as well as Bauman 2012) also shows that peer pressure is paramount for people's consumption behavior. Her focus is on individuals but what she writes could, from my point of view, be applied to the case of public, collective consumption. I will come back to this in my analysis.

Lastly, there are a few words that could be seen as simple enough not to define, but considering the many contexts in which they are used I prefer to describe what I mean when I use them here. Some of the words are related to technology. With technology I mean machines, as in physical objects that are constructed and run on some kind of electricity or fuel. My main focus is, however, on information and communication technology (ICT or IT) and in this I include personal computers, laptops, tablets and cellular phones/smart phones. I will also use the word 'nature' and in this context I shall be using it as in 'the natural world', as the "essence of the material world" (Klintman 2000, 19). With this I mean earth, minerals, the sea and other waters, trees, plants, wind, etc. Environment is another word that has come to include a lot of meanings in addition to its former 'surroundings' (Sellerberg 1994). When I use it without any prefix (as in 'work environment') I mainly mean the natural environment or simply nature.

### **The ecological crisis of reason: a critique of rationalism**

Val Plumwood's (2002) book *Environmental Culture: The ecological crisis of reason* is a powerful defense of the need to question the division of human (reason) from nature (body). Her book is a deep dive into the tradition of rationalism. She explores how rationality has been defined and how it has been used by some to define others (2002, 46-49; 101-109), how reason was divided from the (natural) body and how the narrative of reason and rationalism caused disembodiedness, human- and ethnocentrism and remoteness from harms caused by science and technology (2002, 38-61; 97-122). I use Plumwood's critique of rationalism and the concepts of remoteness for my theoretical framework since it demonstrates how Earth and earth-species as well as humans considered less rational are used in the elevating of rational thought and through that technological solutions (in my case IT in education).

Western thought on the human intellect and how people can live together in societies goes back a long time to, for example, Plato (ca. 400 before Christian time) in Athens

(Ambjörnsson 1997, 213) continuing with Aristotle (1997, 27) and, much later, the 18<sup>th</sup> century Scottish philosophers David Hume and Adam Smith (Björklund 2013), to name a few<sup>7</sup>. Those thinkers have all influenced how the human intellect and rational thought is valued in Swedish (and most western) society today. Reason was seen as a way to escape superstition during the Enlightenment era (later part of 1700s) and to contest “archaic institutions that were seen as infringing on people’s rights” (Björklund 2013, 19, my translation from Swedish). This short presentation can be a target for criticism on grounds that it looks like a linear history, with no other influences or disturbances affecting the philosophical history of neo-liberal capitalism today, or Marxism for that matter. Eric R. Wolf does exactly this by arguing that “it turns history into a moral success story, a race in time in which each runner of the race passes on the torch of liberty to the next relay” (2010, 5). It thus ignores the fact that what we, as one example, see as the historical home of democracy (Antique Greece) in fact was the home of a great deal of oppression as well, such as slavery and discrimination of non-Athenians, tradesmen and women (Wolf 2010, 5; Ambjörnsson 1997, 163-167).

Reason, the phenomenon of taking in, carefully reflecting on, apprehending and then expressing outwards some kind of intellectual response to what was taken in at first, has come to inherit an almost cult status in Swedish society. The status of reason and rational thought can be traced to the position they take in a series of dualisms tied to what Plumwood calls the “rationalist hyper-separation of human identity from nature” (2002, 8). These series of dualisms can be found in for example Aristotle’s view of the composition of the human body where the male is perceived as warm, active and reasoning and the female as cold, passive (matter) and less reasoning (Ambjörnsson 1997, 229-230). Aristotle acknowledged that some animals were social and could express emotions such as pleasure or fright, but only humans could reason<sup>8</sup> and thus communicate right and wrong (1997, 231). This latter is the reason/emotion dualism that Plumwood refers to (2002, 9-10) and that can, through the dualism subject/object, be seen to later have influenced academic researchers to believe that they could gain true knowledge only through detachment from any ‘subjective feelings’. Reason is thus gendered and also characterized by certain ethnicities, since reason is ascribed

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<sup>7</sup> Here I want to acknowledge that I truly appreciate thinkers from the Orient that gave rise to philosophies such as Taoism and Confucianism in China and Zoroastrianism in Persia (Ambjörnsson 1997, 34). Due to limitations such as the theoretical framework and the focus in this specific study though, I will remain constrained by western thought.

<sup>8</sup> From this follows that the female human is perceived as more animal than the male human

to cultures that use this division between human and nature. Through reasoning we (humans) can come to rational conclusions. As Plumwood puts it in an ironic tone, “[r]ational decisions must be made ‘by the head and not by the heart’, and to describe someone’s statements or positions as ‘emotional’ becomes a form of abuse” (2002, 31).

The search for the specificity of Western capitalism was something that engaged the sociologist Max Weber. He studied politics, religions and business and defined what he saw as a “disenchantment” of the world and an intensifying of bureaucratic rationality that created strong efficiency in organizations and work schemas but at the same time alienated people from what they were doing (Macdonis and Plummer 2008, 106-109; Månson 2007). Rational thought (and secularization) was one of the main factors that led up to this disenchantment. Weber understood society as developing through certain phases, leaving ‘action through tradition’ for ‘action in accordance with affection and values’ to ‘action based on systematic calculations on how to reach a certain goal’ (Månson 2007, 83). This historical process leads up to the fact that “the modern human needs to self take responsibility for its actions” since no gods or noble ideals are there for guidance anymore (2007, 83 my translation). Thus, in Weber we see both a sad picture of Western liberal capitalism, now neo-liberal economy, but also a strong belief that traditions of thought had power to change societies. We can also see what Brian Luke “calls the ‘Great-Chain-of-Being’ in which we discover a descending order of species merit [...] often arranged in terms of alleged gradations of rationality” (Plumwood 2002, 170). The same schema is also one of the corner-stones in the narrative of human progress (Huesemann and Huesemann 2011, 157-159). Not only are non-humans commonly ranked according to these standards of rationality, but also human cultures, spatially located as well as historically.

To come back to Plumwood’s critique, her argument is that acts that are commonly named rational are in fact irrational from a dialectical perspective where we should see ourselves as part of nature and not as separated from it. When she talks of an ecological crisis of reason, she means “the crisis of a cultural ‘mind’ that cannot acknowledge and adapt itself properly to its material ‘body’” (2002, 15). In the world market, to be rational is traditionally seen as making informed choices that lead to a profitable outcome for the individual economist, “other species appear [...] through a reductive and human-centered framework, in a rationalised and commodified form” (2002, 27). Plumwood further argues that the rationales of “capitalist economics” focus only the property owned by the “master subject”

and thus ignores the contribution and labour of Others by denying and backgrounding their agency (2002, 28). The position of “Other” is characterized by social class, ethnicity, gender and, not least, the non-human world (2002, 28; 101). The Other is always perceived in relation to the One in a centric structure which promotes “insensitivity to the Other’s needs, agency and prior claims as well as a belief in the coloniser’s apartness, superiority and right to conquer or master the Other” (2002, 118).

The idea of the ‘free market’ is mainly a neo-liberal project and according to Plumwood an heir to rationalism, since it is really “a disembedded market whose rules are freed from any social responsibility or any recognition of our embedment in a constraining ecological order” (2002, 24; see also David Harvey 2005, 183). This perceived disembeddedness leads to such instrumentalist treatment of the world through economics that make possible over-fishing of the seas and deforestation. Not to mention the selling out of institutions previously associated with the public sector in welfare states. The perception of humans as separated from nature and the rationalism in global consumption patterns thus contains a remoteness that “dissociate decision-makers very strongly from consequent ecological damage and which can distort decision-makers’ knowledge of and motivation to correct that damage” (Plumwood 2002, 71). This does not only accrue to ecological damage but is also applicable to social and economic inequalities in the world market. Plumwood states five kinds of remoteness to eco-harms. The first is “*spatial remoteness*”, that is, the avoidance of ecological consequences by living far away “from places and people” that are affected by one’s decisions (2002, 72 italics in original). Next comes “*consequential remoteness*” which means the consequences always fall on some other actor than the originator and “*communicative and epistemic remoteness*”, which means “poor or blocked communication with those affected which weakens knowledge and motivation about ecological relationships” (ibid.). “[T]emporal remoteness” suggests remoteness from future effects of decisions made now and, lastly, Plumwood uses the air conditioner as an example of “*technological remoteness*”, which means that well-being is generated in privileged places whereas the ills of the same technology is generated elsewhere (2002, 72 italics in original).

To remedy the current state of remoteness, backgrounding and denial of ‘the Other’ (nature and workers) we need to “adopt a counter-hegemonic program to restore planetary balance” (Plumwood 2002, 167). Instead of the rationalist tradition we need to implement an understanding of a connection between mind and body and accord non-humans agency of



their own and stop ranking species (and humans) with regard to their assumed level of ‘mind’ and capacity for reason (2002, 172-175). Plumwood argues that we need to “[resituate] humans in ecological terms and non-humans in ethical terms” (2002, 8-9) and stresses that these two “tasks are interconnected, and cannot be addressed properly in isolation from each other” (2002, 9). She states further that “an ecologically rational economic system would create careful links and networks between production and consumption that would enable meaningful processes of learning and responsibility to take place” (2002, 71-72).

Plumwood thus outlines an analysis of how we (humans in neo-liberal cultures) have come to destroy the earth we and other species are living off. A result of the relations among living beings in neo-liberal cultures is ‘remoteness’ which lets consumers in privileged parts of the global society (commonly ‘the global north’) enjoy the advantages of a product or service while most of the negative ecological as well as social and economical consequences are borne by people, earth and other species in less privileged areas (‘the global south’, for Sweden ‘south-east’). A theoretical perspective that can complement Plumwood’s analysis and argument is world-systems analysis and its concept of unequal exchange and core-periphery relations. This perspective will be presented in the next section.

### **World-systems analysis: a holistic view of relations of trade**

As Moran (2010) argues, power structures are commonly stressed within political ecology, for example through use of the world-systems analysis with its focus on unequal economical and ecological relations between nations in the capitalist world-economy (Wallerstein 2005). Due to its focus on global inequalities and use of the concept of core-periphery I find it suitable to use for backing up my arguments for including ethics in public consumption (of IT-products). This theoretical stance is ascribed to Immanuel Wallerstein, who developed it in the 1970’s (Moran 2010; Brante, Andersen and Korsnes, 2001). Wallerstein presents some critiques of institutionalized ways to study and analyze the social world, through which world-systems analysis was developed. One of these focused on the unit of analysis, which had long been the nation state, and argued that focus needed instead to be on what was called a world-system (2005, 16). Another critique was against adhering to “traditional boundaries of the social sciences”, that is, that researchers were applying a “unidisciplinary” stance (2005, 19).

The idea of focusing on units tied to or in relation to each other in a system can also be found in sociology and theories of social stratification. This worldview is commonly pictured as a pyramid to illustrate that the more powerful (at the top) represent a smaller part of the population in comparison with the larger part (towards the bottom of the pyramid), which has less resources (Engdahl and Larsson 2011, 227). Stratification theory, which analyses the composition of social classes and the relation between them, can be traced to both Marx and Weber and their respective followers (2011, 229-237). The pyramid metaphor is also used by Roberts and Parks in presenting “structural perspectives on global inequality and the flows of materials, energy, and power that maintain it” (2007, 33) and the concept of *core*, *semi-periphery* and *periphery* used in world-systems analysis. In this pyramid the top is represented by rich nations in a core position, the middle by the semi-periphery and the bottom by the peripheral poor nations (which are also the larger part). Wallerstein describes the concepts of core and periphery through the ECLA’s (United Nations Economic Commission for Latin America) analysis of the economic world-system: “International trade was not [...] a trade between equals. Some countries were stronger economically than others (the core) and were therefore able to trade on terms that allowed surplus-value to flow from the weaker countries (the periphery) to the core” (2005, 12). Wallerstein also stresses that the notions of core/semi-periphery/periphery should not be mistaken as being identical with certain states, it is rather a characteristic that comes with a certain state’s relative position in the capitalist world-system and the “production processes” it uses at a certain time (2005, 17; 28). What adds up to the more unequal situation is “the fact that economic expansion in one area often implies environmental load displacement to other areas” (Hornborg 2013, 63). Hornborg argues that this should not be seen merely as an “incidental effect of certain patterns of production and consumption” but “as a social strategy that is integral to the political economy of world-systemic processes” (2013, 48). Thus, with reference to findings by economists Roldan Muradian and Stefan Giljum, Hornborg underlines that the suggestion within economics, that more developed economies “become less of a burden on the environment”, can be ruled out by the “counter-proposition [...] that polluting industries tend to migrate toward poorer countries with weaker environmental standards” (2013, 57-58). This has been aptly demonstrated by Jason W. Moore who describes the expansion of mining in western and central Europe during the 1400s and 1500s and how scarcity of raw materials (due to intense extraction) made way for a relocation of extraction to the New World (Moore 2007, 130). Even though it is common to discuss core-periphery as a relation between nation states of extractive and productive economies respectively, the core-periphery relation can be

found *within* a nation state as well (on China and India as examples, see Martinez-Alier 2007, 233).

I have now explored social and economic relations in world-systems through Plumwood's concept 'remoteness' and world-systems analysis with its concepts of core and periphery. I also touched upon the concept of unequal exchange, which can be seen both as reproducing and being an effect of varying relations in a world-system. In the following section I will reflect on some driving factors in (or effects of?) the capitalist world-system.

### **Progress and technology as fetish**

Plumwood described how faith in reason has come to raise the human mind to an almost religious level and create a rift between us (humans) and the natural world. In the age of Enlightenment the (European/male) intellect was seen as the road to freedom, liberty, and with the Industrial Revolution came inventions that increased the wealth of many and made it easier to travel and communicate over long distances. In combination with the idea that the human species went from 'primitive' to 'civilized' we have thus the recipe for 'progress'. Caught up in the spirit that nothing was impossible and that the world was at the inventor's feet, the natural world (and poor people) were seen as an endless resource to use as one wished and science and technology would make life easier and longer (Huesemann and Huesemann 2011, 145-147). It was seen as rational and still is in many ways. Technological innovations are still awed, not least when they are referred to as 'sustainable development' and "green technology" (Bonds and Downey 2012, 168). I will now look into the concept of technology as a contemporary fetish.

On hearing the word fetishism I think immediately of religion and mythology. One might wonder what this has to do with IT in contemporary Swedish high schools? Hornborg points out that "the concept of fetishism as used by Karl Marx helps us to see how human relations to objects are ultimately about their relations to other humans" (2013, 37). He writes further that we need to see the underlying social relations that ascribe machines with "autonomous productivity, obscuring their own foundation in asymmetric global relations of exchange" (2013, 28). Again, the division of nature/human can be seen as affecting our relation to machines (technology) since ethics is not perceived as having something to do with objects and anything outside the human body is objectified. Thus technology can not be perceived as incorporating a subject position and is therefore "immune to political critique" (Hornborg

2013, 35). Still, technological creations are often seen as having a life of their own. Plumwood argues that “[t]he view of the non-human world as rationally replaceable and inferior and the superior status accorded the substitutes produced by reason also helps explain why machines are often now accorded more value and legitimacy as possessors of mind than animals, for whose mindfulness and agency we are assumed to require stringent proof” (2002, 243 note 22). Technological products (machines) can be seen as the ultimate proof of the superiority of the human mind over nature, because through reason nature can be turned into technological inventions. IT-products are increasingly tied to the owner through the idea that it will develop the user’s identity or intellectual capacities by using different applications or by choosing certain accessories for your personal product, even make friends, since you can meet up through the Internet (on consumption and construction of identity see Schor 1999, 56-60). We are encouraged to relate to commodities as things, when they in fact also incorporate “other people’s labour and landscapes” (Hornborg 2013, 37) and are thus actually social relations. Hornborg further reminds us that a “computer that saves its owner time represents losses of time for the myriad of workers [...] whose congealed labour it represents” (2013, 38). This relates to the problem of the global capitalist market that Plumwood addresses in talking about the ecological crisis, namely that the problems “are not primarily technological but social, political and cultural-symbolic” (2002, 7). Unequal exchange can thus be seen as mystified by making technology a fetish in the religion of reason, progress and science (Hornborg 2013, 43).

To continue the association to religious mythology, Huesemann and Huesemann have in their book on techno-fix solutions compared belief in “scientific and technological progress” with religion, since such progress is perceived “as the savior of humanity” (2011, 151). They suggest that faith in scientific and technological progress share *four premises* with religious faith. Those are; “the promise of salvation, the means of controlling and maintaining systems of mass acceptance, the reliance on the wisdom and authority of ‘experts’ and the ignorance of believers”<sup>9</sup> (2011, 152). Religious salvation is often assumed to appear after death (ibid.), thus salvation through technology seems more immediate by getting supposedly time- and energy-saving machines and medical treatments that prolong *this* life. To control “belief in technological progress” one needs to make sure that the public gets information that is

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<sup>9</sup> I want to acknowledge that the last point can be seen as offensive to readers who are actually religious and apologize for this.

“biased toward positive results” and leaves out negative ones (2011, 153). I would also add that this is where hegemonic discourse comes in to do the job. Plumwood argues that

The overall effect of hegemonic centric structure at the level of ideas is not only to justify oppression by making it seem natural but also to make it invisible, by creating a false universalism in culture in which the experiences of the dominant ‘centre’ are represented as universal, and the experiences of those subordinated in the structure are rendered as secondary or ‘irrational’. (2002, 99)

The third and fourth premises Huesemann and Huesemann present are reliance on the wisdom and authority of ‘experts’ and ‘ignorance of believers’. Religious experts are priests, prophets, the pope, etc. while in secular parts of society experts are often simply referred to as ‘experts’. Since science and technology as well as religions often use technical language and professional jargon to express their wisdom, a “‘language barrier’ [is created and serves] as a tool for establishing authority and for keeping believers mystified, thereby limiting comprehension and avoiding critical analysis” (Huesemann and Huesemann 2011, 153). Huesemann and Huesemann also point out that “most people today are insufficiently educated to fully comprehend and evaluate the implications of modern science and technology” (2011, 154). One way to communicate scientific knowledge to the public is thus for media to use certain journalists who are specialized in communicating science. Readers of popular science are not expected to understand or be interested in the messy work leading up to the exciting findings, which is why science journalism tends to emphasize the latter and leave out the former. This way science journalism contributes to a public understanding of science as a strictly ordered process leading to scientists discovering the wonders of nature, “an idealized description of the genius and logic behind a new discovery” (Sismondo 2010, 170). Whenever a tragic accident or crime happens in society ‘experts’ are called on to report their knowledge on the subject matter in media (Huesemann and Huesemann 2011, 153). Climate change can serve as an example, where opponents as well as proponents of global warming theories are using their respective expert reports to serve as proof of being right in the matter. There is also the hegemonic narrative of human progress. By not acknowledging that people could live long and happy lives in pre-industrial societies and by overestimating the significance of medical science for declining death rates (and forgetting to mention democratic factors such as public education and better working conditions) people can continue to believe that techno-science is the main road to save earth and make us happier

(2011, 156-157). Huesemann and Huesemann add a further premise, namely 'awe'. Besides the language barrier, which makes the expert seem more intelligent than the non-expert, huge buildings with impressive architecture, filled with experts and advanced technical equipment (whether it be research labs or hospitals) can invoke awe in much the same way as churches or mosques do in religion (2011, 153).

So, we see that the social construction of reason and rationalism influences relations of power in the construction of knowledge, in world-systems (the notion of developed versus underdeveloped economies) and the status of technology in Western cultures. Due to the ideational connection between human progress and technology, the only way to compete in the contemporary world market is to come up with 'new' technology (alongside with low prices). It is becoming increasingly important to show an interest in sustainability questions and different actors are signaling a need to develop 'sustainable' technological solutions, that is, 'innovative' technology which lets the industrialized societies continue their seemingly comfortable lives in a society built on excessive consumption (see for example Bauman 2012). This can thus be related to the concept of ecological modernization, where continued economic growth and development is understood to lead to less influence on the natural environment over time, with the so-called developed nations taking the lead (see for example Jorgensen and Clark 2012, 4-7). Hornborg states that a common idea is that "[o]ur consumption of Chinese commodities will help China pay for a clean environment and become 'sustainable'" and goes on to say that "[t]o live extravagantly, then, is to show solidarity with the world's poor" (2008, 5). I cannot but agree when he continues by paraphrasing Rudyard Kipling's metaphor on the colonial "civilizing mission" as "the 'White Man's Burden'" in calling the defense of luxury consumption "the White Consumer's Burden" (Hornborg 2008, 5).

## **Body**

I begin this section with a presentation of my interviewees' answers to my questions. After that I go on with the analysis of my findings in relation to my theoretical framework.

### ***Presentation of primary data – the interviews***

I organized my interview guide into two parts. The first part was exploring the interviewees relation to IT in education, through what arguments IT in education is promoted and if there had been any opposing arguments in the implementation process. The second part of the

interview was constructed to explore my interviewees' knowledge on or associations to the concept of sustainability and to find out if there were any traces of reflections on social and ecological consequences on a local as well as global scale, due to the increased local use of IT in education. My questions were mainly about IT in education with relation to the trend that every high-school student gets their own laptop, one laptop per child, or 'one-to-one' as my interviewees call it. Most of my interviewees also reflected on computers and tablets handed out to civil servants and politicians and therefore the interviews reflect an overarching discussion on IT-units (computers/laptops/tablets) in the municipality. All three municipalities gave their high school students personal laptops. One of my interviewees told me his unit supported the network for about "700 machines" in one high-school, including staff computers (Interview 3). With this number as an example from a school in a municipality with no more than 16 000 inhabitants, taken together, most municipalities are huge consumers of IT (which of course is not unique for municipalities compared with other actors in society).

After my interviewees introduced their relation to IT in education I generally moved on to ask what arguments were used *in favor* of increasing the amount of laptops in high-school, with focus on one-to-one laptops. As mentioned in the methodology section, the interviews were more like a conversation and answers to my questions appeared at times in various parts of the interviews. Arguments used to promote, or reasons for wanting to implement, the use of computers and tablets in education were pretty much the same in all three municipalities. One argument that was expressed was the possibility to save resources and money by not having to print out papers with exercises to the whole class. Another argument was that the use of computers would make it easier to share documents and information among teachers, students and parents on a common electronic platform. It would also let teachers who wanted to do so, record their lessons and kids who were on sick-leave for example, could catch up on missed parts afterwards and tests could be digitalized. The computer was generally related to as a pedagogic tool, a teaching aid for both teacher and student, especially, but not only, seen as an important tool for students that have a hard time to learn due to some kind of disability. One of my interviewees thus pointed out that the computer is an aid for students with for example dyslexia since it offers reading aid, automatic spell check and grammar control (Interview 5). "The aspect of fairness" (Interview 1) was another argument mentioned by most of my interviewees. This was the socio-economic aspect that since not every family can afford to buy a computer the municipality should take that cost and support all students with

a laptop. Another aspect was the fact that since the world is seen as increasingly digitalized the students need to be prepared for this. One of my interviewees expressed this as a question of development; “the world gets more digitalized, students who in time will go out into reality need to be prepared...both to continue in education but also in work life, computers are a work tool there” (Interview 7). The students are also perceived as a modern generation and to attract them the schools need to offer more than paper and pencils, so that they don’t find school boring. And not least, competition was stated as the number one argument, at least in the beginning when one-to-one computers started to appear as a phenomenon in the educational sector. When private schools started with personal laptops for students, schools in the public sector became afraid to lose students if they too did not give their students laptops. One of my interviewees states that one-to-one was discussed as a way to attract students to less popular high-school programs. But he also points out that “one-to-one is no longer a competitive tool, it is becoming what it should be, that is, a tool for learning” (Interview 6). This was a point made by more than one of my interviewees, that the one-to-one was not competition anymore, since the phenomenon is already so established, one-to-one is taken for granted. One of my questions concerned who, according to the interviewee, was pushing for an increased use of computers in education. The answers to this were “everyone” (Interview 1) and a collection of the interview answers suggest politicians and teachers as well as some parents and the industry as actors pushing for one-to-one computers. My interviewees were also quite unanimous in their answers on whether there were any arguments put forward *against* the implementation of one-to-one computers. None could recall any recent discussion against it, but reflecting backwards in time they remembered teachers or colleagues who didn’t like the implementation of Information Technology in education. This was mostly referred to age and a discomfort in using new teaching techniques. The economic cost was also stated as a negative argument as well as some who predicted that the computers would just become a toy which would distract the student from listening to what the teacher said.

In the second part of my interview I moved on to investigate my interviewees’ knowledge and understanding of the concepts of sustainable development, sustainability and ‘development’. Other questions concerned whether or not there were discussions present on production and disposal of IT-products and if the costs of IT or health effects were discussed. On the question of whether they were acquainted with the concept of ‘sustainable development’ some answered confidently yes, others were more hesitating. None related to



the Brundtland report. What were instead expressed were mainly *associations* made in relation to the concept as well as the word ‘sustainability’. Some associations concerned the natural world, in taking care of the environment by using less energy, buying second hand and buying high quality products that would last longer. The general context of the interview was IT in schools so a lot of the focus was on material quality and functionality. Thus sustainability was equivalent to hardware that would not break as a result of careless handling, hardware powerful enough to meet future software updates, electronic infrastructure that made usage efficient, energy economic screens, virtualized servers and making sure that the procurement demands looked at the ‘whole chain’, that suppliers would deliver as well as take back for example laptops after 3 or 4 years usage and meet international environmental standards. A few of my interviewees related sustainability to social aspects on a global level. Local economics was the strongest argument in most reflections. The word development was associated to a direction forward, it was seen as improvements in technology as well as organization, a constant evaluating of ones choices and actions and also as simplifying or facilitation of solutions. One of my interviewees expressed it as

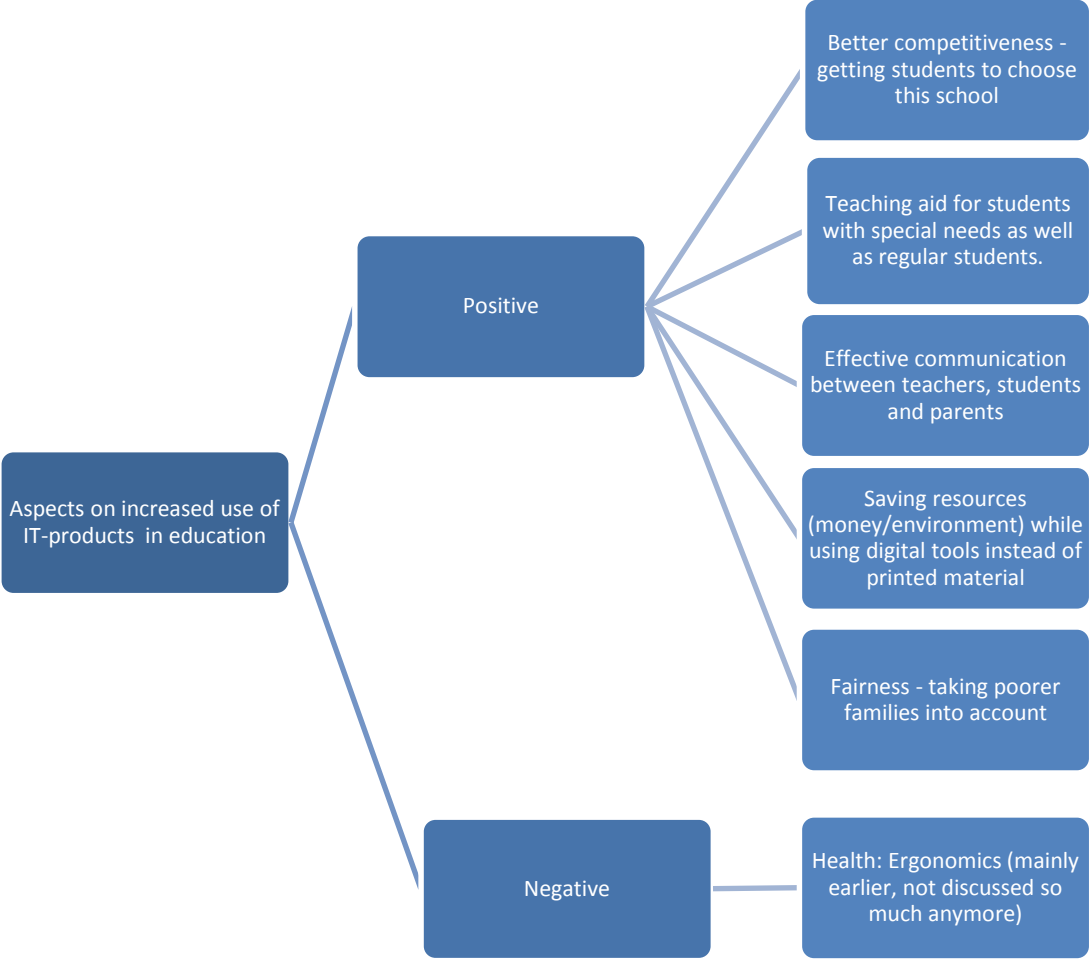
“the world does not ever stand still...so even if we are, I think we need to live in constant development, it doesn’t need to go very fast all the time [...] but something needs to happen all the time because the world is changing so fast...so one who is content...you might be best in Sweden in using computers because you have a concept...but in 5 years you will be worst in Sweden if you do not...all the time think about ‘how can we do this better’, can we make it more effective...what do we get out of this? Do the students get better if we use one-to-one laptops for example?” (Interview 5)

One of my interviewees said that in his youth he saw development as equal to faster and better technology, while now that he was older he had begun to question whether or not it was a human right to live a life in luxury (Interview 8). On questions of whether production circumstances as well as disposal of IT-products were discussed in relation to IT in education my interviewees’ answers were negative. Some recalled reading news articles on work conditions in China with relation to production of IT-components or seeing pictures of children who were burning e-waste to get to the precious metals, but this was not discussed at work or in their role as politicians. Some answers assumed another professional sector in the municipality knew about it or that it was the responsibility of the IT-supplier. All three

municipalities were leasing the laptops they handed out to the high school students from some firm. The relations to disposal were reflected on from mainly three aspects; the students could buy their laptop after their three years in school, the laptops were returned to the leasing firm or laptops/PCs were left at the local recycling and waste management station. One of my interviewees reported that their e-waste was taken back by the leasing firm who also disassembled the computers, reconditioned them and sold or leased them again, all done locally in Sweden (Interview 4). The expression 'e-waste', in English, was not a concept my interviewees were familiar with, though they intuitively understood the meaning of it.

The economic cost of computers seemed not to have been discussed in relation to books, papers, pencils and so on, that is, in relation to how education was run before introducing IT-products. One of my interviewees stated also that it was not possible to compare them, since manual learning tools could never compensate for computers (Interview 3). What appeared though, were reflections on the fact that education became more expensive due to schools now using both systems at the same time since they did not abandon the use of books, printed papers and whiteboard at the introduction of 'one-to-one' laptops. Some expressed a concern that information in printed textbooks becomes old in a fast changing world, which is why it becomes cheaper to get up to date information if they use digital teaching aids (Interview 2; Interview 6). In the beginning of the implementation of one-to-one some critique concerned the increased cost and unease with technology. Reconditioned computers were not an alternative thought of, or at least not desirable, since it was seen as unsustainable from a quality and economy perspective. Lastly, I asked my interviewees if they had participated in or heard any discussion on health in relation to the increased use of IT in education. They answered that presently there was no such discussion, but some recalled past debates on radiation and ergonomics. This discussion seemed to have disappeared since around 10-12 years ago (Interview 5). One reflection was that the school should be an alternative to the private life; if students are sitting still a lot at home they should be offered gym class and teachings on health in school (Interview 8). Another reflection made was that the staff gets ergonomic accessories to use with their computers, but not the students who will probably eventually hurt their necks and eyes (Interview 3; Interview 5). Privately some were concerned about ergonomics, relating to their own children spending too much time indoors and sitting still, crouched down by their tablet or laptop. Another aspect mentioned was the large amount of radiation in homes due to much electronic equipment. Health issues were generally not related to a global context.

During the interviews many aspects appeared that were not answers to my questions but that I still find valuable to reflect on in relation to my study. One thing that was enhanced was the argument that young people today are so clever. They were reflected on as more knowledgeable in technology than their teachers; a spontaneous reflection was that the students are able to crack the passwords to upload illegitimate material on the school computers and to get to the Wi-Fi network with their smart phones. Some reflected on the older teachers as a problem, they were too afraid of technology, while others reflected on the organization as a problem, that the teachers need to be taught the technology before the implementation of those new teaching aids. Another thing that was expressed in a couple of the interviews was that the professional sectors in the municipalities have not yet understood the importance of using public procurement as the useful tool it actually is.



*An overview of my interviewees’ reflections on IT in education in general and one-to-one-laptops in specific. The perspective taken was mainly local.*

## ***Interpretation of findings***

In the methodology section I stressed the importance of acknowledging discourse as a tool for obstructing or promoting changes in social life. In accordance with my previous reflections I see the tacit acceptance of a singular understanding of certain concepts as sustaining and reproducing power relations, on a local as well as global level. I searched therefore in my interviewees' answers to my questions, for keywords and arguments that I see as belonging to my analytic tool 'the hegemonic IT-discourse', but I was also open for the possibility of finding any digressions from this, for example keywords signaling other stances in relation to IT in education. This was done by listening to the recorded interviews and reading transcripts of them. Keywords and assumptions that I searched for was words like 'competition', 'innovation', 'development', 'progress', 'economic gains', if technology was perceived as the solution to both pedagogic and environmental issues and any interpretation of critics of IT; were those seen as educated or backwards. 'Innovation' and 'development' were not dominant in the interviews. However, as will be discussed below, 'competition' and 'progress' presented through words as 'modern' and 'future' and IT as the antitheses to past pedagogic tools, were present in our discussions. 'Sustainability' and issues of justice was also included, still only within a local and immediate perspective.

I want to stress again, that the hegemonic IT-discourse is an analytical construction that I created from what I perceive as a certain mix of words which signal a certain agenda. Below I have presented some discursive themes to give an analytical overview of my interviewees' answers.

### **Being a competitive municipality**

The argument of competition can be seen as corresponding to how the school has become more or less an actor among others on the Swedish and global market. The school is an enterprise like other (private) businesses and needs to attract customers, that is, students. As one of my interviewees puts it

“youth today, if we are to attract them, if we are to satisfy them, to get them to think it is fun...well then you don't want to...put your smart phone in your pocket and then go and write with a pencil, so...we are on our way from that, the youth is there today, they have their smart-phone, ninety percent have one today, of the school-kids, well at least in the higher grades....”. (Interview 2)

Offering students' laptops therefore becomes important as a marketing tool. And when everyone else is offering personal laptops certain qualities in technology become ever more important. Not only private schools are seen as competitors but other municipalities, especially since there is recognition of the tendency of young people moving out from their home municipality when they start high-school. As another of my interviewees says, "the worst scenario is students from different schools who talk to each other, and our student has crap equipment and the other has a really good computer, we need a happy new student who talks well about her or his education and school" (Interview 6). This point could be related to what Schor calls 'upscaling' or 'keeping up with the Joneses', she says that "how we spend has become a crucial part of our self-image, personal identity, and social network" (1999, 96). Spending on the right items is important not "to get stuck in the 'wrong' lifestyle cluster" (ibid). In the case of Swedish municipalities and their consumption of IT-products this is about not seeming updated enough on what educational tools are *in* at the moment. Zygmunt Bauman too underlines how the importance of being a good worker has been replaced by the importance of being a good consumer (2012, 63) and how important it is to have what others have. Even though my interviewees all see the computer as an educational tool today, it was a competitive tool from the start, and I would say with reference to this last quote, still is today. Computers as a tool for competition relate to what I discussed earlier, that technological progress serves as a symbol for a modern developed society. My interviewees say that personal laptops are now taken for granted, and now that 'one-to-one laptops' are normalized I am sure that no school would want to *not* offer their students personal laptops. Instead, the municipalities are looking into the possibility of pushing the one-to-one concept further down in ages, to the upper grades in elementary school.

### **An aspect of fairness – equality among students**

Socioeconomic implications such as the affordability of a computer and all its accessories are reflected on by my interviewees as an argument to implement 'one to one' laptops. One of my interviewees expresses the risk that students who do not have the opportunity of handing in a piece of work written with the aid of a computer might be disadvantaged in relation to students who do, when it comes to being graded (Interview 5). Those comments touch on the fact that material notions of development and progress are closely related to monetary income and will thus also affect the knowledge ability individuals possess regarding IT. Therefore being considered progressive is evidently not (necessarily) a characteristic of

intellectual development but of economic means, a distributional rather than developmental phenomenon (cf. Hornborg 2013, 44). Another of my interviewees reflected briefly on the fact that not all students have Internet access at home and that this could be problematic concerning homework (Interview 2), but we did not explore this further. This seems especially important in relation to what a third interviewee expressed when we spoke about security issues on using the Cloud compared to using a computer at home, without Internet access. He said that: “then you don’t need so much security, but I mean...that is passé, a computer where you do not have any Internet access is not a computer...well, it is I guess, but one is limited in ones actions!” (Interview 3). Thus, the principle of fairness seems more like a second hand construction to defend the massive investment in personal laptops instead of using stationary computers at school, where the needed infrastructure is also located. Inequalities that stand out in a digitalized society have been acknowledged by for example sociologist Manuel Castells who has written specifically on what he calls “network society” (Engdahl and Larsson 2011, 331). Already existing social inequalities are reflected in a “*digital rift*” that privileges those with access to “technological infrastructure as well as knowledge and personal access to computers” (Engdahl and Larsson 2011, 337, my translation from Swedish, italics in original). One of my interviewees suggested that, as with so much else, there is a great hurry to get started, “the thing, or the technology, comes first, because one sees that others have the technology and then we have to have it as well and the need has to be invented afterwards, like; ‘why did we need this technology?’” (Interview 5).

My interviewees also mention that digital tools can be very helpful for children with dysfunctional learning abilities. They seemed to hope that IT in education would help all students to perform better in school. What is interesting here is that in spite of the increase in digital teaching aids during the same time, Swedish students’ performance in education has been worsening during the beginning of the 21<sup>st</sup> century (Skolverket 2014, TT 2013). It is statistics and of course a generalization, but the international measuring tool PISA is used on a regular basis to measure reading skills, performance in mathematics and natural sciences among young teens, and the test has had great influence on Swedish politics since 2013s bad results were published<sup>10</sup>. It could also be questioned whether the use of computers (with access to the Internet) is really a good tool for the learning ability of students or not. Research on how the brain changes when being exposed to hypertext and hypermedia (text

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<sup>10</sup> Results from the most recent test will be released in December 2016 (<http://www.skolverket.se/statistik-och-utvardering/internationella-studier/pisa/pisa-2015-1.207529>)

with links to other text as well as pictures and videos) shows that the user is so distracted so that a deeper comprehending of the text becomes hard or impossible. The brain is too focused on problem solving (should I follow this link or not?) and gets scattered information from the reader skipping from one text to another so the capability of comprehending longer texts is not practiced (Carr 2010, 126-132). This kind of work is rewarding in some ways for the user, but not for learning linear and complex textual material (2010, 116).

Though limited to the actual computer, the phenomenon of one laptop per child could be seen as positive from the perspective of affordability in a *local* context, some families cannot equip their children with computers. Still, again, the access to a computer and Internet needs to be seen as a social privilege and the fact that children and adults who participate in producing, and sometimes disposing of, electronics are risking their health should to a larger extent be problematized. This relates to technological remoteness: technology is used to make a life easier or more fun while the same technology makes another life harder and less fun. But, as Plumwood (2002, 28) highlights, rationales of the capitalist economy backgrounds as well as denies actions of ‘the Other’, in this case those who put together the high-quality products for such an affordable price, the natural resources needed and Earth contaminated. The humans (and natural resources) behind the product are not at all reflected on, which can be seen as an effect of a centric culture that assumes that how the centre chooses to live is a universal way of living and others (in the cultural or economic periphery of the centre) are “deficient” (Plumwood 2002, 101). The lives of individuals outside the local municipality in Sweden should not be considered less valuable than those of local students and greater respect should be paid to global relational ties. This argument, that the computer will help students with special needs to perform better in school, serves to promote laptops for *all* students (in the same school), illustrating the fetish-like symbolic value that machines have: The machine is the benevolent problem solver and (as with most products today) the human relations behind the product are obscured. At the same time the machine is the savior for those who have trouble learning ‘the normal way’.

### **Saving energy and paper – the environmental argument**

The issue of energy resources was another argument that my interviewees returned to many times, in discussions on both economy and environment. The use of digital tools is commonly presumed to decrease the consumption of printed paper and the need to make paper copies of documents. Reflections were also expressed on the possibility of sharing

storage of documents and the importance of a generous infrastructure to allow for a high quality digitalization. Thus some interviewees talked about saving energy (and thereby money) by virtualizing their digital servers. In doing so one of the municipalities saved 10 000 kronor per month in energy costs by virtualizing their server station (Interview 4; the server was not only for the educational sector). At the same time, electronic materials that were not used before now have to be extended.

Even though the local server space is compressed and some of the space used is relocated to ‘the Cloud’ (like a virtual server located on the Internet), what my interviewees fail to see is the global context. Digital storage needs server space which in turn calls for physical space and energy for cooling, running and producing these servers. This does not only apply to so-called social media such as Facebook, YouTube or LinkedIn, but to anything that is stored on the Internet such as e-mail accounts, search engines or, as in the case of my interviewees, local computer networks (private and public businesses). In Falun, a presumably carbon-negative data center is being built and the information site states that “[t]he ICT sector alone consumes up to 10 percent of the world’s electricity”, world-wide (EcoDataCenter 2015). It continues by saying that “[t]here are currently over three million data centers globally. According to several reports the combined carbon dioxide emissions from these data centers are expected to exceed the emissions from the entire airline industry in only five years” (ibid.). Therefore the company is focusing on reuse of waste energy from the municipality and the data center’s IT equipment in a reciprocal relationship. If a data center needs to exist, this is of course a better way to do it. Such data centers might be good for stimulating local job opportunities, sometimes by being placed in less populated regions, and by choosing geographically colder areas further environmental gain could also be made (cf. NCC on Facebook server in Luleå), but the electronics still need to be produced and extensive geographical areas will be exploited. Even such a thing as a so-called carbon-negative data center needs new parts and we still need to be aware of *where* and *how* the physical parts for such data centers are produced, with regard to raw materials, treatment of workers and, not least, emissions of and exposure to hazardous materials and the issue whether waste is decreasing or increasing. What are concealed here are the human relations behind the objects as well as societal relations to nature (cf. Hornborg 2013; Brand 2010, 145). This is why public procurement seriously needs to be considered as the tool it is and can become.



The practice of moving server space to other areas would be an example of *environmental load displacement* (Hornborg, 2013), which I discussed in the section on world-systems analysis, even though the load displacement might be within Swedish borders. Another issue is that this consumption of energy and materials can be perceived as invisible since the Internet is commonly not seen as a physical thing, but is instead used as an argument to save energy and thus money, as compared with printed materials and/or local server stations. But as presented above, the direct local cost for education has increased since the old system with printed books is not abandoned but now used alongside computers. An environmental gain might not be reached either, at least not on a global level, since reconditioned computers are not considered as an alternative, but a new unit has to be produced for every new student.

Well-functioning and robust high-quality technology is of course a part of sustainability (both in the actual *and* conceptual meaning) and is often, in other areas, related to traditional craftsmanship. Increased energy as well as spatial efficiency is generally believed to decrease economic costs as well as environmental ills. It is a fact however, that the more efficient and smoothly running a machine or operation gets, work hours or use of machines increase (Huesemann and Huesemann 2011, 99-105). This has been called the “rebound effect” (Klintman 2013, 78) and was observed by Jevons in the 19<sup>th</sup> century (see also Bonds and Downey 2012). Klintman suggest that “the rebound effect is *direct* when the saved money [or energy] is used for more of the same practice” and “*indirect* when the saved money is spent on another practice, in the case where it hurts the environment” (2013, 78, italics in original). In relation to this, despite the idea that the use of Internet would decrease transportation of things and people, travelling is stimulated since people want to meet new contacts made on the Internet and want to see places they read about. Internet stores also make it easier to buy and sell things across the world and both e-mail, music, arts and networking services are commonly powered with the aid of commercial advertising, which contributes to an expansion of consumption and in turn leads to increases in transports, energy use, emissions of CO<sub>2</sub>, pollution by toxic waste, etc.

### **Getting prepared for a digitalized future**

As we saw in the findings above, my interviewees explicitly state that students need to be prepared for a society characterized by ‘new technology’, ‘the digital society’ and a computerized work life. Digital tools are presumed to be used in school, at work and through

entrepreneurship. The responsibility to prepare students for this future is taken on by education in the public sector by using digital teaching aids, as one of my interviewees expressed it regarding the investment in computers in education: “to prepare the students for...when you get out in work-life it is digitalized, there is not much work left that is not dependent on IT” (interview 4). They may be right in this, but these arguments not only respond to something happening out there, they *also help to create and shape precisely the expected circumstances to be prepared for*. When I defined ‘discourse’ above I mentioned Jørgensen and Phillips (2012) who observe that the discourse used is a perception of reality but at the same time its creator. IT-society is spoken of as something that will happen, or at least become intensified, without recognizing that this way of talking is what is already intensifying this culture. This seemingly powerless attitude relates to the idea that technological development is something unstoppable, something with its own, fetishized life beyond human control. This position is undoubtedly also connected to the narrative of progress, where the future is always a place with more technology, not less, or else human development is stranded.

### **A question of generations?**

Another reflection made by my interviewees was regarding a generational gap. Despite the argument that the students needed to be educated ‘for the future’, they were seen as superior in their technological knowledge compared with the teachers, who were instead the ones in need of education on those tools. The older teachers, or teachers that hesitated to use IT, were depicted as afraid of technology. At my suggestion to one of my interviewees that students and teachers maybe used the computers in different ways from each other, he replied that “they know different things, but [...] that *the students are not as afraid of the computers* [as the teachers are]” (interview 6, my italics). He still stressed the importance of helping teachers to new ways of teaching, to meet the ways that youth today is used to. Another interviewee gives a little more authority to the teacher by stressing the importance of guiding children in their use of IT, but says also that teachers need to be braver around technology, to realize that it doesn’t matter if one or two students know more about the technological device than the teacher; the teacher can still guide them. “Some students can program, not many teachers can do that, but that does not need to be a problem, *if the teachers are not afraid*” (Interview 5, my italics). A third interviewee also says some older teachers don’t use IT-tools so much. He doesn’t frame it as the teachers being a problem but states that the teachers need to get education on IT-tools; “it is more about giving tools to the teachers than to give tools

to the students, they find those anyway...” (interview 4). I want to stress, however, that my interviewees were reflecting on their own thoughts, acknowledging that they did know some (older) teachers who had adapted to and used the new technology a lot in their education. These arguments still counter the former one that students need to be prepared for their future in a digitalized world. If they are superior in using digital tools compared to older generations, maybe the school does not need to offer this?

The increased dependency on electronics in everyday life leads to increased dependency on advanced knowledge in electronic technology. Even though lots of people know a lot about electronics and although this could in some cases be seen as a generational question, it still poses a problem for people who lack the knowledge needed to manage equipment that they are more or less forced to use. Some interviewees expressed that the public sector should provide education on the new digital tools for teachers who needed this, but it was still argued that they needed to accept the new circumstances, whether they liked it or not. This argument could be seen as relating to the discourse of ‘older’ people as a not so useful part of society soon to be replaced by younger people fit for the new ways in society. It corresponds also to the idea of ‘progress’, the young are already in the future and the new digital technology is not possible to stop. The fact that those who developed the advanced technology being used today are now middle-aged, or even old, men and women, is not acknowledged in this discourse.

### **The lost discussion on health and e-waste**

As my findings suggest, once the boom of one-to-one computers started, the discussion on ergonomics in relation to students and their work tools seems to have disappeared. From my point of view, this can be tied to the argument of competition. The discourse on one-to-one laptops does not allow for reflections on health. Implementation of technological tools just *has* to happen: the schools, or local politics, presume that they can not afford *not* to invest in this trend. How the student sits or the amount of screen radiation they are exposed to, plastics and other possible toxic substances have no place in a discourse that focuses on competition, whether it is about immediate competition among municipalities or assumed possibilities for the students to compete in a future professional or study situation. As presented above it was also recognized that staff in the administration were accorded ergonomically correct working spaces, with a docking station for their laptop and a stationary screen with power saving functions as well as ergonomic keyboards. It seems like the project of giving all students a

laptop is more important than caring about their long term health. Looking to the argument of competition this is understandable since the educational sector is now under pressure of competition like other industries and students have less power and awareness to claim a healthy job environment than employees. The students are customers that need to be attracted to choose a certain school and ergonomics is commonly not seen as very exciting.

Besides ergonomics I want to stress mental and emotional wellbeing as a health factor too. Another aspect of increased digitalization not brought up by my interviewees is that the physical integrity among children has decreased as well. When mobile phones are used as a weapon to blackmail other kids, for example by taking photos in the shower after gym class with threats of sharing them on the Internet (Nordh, 2014), social vulnerability increases. Again, as suggested by Castells, such problems could be seen as not being due to technology itself but that technology “is an extension of the already existing social structure” (in Engdahl and Larsson 2011, 338, my translation), but even so, whether created or enhanced by technology, increased vulnerability needs to be taken seriously. Another factor is the lack of willingness or power of adults to limit children’s use of such technology and to question the presence of Information Technology in all situations. This relates again to the idea of IT as a question of generations and that adults, being the older generation, are understood as not accepting IT only because of a presumed feeling of alienation in relation to technology and not because they are more experienced in life and have a wider spectrum of knowledge than children do.

As I mentioned above (page 28-29) e-waste was barely reflected on other than that the supplier should take used laptops back at the end of the leasing period if the computers were not sold second hand by the municipality. A wider, international perspective seemed not to be something that dominated concerns related to used IT-products or the production of new units. As with the health issue this can be understood from the point that my interviewees are implementing local political goals and dealing with local economics. However, the fact that development of Swedish education proceeds without greater reflections on how local actions replace, or displace, social and ecological ills to other places than the immediate municipality is problematic and need to be rethought in an immediate future.

## **Conclusion**

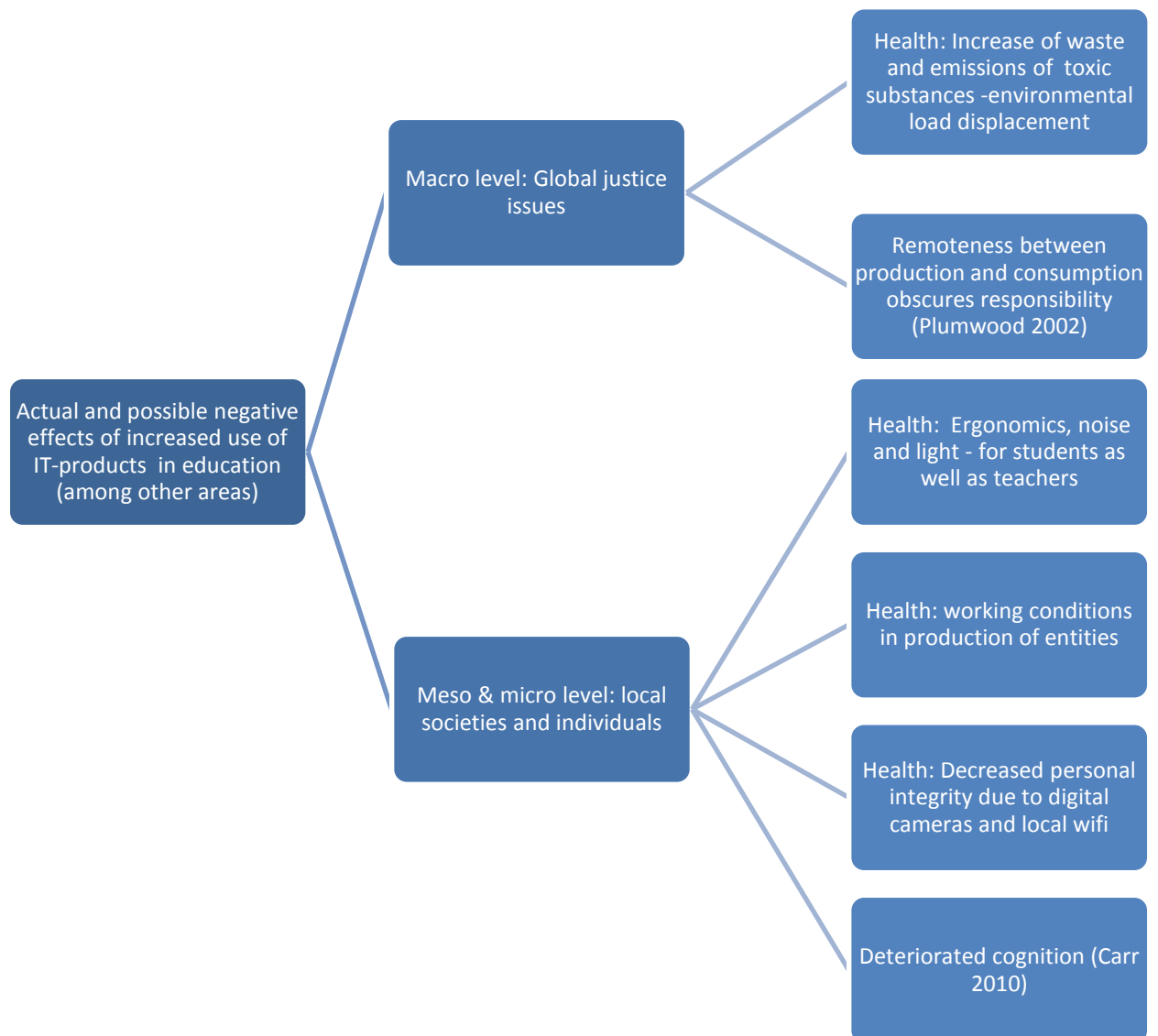
My aim with the interviews was to find out whether or not actors with a professional or political relation to IT in education in public schools have discursive room to make consumption choices that decrease social and ecological harms in the world. This was explored by asking questions that showed whether they draw on what I call the hegemonic IT-discourse in their reflections on IT in education, or if they challenge it by drawing on other discourses. I would say that they do not in any considerable degree depart from the hegemonic discourse on IT. IT in education is seen as a 'must have', it is not negotiable, and to reject it is to reject the future. The hegemonic discourse on IT favors the narrative of progress and market economics. My interviewees adhere to it through their role as officials with a responsibility to stick to the budget but also to attract 'customers' to their respective municipalities. If they depart from this discourse it is by reflecting from a *private* point of view, mostly by looking at children and grandchildren with concerns related to their well-being. Otherwise those belonging to the past (older teachers/grown-ups) were seen as problematic if they were suspicious towards the use of IT-products. Ecological and social ills were barely reflected on, if not simply to support the implementation of electronic and digital equipment. However, one of my interviewees challenged the hegemonic discourse on IT (technology/progress/growth) by questioning the right to live in abundance.

I want to argue that the promotion of computerization and digitalization of the social and economic world in Swedish society facilitates what Val Plumwood (2002) calls remoteness of eco-harms and other harms as well. The usage is promoted as a universal need, without acknowledging that it is happening locally, that access to technological progress is a socio-spatial and not only a historical phenomenon and that the implementation of technological tools in one area can cause social and ecological harms in other parts of the world (load displacement). Computers and tablets are produced to be used by (among others) young students in Sweden, locally promoted with the argument of saving paper, money and energy, effective communication, helping students with special needs and preparing students for a future digital work life. This is an example of 'technological remoteness' as well as 'spatial' and 'epistemic remoteness' (Plumwood 2002); production of this technology is causing destruction of land to retrieve raw materials, it lets people suffer under tough working conditions to assemble the computers and then new technology is bought after only three years of use, rejecting the use of reconditioned computers. It might not be the explicit and

conscious choices of individuals in positions such as those I interviewed to exclude ethical concerns regarding social and ecological harms on a global level: *the discursive environment with its focus on local economics simply does not encourage a more inclusive framework*. As mentioned earlier, the effect of spatial remoteness (suffering doesn't happen here) and temporal remoteness (suffering doesn't happen now) is that decision makers as well as users are less, or not at all, motivated to avoid such harms. The narrative of progress also constrains actions that would slow down the production of technology or encourage solidarity with other values than technological and monetary development.

A change in Sweden during the last 15-20 years is a political 'bend' towards a stronger neo-liberal approach to governing the society, which has influenced priorities in the educational as well as other sectors. The main argument has been the individual's right to choose among more options than one or two and in accordance with this, increased privatization of former state owned sectors has been enabled (Lundqvist 2010, 227-234). It could be argued that the 'marketization' of the educational sector makes it harder to assert any other discourses than such as the hegemonic IT-discourse, which prioritize competition above other values. As I have been discussing, technology is not just an innocent tool. The term technology should of course be acknowledged as representing a heterogeneous phenomenon which includes devices for life-saving, killing, transportation, and agriculture as well as pleasure. However, technological phenomena gain status in themselves, not because they are necessarily something we need or something which will make us better, wiser or healthier people. Technological products are, as well as students, part of the global capitalist market and, as Huesemann and Huesemann put it "[i]n the conflict between corporate profits and human or environmental welfare, the economic system has a strong bias toward profits" (2011, 259). Just as it is irrational not to acknowledge humans as interconnected to nature (see my section on 'The ecological crisis of reason'), it is also irrational not to acknowledge (actions in) Sweden as interconnected with foreign state actors. When consumption choices are made on a global market it has inevitably repercussions within the same market and on the common global natural environment. An individual municipality may not think that it is doing business outside the municipality, but by buying products that are produced abroad it certainly is, indirectly. Plumwood argues that a "[c]aring rationality sees ethics and social responsibility as a crucial part of science and of the scientist's task" (2002, 55). Such a caring rationality should be incorporated into everyday political and other work and especially processes of public procurement to not set aside the well-being of Earth and its inhabitants in

making consumer decisions. This is also what Kurt Junesjö writes on public procurement, that it is “a powerful weapon for improving societal conditions” (2000, 9), a tool that could be used to increase equality among people and better working conditions and, like one of my interviewees, he stresses that the public sector is such a large consumer that it should realize its power as such.



*Overview: Rarely acknowledged, negative aspects of increased computerization of societies – a global as well as local perspective*

### **On ethics**

Some of my interviewees explicitly stated that my questions had caused them to start thinking about environmental and politico-social matters around IT-products. In political

science the question of political power is discussed, if it is ultimately politicians who control political decisions or if it is really civil servants who do (Bergström 2010, 199). In my interviews I could see those relations close up and I felt happy to awaken the thought on the matter of ethics in relation to IT in at least some of my interviewees, knowing that they would bring those thoughts with them into their daily profession.

Another aspect is the fact that my interviewees shared their thoughts with me and at the same time in a way also gave them away to me. As a researcher I took on the authority of putting their thoughts and opinions in an analytical and ideological frame that they might not agree with. I spoke to them about it, but even so, it might be unpleasant for them to find that their thoughts, that were from the beginning seen as personal and belonging to them as individuals, are now brought into a larger context and depicted as less unique and belonging to structures that my interviewees might not even recognize. I put their words into a construction that is not their own.

## **Theoretical contributions of the study**

My thesis is first and foremost to be seen as a theoretical reflection on the hegemony of technology. My empirical material (the interviews) is used to exemplify this hegemony in a contemporary Swedish context and to problematize it but also to discuss possibilities for change. The way discourses frame and influence what we can say or do in any given society creates or hinders, in my point of view, opportunities for change. Since the production, distribution, use and disposal of computers and cell phones are part of and produces pollution, health problems and armed conflict (as do many other products) I believe this study is of great relevance to the discipline of human ecology. This depends of course on what questions are asked of the material but in accordance with what I wrote in previous sections, the phenomenon of personal laptops or tablets for all Swedish high-school students corresponds to relations between human society (political aims, ideational traditions), the natural world (resources, pollution) and the individual (students, workers). When it comes to relevance to the intersection of “Culture, Power and Sustainability” one needs to break the chosen phenomenon down into parts, or levels, where we might see how the (presumably) felt need to respond to discourses of progress, modernity and innovation collide with aspirations to respond to demands on social and ecological sustainability. Thus by mainly focusing on aspects of local economics, the needs of earth-others and people in other places are backgrounded and denied. Another problem is that priorities always come down to a very



narrow definition of economics and this does not see social and ecological care as rational. Only an immediate economic gain for the ‘master subject’, as Plumwood (2002, 28) refers to it, is what counts in the end. Therefore, a greater focus needs to be laid upon the possibility to think and talk differently, more radically, about political (educational, social, economic, etc.) priorities (cf. Pascale 2011; Brand 2010). As have been struggled with in theory for a long time, ecological (and social) costs need to be internalized into economical calculations and not seen as something that is external to business (cf. Simonis 1989). We can write report after report on implementation processes, development and educational tools but nothing will change if we cannot openly admit that normative science (especially within economics, law, natural sciences) needs to be taken seriously and a caring rationality adopted, in science as well as in ‘real life’.

### **A deeper understanding – or contesting – of the concept of sustainability**

Further questions to address include if there are political documents<sup>11</sup> which formulate and discuss the priorities of the concept of sustainable development and, if so, if civil servants and politicians relate to and understand them? This needs to be evaluated on a larger scale if political ambitions for sustainable development and decreased environmental harms are going to be taken seriously. The concept of sustainability is ingrained into everyday speech both in the public sector and in private businesses but it need to be updated and actions that are called ‘sustainable’ need to be defined; how are they sustainable? ‘Sustainability’ has itself become a ‘lame’ word, often used to signal a ‘green’ position, but without really telling how it is ‘green’ or ‘fair’ and often without reflections that stretch further than one’s own community. This is definitely of importance for the study of human ecology since if private and public actors respond to the now more open (and sometimes accepted) debate on fair economical and ecological solutions by using a ‘sustainability discourse’ as some kind of ‘green wash’ it makes honestly ambitious actors less influential and invites suspicion that it is all just talk.

My study shows the importance of a theoretical deconstruction of concepts like ‘technological solutions’, ‘innovation’ and ‘sustainability’ so that these are not just used to give a positive impression, without really communicating anything new and with old problems still not solved. By tying together ideational traditions (reason, progress) with

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<sup>11</sup> The European Commission has for example published a guide for Socially Responsible Public Procurement. See reference list on “Europeiska kommissionen”.

political priorities and speech (technological development, economic growth) we can see that not much is new. What shines through in my interviews is the clash between direct, individual economic gain (in this case for the municipality) and discourse on social and environmental responsibility (which is needed to appear as a good and modern democratic actor). The market rationality thus exerts great pressure on other rationalities. My interviewees clearly related to the hegemonic IT-discourse which in turn is a caricature of the narrative of progress. My presentation of theoretical perspectives and concepts showed that rationalism has a long tradition of excluding ethics from human agency and that this has influenced how the economic world-system is shaped, with its exploitation of some to the advantage of others. I pointed also to the fetish-like status of technology in western societies as an index of human progress and rational thought, which is why it makes it hard to reject technological solutions without seeming backwards. When civil servants, teachers, politicians and others today make use of words like ‘progressive’ and ‘innovative’ this is the tradition they rely on. Behind the technological products are social relations: company owners who want to sell products, officials who want to look modern and full of agency, and competition between states and municipalities about who is the more progressive and who has the least degraded environment, etc. The status of technology relates to ideational traditions but serves to mystify unequal and exploitative social as well as ecological relations. The unawareness of this phenomenon, or neglect of it, upholds the status quo and impedes change.

This study could, in a larger format, have used a combination of surveys and interviews to get a more dense description of modern discourse on technology. It could also have put greater focus on written documents, directives and other secondary empirical material. A comparative study between schools with different pedagogical identities (for example Waldorf and Montessori schools) might also have given other perspectives that could have served as examples of non-capitalist priorities. However, with reference to previous sections, what I find most urgent is the need to challenge the hegemony of capitalist rationalities which influence political priorities today.

## **Sociopolitical contributions of the study**

When it comes to socio-political contributions I believe my study shows that the hegemonic discourse on IT in education need to be acknowledged and contested if local politics are going to be able to approach responsible local actions with respect to ecological and social

sustainability on a local as well as global level<sup>12</sup>. The Swedish government has through writings acknowledged the need to work with developmental questions in a ‘trans-political’ fashion, that officials should cooperate with private businesses and non-profit organizations and that political work on development policies need to apply the perspective of poor people to be able to practice fair and ecologically sustainable developmental policies (Regeringskansliet, UD 2010). I hope that writing this thesis and the conversations I had with interviewees as well as those who read and commented on my work, contributes to the discussion on the role of collective consumers within the global as well as local economy and the common social and ecological responsibility that needs to be acknowledged if a more inclusive stance is to be adopted. I am not suggesting that Swedish municipalities can change the world in an instant, but they could acknowledge the power they do have as consumers of large volumes of electronic (and other) products. Actions made in the name of ecological sustainability in one place (the environmental argument) or social agency ascribed to technology (‘An aspect of fairness’ and ‘Being a competitive municipality’) might harm people and earth in other places (cf. Bonds and Downey 2012, 171).

My hope is also that my thesis gives substance to those who want to work for more obvious relations between production and consumption. If we want an end, or almost end, to miseries like social and ecological inequalities in the world, viewing (some of) the humans as apart from nature must urgently come to an end. An economy and trade that does not problematize the suffering of the people, animals, and earth which provides it with profits is an unhealthy and unethical economy. By acknowledging humans as embedded in and dependent on the ecological world and to see this view as truly rational is a way, maybe *the only* way, to get a fairer world and to show that progress is not just about technological solutions, but the capacity for humility and compassion with earth-others as well as other humans.

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<sup>12</sup> It could of course be argued that ecological and social sustainability is not at all possible within contemporary economical frames since capital accumulation is rooted in exploitation of humans and earth-others as well as Earth itself.

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<sup>13</sup> This source is a scanned copy of a printed document and the publisher's advice is to refer to the original published version. However, since I don't have it I take the risk of referring to this, scanned, version.



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## Appendix 1 – Interviewees

Interview no.	Profession/Public function	Education highest	Sex	Age	Ethnicity (assumed)
1	President of the Board of children and school in municipality A	Folk high-school	Male	40-45	Nordic
2	President of the Board of education in municipality B	9 year elementary school	Male	55-60	Nordic
3	IT-technician on a high school in municipality B	High school	Male	40-45	Nordic
4	Manager of the IT-unit in municipality B	Academic courses in the social sciences, no degree	Male	45-50	Nordic
5	Manager of the section for education and work/employment in municipality A	Teacher – academic degree Headmaster	Male	45-50	Nordic
6	Manager of the IT-unit in municipality C	Industrial engineer Courses in pedagogy Business school	Male	55-60	Nordic
7	Manager of the Unit for public procurement in municipality A	Academic courses in the humanities and social sciences – no degree	Male	40-45	Nordic
8	Manager of the section for education in municipality B	Teacher –academic degree Headmaster	Male	55-60	Nordic

*The municipalities (A,B and C) to which the interviewees were related have a population of between 9000-16000 inhabitants and are located in southern Sweden.*

## Appendix 2 a– Interview guide in English

### *Research questions*

Is there discursive room for employees and politicians in the public sector related to IT in Swedish education, to make consumption choices that decrease social and ecological harms in the world?

What arguments are used to justify the use of Information Technology in contemporary Swedish schools?

What do politicians and civil servants with a professional relation to IT in education know about issues on ecological, economic and social concerns in relation to IT?

What associations are made by the same politicians and civil servants on hearing the words ‘sustainable/sustainability’ and ‘progress’ or ‘development’?

*Thank you for taking time to participate in this interview. It is important for me to get some insight in the processes that precede the incorporation of IT-products in the public sector, specifically in the educational sector.*

*Is it okay if I record the interview?*

*If not, is it okay that I take notes and then cite you in my thesis?*

*I will transcribe the interview and you can have a copy of it if you want to. I shall not store the transcription in a medium that others than I have access to, the Internet for example.*

*To protect your anonymity I shall only refer to an interview number or “a professional title in a small municipality in southern Sweden”. This is for me to be able to analyze the material in another way than my interviewee would do and for no one to feel exploited.*

### **Arguments for and against – tracing source of choices**

In what way have you been active in discussing IT-products in the public sector?

(Have you participated in discussions on computers, laptops or tablets in schools and preschools?)

*If not - why?*

What arguments were used in favour of buying computers to use in schools?

→ *For example economical, modern vs. unmodern, educational, energy efficiency...*

What arguments were used in favour of not buying computers to use in schools?

→ *For example economical, modern vs. unmodern, educational, energy efficiency...*

Who would you say are pushing for personal laptops in high school?

Why do you think that is?

Who would you say are pushing for tablets and computers for children in pre-school?

Why do you think that is?

## **Economical, social and ecological sustainability? – tracing awareness and presence of sustainability questions....**

What do you know about the concept of sustainable development?  
Does it interest you?  
*Why? Why not?*

What do you think of when you hear the word ‘sustainability’?  
What do you assume is to be sustained?

What does development/progress mean to you?  
What do you relate to that word?

### **Production and waste**

At work, have you heard any discussions about under what circumstances IT-products are being produced?  
Have you participated in any such discussion?  
What was said?

At work, have you heard any discussions about under what circumstances IT-products are gotten rid of after being used and where the so called e-waste goes?  
Have you participated in any such discussion?  
What was said? *For example concerning recycling, transportation of waste etc...*

### **Economical costs and benefits**

Have the economic costs concerning IT-products been discussed in comparison with or in relation to costs concerning books?  
What was said?  
→ *Example: direct price at purchase, energy costs during use, cost of IT-support and technicians, efficiency at work for teachers, teachers wages vs IT-technicians wages....*

Has there been any discussion on buying used and reconditioned computers?  
Did you know that there are Swedish companies that are reconditioning and selling used computers?

### **Health – on a local level**

At work, have you heard any discussion on health issues concerning students/children and their increased use of IT-products?  
Have you participated in any such discussion?  
What was said? *For example stress, problems with concentration, radiation, chemicals, plastics, social aspects, increased time spent sitting still indoors....?*

Was it ever related to health issues on a global level?  
*For example long workdays for young people in factories, exploitation of workers, increased time spent sitting still indoors...*

## Appendix 2 b – Interview guide in Swedish

### *Mina forskningsfrågor*

Finns det finns diskursivt utrymme för anställda och politiker inom offentlig sektor, med relation till IT i skolan, att göra konsumtionsval som minskar sociala och ekologiska skador i världen?

Hur försvaras användandet av elektronisk utrustning i skolor och förskolor?

Vad vet politiker och tjänstemän om ekologiska, ekonomiska och sociala aspekter i relation till IT?

Vilka associationer görs av dessa politiker och tjänstemän när de hör ord som 'hållbar/hållbarhet' och 'framsteg' eller 'utveckling'?

*Tack för att du tar dig tid för att ställa upp på en intervju. Det är väldigt viktigt för mig att få insikt i hur den process går till som leder till att man använder elektroniska IT-produkter i den offentliga sektorn, med särskilt fokus på skolverksamhet. Detta kan hjälpa mig att knyta mitt teoretiska perspektiv till en praktisk verksamhet för en fortsatt och fördjupad diskussion om etiska aspekter gällande människors samvaro med varandra och annat liv på jorden.*

*Är det okej om jag spelar in intervjun? En inspelning underlättar mitt arbete och minskar risken för missförstånd som tillexempel kan uppstå om jag tar anteckningar och sedan ska tolka materialet utifrån dessa. Om jag antecknar måste jag antagligen skriva korta fraser och stödord och detta försvårar analysarbetet.*

*Jag kommer att transkribera åtminstone delar av intervjun och denna transkribering kan du få ta del av om du vill. Jag kommer inte heller att spara intervjuerna på något medium som andra har tillgång till, t.ex. Internet.*

*När jag citerar mina informanter kommer jag inte att använda deras riktiga namn. Jag kommer endast att hänvisa till en "yrkestitel i en mindre kommun i södra Sverige". Detta för att inte någon ska känna sig uthängd och för att jag ska kunna analysera det som sägs trots att analysen kanske skiljer sig ifrån hur min informant eventuellt förstår sig själv.*

### **Argument för och emot – att hitta källor till val**

Har du deltagit i diskussioner gällande datorer och surfplattor i olika former av skolverksamhet?

*Varför? Hur?*

Vilka argument användes för att köpa datorer för användning i skolan?

→ *Till exempel ekonomiska argument, modernt VS omodernt, utbildningsargument, energiargument, konkurrens...*

Vilka argument användes mot att köpa datorer för användning i skolan?

→ *Till exempel ekonomi, hälsoaspekter, utbildningsargument, energi...*

Vem, skulle du säga, trycker på i frågan om individuella bärbara datorer i skolan (gymnasiet)?

*Varför tror du att det är så?*

(Vem, skulle du säga, trycker på i frågan om surfplattor och datorer för barn i förskolan?)  
*Varför tror du att det är så?*

## **Ekonomisk-, social- och ekologisk hållbarhet – är hållbarhetsfrågor närvarande och finns det en medvetenhet om dem?**

Vad kan du om konceptet ”hållbar utveckling”?  
Intresserar det dig?  
*Varför? Varför inte?*

När du hör uttrycket hållbarhet, vad tänker du på då?  
Vad är det som ska ”hålla”?

Vad betyder ”utveckling” för dig?  
Vad ser du framför dig när du hör ordet utveckling?

### **Produktion och avfall**

När du är på jobbet/uppdraget, har du då hört några diskussioner om under vilka förhållanden IT-produkter produceras?  
Har du deltagit i några sådana diskussioner?  
Vad talades det om då?

När du är på jobbet/uppdraget, har du då hört några diskussioner om under vilka förhållanden IT-produkter kasseras och vart det så kallade elektroniska avfallet tar vägen?  
Har du deltagit i några sådana diskussioner?  
Vad talades det om då? *T.ex. återvinning?*

### **Ekonomiska kostnader och fördelar**

Har den ekonomiska kostnaden relaterad till IT-produkter diskuterats i jämförelse med eller i relation till kostnader relaterade till exempelvis böcker?  
Vad sades då? Hur talades det om denna fråga?  
→ *Till exempel: direkt inköpspris, energikostnad vid användning, kostnad för IT-support och tekniker, effektivitet i arbetet för lärare, lärares löner VS It-teknikers löner...*

Har det förekommit någon diskussion om att köpa begagnade och rekonditionerade datorer?  
Har du hört talas om att det finns svenska företag som rekonditionerar och säljer använda eller knappt använda datorer?

### **Hälsa – på en lokal nivå**

När du varit på jobbet/uppdraget, har du då hört någon diskussion angående elevers och barns hälsa med anledning av deras ökade användning av elektroniska IT-produkter?  
Har du deltagit i någon sådan diskussion?  
Vad talades det om då? *Ex. stress, koncentrationsproblem, strålning, kemikalier, plast, sociala aspekter, ökat stillasittande inomhus...*

Relaterades någon gång till hälsofrågor på en global nivå?  
*Ex. Ungdomars långa arbetsdagar i fabriker, exploatering av arbetare, ökat stillasittande inomhus*