

understanding_informationtechnology@school

An exploration of global IT discourses at
Columbus elementary school, U.S.A.

By Helen C. Green



Thesis submitted for the degree of Cand.Polit., Spring 2002

Department of Social Anthropology

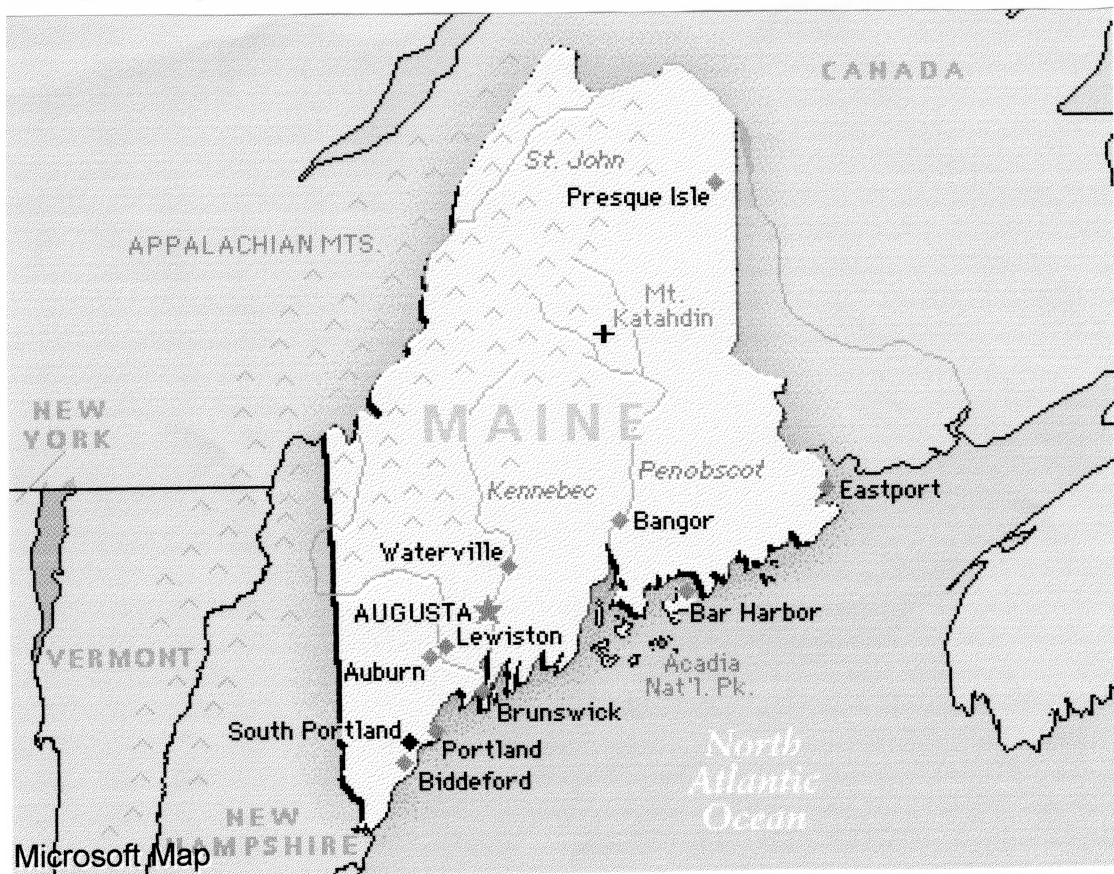
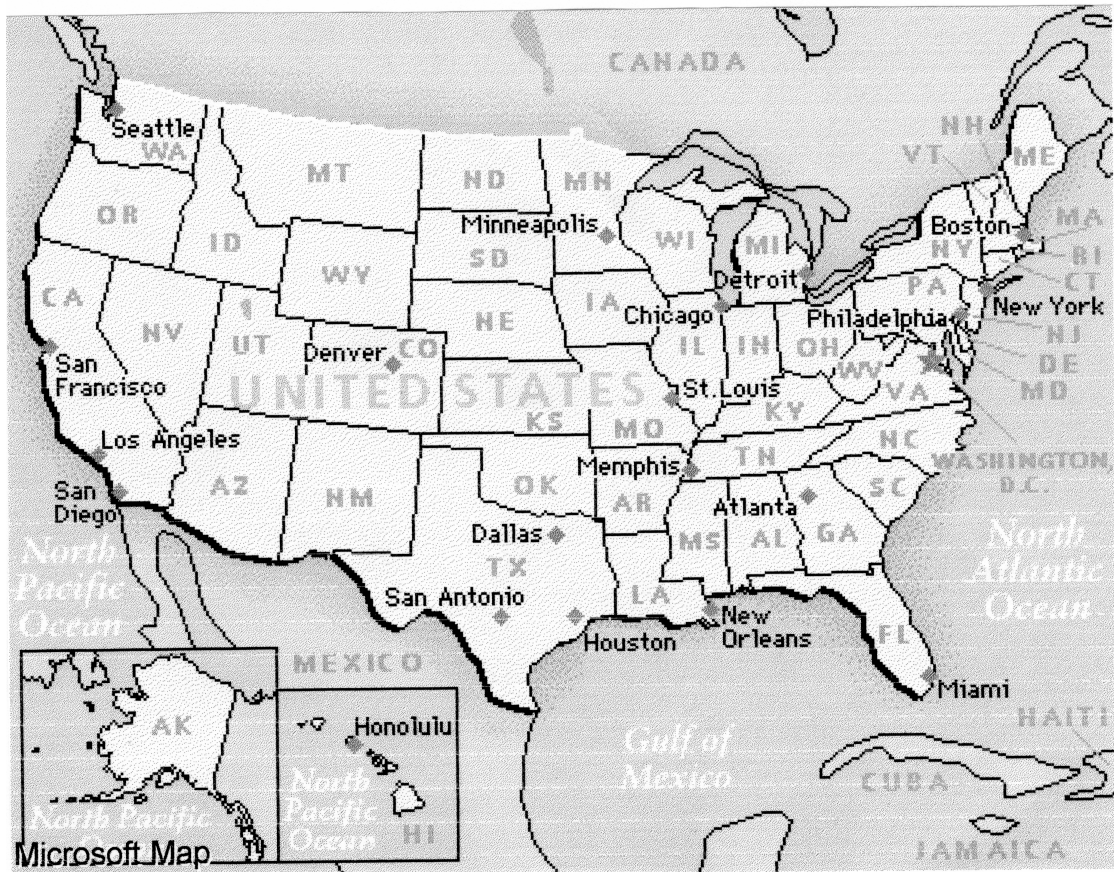
University of Bergen, Norway

Acknowledgements

I would first and foremost like to thank the staff, teachers and children at Columbus elementary school for letting me be a part of their lives. Without their help and cooperation, this thesis would not have been possible. Thank you all! I would also like to thank my father, Nancy, Ryan and Jonathan for their help and support during my fieldwork period – they made a wonderful experience even more enjoyable.

I extend my thanks to everyone who helped me during the various phases of writing my thesis: my thesis supervisor Robert G. Minnich for his guidance and enthusiasm, my fellow students and friends Cathrine Rafner, Ida Samuelsen, Mona Nygård and Sissel Heia for their criticisms and ideas, and my mother and Nina for their continuous encouragements. I would also like to express my gratitude to the people who took the time to proofread this thesis: my mother, Truda Mitchell and Cathrine Rafner - your help was greatly appreciated!

Last, but not least, I owe a special thanks to my husband Lasse for his love and support during my years at University.



CONTENTS

Part One – Methodological and Theoretical Issues	6
1 Introduction	6
1.1 The Research Problem	6
1.2 What is Information Technology?	10
1.3 Methodological Issues	13
1.3.1 Children in anthropology.....	14
1.3.2 Methods in related research	15
1.3.3 “The Field” in my Fieldwork.....	16
1.3.4 Methodological choices and experienced challenges	17
1.3.4.1 <i>Methods</i>	17
1.3.4.2 <i>Gaining Access to the Children</i>	19
1.3.4.3 <i>Acceptance = Identities?</i>	20
1.3.5 Ethical considerations.....	22
1.3.6 Secondary Sources.....	23
2 A Clarification of Theoretical Perspectives	25
2.1 Approaching the “Macro” in Anthropology	26
2.2 Globalization	28
2.2.1 Arjun Appadurai: Global Landscapes	30
2.2.2 Ulf Hannerz: Organizational Frameworks	31
2.3 Meanings as Discourses	34
2.4 The Social Self	36
2.5 Structure of Thesis	39
Part Two – The Macro	40
3 The Development of IT Discourses: Origins and Contexts	40
3.1 Historical Roots: Is Our Fate in the Hands of Technology?	43
3.1.1 From Marx to Ellul: Different Times, Same Ideas	44
3.1.2 Breaking the Chains Held by Technology.....	47
3.2 The Political Cheerleaders of IT	49
3.2.1 American Individualism.....	50
3.2.2 Norwegian Collectivism, or “Egalitarian Individualism”	53
3.3 Same Problem, Different Solutions: The Norwegian and American School Systems 55	
3.3.1 The Norwegian School System	56
3.3.2 The American School System	58
3.3.2.1 <i>How Does a Small American Town Deal With These Challenges?</i>	61
3.4 The Use of IT as a Tool for the Reproduction of Cultural Values	63
3.4.1 “Hurray, I Won!”	63
3.5 Summary	67

4	<i>Exploring the Discursive Order of IT Discourses</i>	68
4.1	Producers and Developers of Information Technology	69
4.1.1	Children as a Target Group.....	71
4.1.2	Aiming at the Moneybag: The Caretakers of Children.....	76
4.2	The Academic Side to IT Discourses	86
4.2.1	Introducing the Pessimists.....	88
4.2.2	Only Pessimists?.....	92
4.3	The Media: “Machineries of Meaning”	94
4.4	The Continuing Battle of IT Discourses	96
4.4.1	Which Discourses Were Heard at the Elementary School?.....	98
4.5	Summary	99
 <i>Part Three – The Micro</i>		101
5	<i>IT Discourses in Terms of Self and Identity</i>	101
5.1	A Sense of Self in the School Environment	101
5.2	The Teachers: Tech-savvy vs. IT Intimidated	103
5.2.1	“I want to teach the kids something useful about computers”.....	103
5.2.2	“I really don’t know much about these machines”.....	108
5.3	The Children: Embracers of Information Technology	111
5.3.1	“Computers are fun, ‘cause you can do different stuff on them.”.....	112
5.3.2	“Mrs. Blair shows us cool computer stuff.”.....	116
5.4	Imperfect Computers	119
5.5	Summary	121
6	<i>The Impact of IT on the School Environment</i>	122
6.1	Reform vs. Status Quo	123
6.2	The Integration of IT at the Elementary School	125
6.2.1	Barriers to Computer Use.....	126
6.3	Changes Resulting from the Use of Computer Technology	128
6.3.1	The Traditional Classroom Structure.....	128
6.3.2	Changes in Peer Interaction.....	129
6.3.3	Changes in Teacher – Pupil Relations.....	131
6.3.4	Increased Motivation.....	134
6.4	Summary	136
7	<i>Closing Remarks</i>	137
8	<i>References</i>	141
8.1	Internet Web Sites	146
8.2	Pictures	147

Part One – Methodological and Theoretical Issues

1 Introduction

1.1 *The Research Problem*

This thesis is based on fieldwork which took place during the spring/summer of 1999, in a small, rural town in New England, U.S.A. The town of Columbus¹ has approximately 4000 inhabitants, and is located in the Northeastern part of Maine (ME), on the Canadian border. The town depends largely on the economic turnover made from the traffic that flows between the two countries, such as tourism, transport and Canadians shopping in the US due to a lower sales tax. My daily observations took place at the town's elementary school. Consisting of 300 students, the classes ranged from kindergarten through to fifth grade. A male principal, whose staff consisted of a secretary, janitor and approximately fifteen teachers (three men and twelve women), ran the school. There were also a number of substitute teachers, parent volunteers, and special education teachers. I interacted with every class at the school, with the exception of the kindergartners, but eventually most of my time was spent with a third and a fourth grade class. But what, exactly, was I doing here?

When deciding that my research focus was going to be some aspect of the relationship children had to information technology (IT), an elementary school equipped with computers seemed to be a good place to observe such processes. My interest in this topic was sparked by the fact that many children in the Western world are the first to grow up with information technology as an integral part of their everyday lives. Unlike those that first came into contact with computers through work or higher education, many children are now using this technology before they can read or write. My interest was deepened by the widespread rhetoric in the media linking children to IT in one way or the other. For example, children are often portrayed as the masters of computer technology, with a natural gift for understanding them. They are also seen as becoming more creative, or, on the other hand, socially incompetent by using these machines. Many of these discourses seemed to be the result of

¹ The name of the town has been changed for reasons of anonymity.

superficial or non-existing research, and I was curious as to whether they held some truth or not.

When I first arrived at the school, I was not quite sure which aspects of the child – computer relation would be of interest. However, after a few weeks, I started noticing certain patterns in how the children and staff talked about and used their library and classroom computers. In other words, there were certain *meanings* concerning information technology that were circulating in this social environment. But what, exactly, is “meaning”? Simply put, “meaning” has a number of meanings. In everyday use it will often refer to *intent*, i.e. a person’s reason, motive, purpose etc. for acting a certain way (Hanson 1975). However, in anthropology “meaning” refers less to the individual than to collective phenomena. Here, many hold that meaning is the same as culture:

“(…) culture, in the anthropological view, is the meanings which people create, and which create people, as members of a society.” “(…) The cultural flow thus consists of the externalizations of meaning which individuals produce through arrangements of overt forms, and the interpretations which individuals make of such displays.” (Hannerz 1992:3&4)

Some, on the other hand, disagree with the notion that culture is just meaning. They argue that even though meaning undoubtedly is an important part of culture, culture also consists of material products, organizational structures, techniques etc. (www.wcsu.ctstateu.edu). In any case, there seems to be a general consensus within anthropology that “meanings” should refer to how a person, or people, make sense of something; their knowledge, understandings and perceptions of the world around them. Meanings are therefore common truths that are built, accepted and contested through social interaction (Jørgensen et al. 1999). In other words, meanings are “negotiated agreements”, which occur when members of a human society agree to relationships between a word, behavior, or other symbols and its corresponding significance (www.wcsu.ctstateu.edu). My use of the term “meaning” will be in accordance with these definitions, although it will primarily refer to the specific understandings, ideas, interpretations and perceptions people have of information technology. As I will discuss in the next chapter, meanings related to IT can be labeled as “discourses”, due to certain unique characteristics.

Tracing meanings is in accordance with a basic “tenet” in anthropology, which holds that the researcher should attempt to understand the “life-world” of his or her informants, i.e. understand how they interpret and experience their surroundings (Veiden 1999). Some of

these understandings and interpretations become shared and public through social interaction, and it is possible to grasp them through such communicative events. As several informants repeatedly expressed certain understandings of information technology over a prolonged period of time, I feel that it is safe to say that these meanings were a part of life-worlds at the elementary school. However, it became important for me not only to document the presence of such understandings, but also to unravel their sources. Were the school member's perceptions of information technology a result of local processes? Aspects of these discourses were undoubtedly local, and some were the product of ongoing situations at the school. Their perspectives were not, however, purely local. In fact, many of these meanings did not make sense if only interpreted within a local context, so I had to look outside the school environment for a broader understanding. I soon realized that these IT discourses were remarkably similar to those found in secondary sources, such as the media. Therefore, external and non-local forces seemed to have created many of the meanings that my informants had appropriated and made their own.

These realizations led to the development of the following research problem: *How, and in what way, do global discourses regarding information technology become part of local life at the elementary school?* Attempting to address this problem led me to ask a number of related questions, such as:

- Are these discourses as new as the technology itself, or have they been heard before?
- What are the exact sources of these discourses, and what are they saying?
- Do these discourses determine the way the children and teachers think of, relate to and use this technology?
- How do my informants cope with the messages bestowed upon them? Are they merely passive recipients of IT discourses or do they relate to them in an active manner?
- Does information technology in and of itself have an impact on the school's social environment?

In the following chapters, I argue that how the members of Columbus elementary school used and viewed information technology was not just the result of discourses, but also reflected the immediate aspects of their everyday lives. For example, material resources, computer skills, relationships between teacher and child, community and national values, all had an impact on

how the discourses were managed by my informants. Furthermore, the children and teachers were not merely passive recipients of such messages, but were highly active in the ways they reproduced, altered or rejected these meanings. Often such processes were related to issues of identity. IT discourses would be used by a person as a means to signal to others who they “were” or wanted to be. This is not to say that the discourses did not influence how the children and teachers perceived computers. In many ways the meanings were important points of reference and would set limits on how it was conceivable for them to relate to the machines. However, numerous factors intervened to make sure that this was not a straightforward process. My basic argument is, therefore, that one must explore how such global discourses are understood locally, rather than assume that different people living under different circumstances relate to them in the same manner.

This thesis focuses on multiple levels of social life, as it is an attempt to trace the many interconnections between the “micro” life of the school and the “macro” aspects of IT discourses. A number of theories and analytical tools will be utilized for this purpose, such as ideas relating to the global flow of meaning, the term “discourse”, and social identity. These ideas and their use will be discussed in detail in chapter two.

As a conclusion to this section, I would like to stress that my research problem relates to issues that are currently given a great amount of attention in today’s Western societies. “Information technology” and “globalization” are topics that are constantly thrown together in various forms of debates, regardless of whether these discussions take place in the media or at the kitchen table. This was also the case in the place where I conducted my fieldwork. Despite the fact that the town was located in a remote part of Maine, far from technological “capitals” such as “Silicon Valley”, the people living here were also concerned with these issues. As a result, they decided to donate time and money so that their children could start using this technology at an early age. Thus, it was not just an issue they occasionally read about in the newspaper, but was something they had decided was of relevance to their community. Unfortunately, anthropology has been relatively slow in participating in these debates, but I hope that this thesis will be a worthy contribution.

Before proceeding with the exploration of my research problem, I discuss the methodological issues and challenges of my fieldwork. But first, what exactly is “technology”? Even more

importantly, what is “information technology”? What is the history of information technology, and what place does it hold in contemporary Western societies?

1.2 What is Information Technology?

The everyday understanding of the term “technology” usually refers to some sort of mechanical object, which can be used to perform certain tasks that are difficult to accomplish by manpower alone. However, such a restricted view of technology is often disputed. For example, many object to limiting “technology” to machines, as this implies that technology has only been with us for a few hundred years. A solution has been to describe technology as “manmade tools”² (Hylland Eriksen 1993:226), which broadens the category considerably. This means that a rock is technology, if it is used as an extension of our bodies to alter our environment. It also means that technology has been with us since “the beginning of time”, and not just since the industrial revolution. However, again we find that this understanding of the term is challenged. The Oxford Dictionary provides the following definition of technology: “(...) the study or use of the mechanical arts and applied sciences.” (1998:853). As we can see, technology is not limited to some sort of material object outside ourselves, but is extended to include human thought. In fact, the word technology comes from the Latin root *texere*, which means to weave or construct. An alternative definition of technology could therefore be:

“Technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome. (...) A technology usually has both a hardware aspect (consisting of material or physical objects) and a software aspect (consisting of the information base for the hardware).”
(Rogers 1986:1 – original italics)

This definition not only includes the tool itself, but also the thought process involved in its application. Anthropologists will often go a step further, and claim that technology is “(...) the total system of means by which the group interacts with the environment.” (Seymour-Smith 1986:276). These “means” include tools, work patterns, the information or knowledge employed and the organization of resources for productive activity (Ibid.). Accordingly, technology is inherently cultural, i.e. is the result of specific cultural processes. It is not just

² The original definition is in Norwegian: “Menneskeskapt redskaper”.

an object external to our lives, only used and related to when performing certain tasks, but is inseparable from the social environment it is a part of.

A similar debate surrounds the use of the term “information technology”. Unfortunately, confusion is heightened by the fact that it is used interchangeably with labels such as “communication technology”, “computer technology” etc. However, as with technology, information technology is for many synonymous with a visible manifestation: microprocessor based computers. The ability of the computer to generate, process, collect and distribute information is the most likely reason it is referred to in this manner, although it has been pointed out by researchers that we have had information processing tools long before computers came into use (Zorkoczy 1995). Therefore, more precise understandings of the term will point out that what marks “information technology” as special is not just the availability of microcomputers, but the flow of information made possible by the interconnections between computers. Some will go a step further, focusing strongly on the human aspects of IT. An example is the definition provided by Everett M. Rogers, which holds that information technology is “(...) the hardware equipment, organizational structures, and social values by which individuals collect, process, and exchange information with other individuals.” (1986:2). I agree with this definition of IT, as it supports my basic assumption that information technology is inseparable from its social and cultural environment.

Now that I have clarified the meaning of information technology in relation to my research, I will present a brief history of the technology itself. This will illustrate its rapid rate of development, and give an idea of its expansion in Western societies. It is difficult to pin-point the exact beginnings of computer technology, as every so-called “invention” stems from previous developments (Winston 1998). However, we find that most historical accounts of the computer begin during the 1940s. The roots of the modern computer are traced to the military’s wish to improve the speed of calculating machines during World War II, as a response to the need for more efficient and precise weapons, radar systems and targeting devices (Campbell-Kelly et al. 1996). Millions of dollars were spent on research and development, which resulted in the production of the first electronic, stored program computers. However, none of these machines were completed in time for war work. After the war, the potential of the computer as a data-processing and accounting machine was recognized, and computer manufacturers found a ready market in government agencies, insurance companies, and large businesses (Ibid.).

The basic structure of the computer has remained unchanged, but the innovation of new components and modes of operation have dramatically altered human experience with computers. In the beginning there were only a handful of computers worldwide, which cost several hundred thousand dollars and filled a large room. The users of these computers would usually neither touch nor see the machines, as they would bring punched cards representing the program to a computer operator and pick up the results hours or days later. The computer, such as most of us know it today, was not even conceivable until 1971, when the world's first computer chip came into use (Ibid.). Since then the computer has developed rapidly, with a continuous decrease in size and cost, parallel to an equal increase in processing power and storage capacity. By 1981, the PC had become affordable for many, and was readily available for those wanting to buy one. However, the computer had still not become as commonplace as it is today. The reason for this had to do with software, rather than hardware. Until the early 1980's, the user communicated with the computer through typed and encoded instructions. The effort it took to learn this "language" and the lack of a standard interface in different applications became a major obstacle to widespread use. The attempt to make PCs "user-friendly" resulted in the graphical user interface (GUI), which allowed a person to interact with a computer through graphical images and icons instead of text. Learning to use this technology became much easier, and the producers of computer technology experienced a renewed interest in their products.

The next "great leap" in computer development took place a short decade later, with the increasing popularity of what has been labeled "the internet". Simply put, the internet is the network that links millions of computers around the world, giving their users access to a variety of computer facilities (Ibid.). As with computer technology, the internet has its roots in the military. Since the 1960's, the military had wanted to develop a decentralized network of computers as a means of exchanging information, while at the same time avoiding the vulnerabilities of a centralized system. For a long period of time this network was closed to the outside world, but eventually started including various research organizations and universities. At the beginning of the 1990's the internet started to gain public attention, and has since then experienced an explosive expansion rate³.

³ Some examples: In 1990 the number of computers hooked up to the internet was 313 000; by 1996 the number was close to 10 million (Campbell-Kelly 1996). In 2001 104 million American adults were online, and 110 million Europeans had access to the internet at home (www.usatoday.com - 19.02.01, www.aftenposten.no - 23.05.01).

“Surfing” the internet is today one of the most common uses of computers, whether for sending e-mail, reading a newspaper, shopping, checking their bank account or gathering information for research. Computers are also used for a variety of other reasons, such as entertainment and data-processing. The fact that computer technology can be used for such a wide range of tasks is indeed one of the main reasons it has become such a popular tool, whether at home, school or the workplace. However, researchers have also pointed out two other characteristics of this technology that seem to boost its popularity. They both relate to how computers present information, as opposed to other media, such as TV, newspapers, radio etc. Firstly, the latter group of media is *linear*, meaning that their contents and the unfolding of their contents have been determined in advance. Information technology, on the other hand, is *non-linear*, meaning that their contents are connected through hyperlinks, enabling a person to jump back and forth between pieces of information as it suits them (Grünbaum 1998). It is therefore very flexible as a tool. Secondly, the computer is *interactive*, i.e. it has the capability to “talk back” to the user (Rogers 1986). This places the user in a situation where he/she must be active, take the initiative and make choices, rather than being passive or merely reactive. When interviewing some of the elementary school children, I would ask them why they preferred computers to TV (as many of them did). Interactivity was the most common answer, although they did not use this exact term. Rather, they would describe how they liked the fact that the computer “answered” them, and that they could do more on it than “just watch”. It seems that they enjoyed the sense of control through choice, and that the computer acknowledged their presence, so to speak.

Summing up, information technology is the result of continuous developments occurring over several decades, and is by no means as “revolutionary” as some might claim. It differs from other human technologies in the sense that it mainly relates to nature in an indirect manner, processing information rather than material entities.

1.3 Methodological Issues

I now turn to the methodological issues of my fieldwork. In this section I discuss the concept of the “field” in anthropology, and the different methods I used during fieldwork. Following this discussion I address a number of questions, such as: What challenges emerged when using these methods with children? How does a researcher gain access to children, and how was I identified by my informants? What are the ethical implications of using children as

informants? This section ends with a brief description of my secondary data sources. But first, how have children been conceptualized in anthropology, and in research that relates to my area of study?

1.3.1 Children in anthropology

One of the most insightful anthropological contributions to the study of children is the view that being a “child” is not, as is often assumed, a “natural” stage in a person’s lifecycle. The notions of “the child” and childhood are cultural constructions dependent on time and space. For example, it has been shown that the concept of childhood did not emerge fully in European societies before the 16th century, prior to this point in time children were viewed as miniature adults (Aries 1962). However, children have rarely been the main focus of anthropological studies. When children were a focus of research, they were most often depicted as recipients of knowledge and skills that they would need to function in society, meaning that they were in some way socially incomplete or only partially cultural. This led to a view of children as passive reproducers of culture, and their state as children became irrelevant. This view of children, influenced by sociology and psychology, was called into question when anthropologists started challenging the notion of cultures as bounded and integrated wholes. By seeing cultures as dynamic and relational, Virginia Caputo argues that it is not only possible, but also desirable that we see children as “(...) active agents engaged in the production and management of meaning in their own social lives.” (1995:20). A similar view has been expressed by the American sociologist William A. Corsaro (1997), who argues that we need to acknowledge children as autonomous individuals capable of exerting their own special influence on the cultures they are a part of. Therefore, even though children do take part in the reproduction of “adult culture”, they must also be viewed as producers of culture.

Research methods can strongly influence or support certain theoretical perspectives, such as ideas relating to “the child”. Choice of method should therefore be given special consideration when conducting research involving children, as certain methods enable us to counter previous conceptions of this age-group as passive members of society. To be able to show how children actively contribute to the production and reproduction of the cultures they are part of, it is necessary to employ a method that captures a child’s perspectives. As Caputo (1995) points out, the ethnographic method of participant observation is particularly well suited for elucidating a child’s “worldview”, as it allows one to capture aspects of their lives

that are spontaneous and informal. I agree with Caputo that participant observation is well suited to gain insight into the social worlds of children. I began my fieldwork by investigating how children viewed and related to information technology, and how IT was incorporated into their social interaction. The use of this method quickly strengthened its hold as it helped me produce data that I felt shed light on these issues. I find it hard to imagine other methods that would have given me similar insight. However, it did not completely eliminate my use of other methods (e.g. interviews), as there were a number of questions that could not be answered from participant observation alone.

1.3.2 Methods in related research

When I began my research on children and information technology, I quickly discovered that there were few extensive studies on this topic. As I write, this is still the case, although things are slowly improving. However, for the most part I relate my work to research that focuses on different age-groups than the ones I am interested in, and, more importantly, are rarely conducted from an anthropological perspective. This means that most of the studies regarding relationships between people and information technology have, to a large extent, used research methods that differ from methods used in anthropology. Many of the studies are conducted from a sociological and/or psychological perspective, and are based on various types of interviews. These range from structured interviews that yield statistical results, to open-ended interviews in which respondents are free to form their answers. Such studies also vary according to whether they conducted face-to-face interviews, or employed a more “impersonal” approach such as, for example, interviews over the internet. Interviews conducted over the internet have become a widely discussed topic in the social sciences, especially with regards to such issues as data validity and research ethics.⁴ As a consequence of such interview-based research, these studies are not only limited in scope, but are also limited in terms of time spent with informants. For example, they will often focus on the use of a computer by one person, ignoring the social dynamics that emerge between groups of users. Short time spans and lack of depth seem to result in an image of children as being passive consumers of information technology, without a will and conscious mind. As a result, such research and the consequent discourses emerging from them often portray children as either a victim or a hero in relation to computer technology, for example as either being consumed by the negative side-effects of playing computer games, or having some natural

⁴ Two recent studies using interviews conducted on the internet are Sherry Turkle’s “Life on the Screen. Identity in the Age of the Internet.” (1995), and Don Tapscott’s “Growing up Digital. The Rise of the Net Generation.” (1998).

talent for “understanding” computers. Participant observation helps to avoid such stereotypes, and allowed me to gain a much more complex understanding of how children participate in developing ideas and understandings of IT.

1.3.3 “The Field” in my Fieldwork

Until recently, the field in fieldwork was largely taken for granted in anthropology. Fieldwork was seen as involving an anthropologist traveling from his/her “home” to a totally different geographical setting. This setting, “the field”, was thought of consisting of small, non-industrial and isolated societies in which the anthropologist stayed for extended periods of time. Even if there ever has existed completely isolated small-scale societies (which is doubtful), it has become increasingly difficult to uphold such an image of “the field” in fieldwork. This is in part due to new technologies enabling fast paced travel and communication, and other globalization processes (Gupta et al. 1997). Add to this the increasing tendency of anthropologists conducting fieldwork in large scale (post)industrial societies, and “the field” as the study of distant and exotic tribal societies is revealed as the idealistic construct it is (Clifford 1990). James Clifford (1997) argues that it might be: “(...) useful to think of the “field” as a habitus rather than as a place, a cluster of *embodied* dispositions and practices.” (Ibid.:199 – original italics). Rena Lederman holds a similar view: “(...) “the field” is not so much a place as it is a particular relation between oneself and others (...)” (1990:88). Even though I agree with the criticisms aimed at traditional ideas of the “field”, I feel that defining the field as only the interrelations one has with a few informants might be going too far in the other direction. Delineating the field as a relationship can, if one is not careful, be just as constraining as limiting it to a specific geographical area. However, this risk will have to be weighed by each researcher in relation to his or her research focus.

I found that one of the main challenges of fieldwork was attempting to determine where my “field” began and where it ended. For example, how was I to delineate it in time? Did the field begin the moment I stepped on the plane? Or when I went through customs in the US? Or, perhaps more logically, when I first met the staff and children at the elementary school? Or, did the field begin the moment I determined where to go, and I am still in it as I write? I would argue that the last question is also the answer. The first step into the field is taken the moment a choice is made as to where, what and who one wishes to study. Further steps are made through theoretical and practical preparations, such as reading literature on the subject. For most anthropologists, the largest and most intimidating step will, of course, be when one

arrives at the fieldsite. In my case this was less dramatic, as I had visited the town on several occasions, before conducting my research. Leaving the actual fieldsite, however, does not necessarily imply that one is completely out of the field. The field is with you whenever one reads through fieldnotes, or e-mails from a friend met during fieldwork. As such, “the field” can be viewed as an ongoing process rather than a time-limited experience.

Defining the field is not only problematic in relation to time, but also in terms of space. My conception of what the “field” would be was quite narrow at the beginning of my fieldwork experience. I mainly viewed it as consisting of the relationships I had with the staff and children at the elementary school, as well as the physical boundaries of the town and school itself. After all, I was living in the same area and interacting with the same people on a daily basis, for several months. However, my thoughts on this issue changed as my research focus developed. As I started tracing the many ways that the elementary school were connected to the outside world, I realized how limited my view of the field had been. It was clear that several large-scale constellations, such as those relating to politics and the economy, were just as important in the lives of my informants as the local community. I therefore had to ask myself if it made sense to limit my concept of the field to the “here and now” of fieldwork. The answer was of course no. To be able to shed light on my research problem, the field in my fieldwork would have to extend far beyond the boundaries of the school.

1.3.4 Methodological choices and experienced challenges

1.3.4.1 Methods

As mentioned, the main research method I used was participant observation, which proved to be an excellent method for getting to know the children and teachers, while at the same time gathering the data I needed. The first two months of my fieldwork I observed as many computer classes in the school library as possible. That way I was able to meet most of the school's teachers and pupils, while gaining an overview of the social networks, interpersonal relationships and the differing uses of computers. After these two months I narrowed my focus and spent most of my time comparing two specific classes. However, my research period was not only spent observing, but also participating in the daily routines of the school. Most of the time I functioned as a library volunteer and as an “informal” teacher’s assistant. One of the greatest advantages of participant observation was its *closeness*, allowing me to gain intimate knowledge about the social environment at the school. My constant presence

over time meant that my informants, especially the children, started taking me for granted as part of the everyday routine of the school.

In addition to participant observation, I also interviewed thirty pupils from the third and fourth grade. Their ages ranged from approximately seven to nine years old, and they were from the same two classes that I was comparing through participant observation. Interviews were necessary as I had a number of questions that could not be answered by just observing or having short informal conversations with the children. Amongst other things, I wanted to get some background information on the children's use of computers in their spare time, and in what ways it was a part of their lives outside school. Therefore, some of the questions I asked concerned background issues, such as: whom did they use computers with? What did they use them for? Did they have access to one? Did they learn things about computers outside the school environment? I also asked questions to find out how the children perceived information technology. Did they use computers to communicate with others, where did they believe this technology was taking us in the future and how did they compare TV and computers?

The interviews were conducted one-on-one, with fourteen prewritten questions (open answers). As I soon discovered, interviewing children presented several problems which might lead one to question the validity of the data obtained by this method. First of all, the children had never been in a similar situation before. I always had to ensure them at the beginning of the interview that no one would know what they answered, and that the interview was not some kind of test. Still, many of them would remain a little nervous and "on edge", and I would sometimes have to encourage them to answer the questions. The formality of the situation might have led them to provide responses that they thought I wanted to hear, or that were in some way "correct". I also found it impossible to use a tape recorder, since the children were more interested in hearing their voice on tape than in answering my questions. In addition to their awkwardness in the interview situation, there were limits to how long they managed to stay focused and interested in my questions. There were, of course, individual variations in the degree of patience they exhibited, but by the time I had reached the last question the novelty of being interviewed had worn off, and the majority felt it was time to change activities. With these problems in mind, I have chosen to view the interview data as a supplement to the information I obtained through participant observation. The interviews have

provided me with useful background information, but my thesis is focused on the daily experiences I had with the children at the school.

However, participant observation was not without problems. No matter how well I was able to “fit in” to the school environment, I was still faced with the fact that children experience most of their contact with adults in subordinate positions of power (Caputo 1995). For example, my note writing while observing them became a major concern for the children. Once, two fifth grade boys decided to go on an internet site they had explicitly been told to stay away from. After a few minutes they realized I was watching them, and one of them asked: “Are you going to tell Mrs. Brown what we did?” Children from other classes also approached me and expressed that they were worried that I was writing “bad things” about them, and that this information would be passed on to their teachers. Since this obviously had an influence on their actions and attitudes toward me, I quickly started restricting my note taking, and would usually jot notes between classes. However, I wish to emphasize that as time passed I was able to gain a certain trust with the children. For example, whenever I was not interacting with them, they almost seemed to forget that I was there. There are two main reasons for this. First, the children quickly realized that I was *not* discussing their behavior with teachers, as they had never been disciplined as a result of actions only I had witnessed. Secondly, even though I would often help children with computer problems, I never acted fully as a “real” teacher: I did not check their homework, give them tests, tell them to be quiet etc. It therefore seems that by avoiding some of the usual “power aspects” that can be a part of teacher - student interaction, I was able to reduce disturbances I might otherwise would have had on their interaction with peers.

1.3.4.2 Gaining Access to the Children

Gaining access to children can be a more strenuous process than gaining access to adult informants, since permission to conduct research must be obtained from someone other than the research subjects themselves. Further, the difficulty of gaining access depends to a large degree on the research focus, and the children’s social environment. In my case, the research focus was of a relatively benign, non-controversial sort – at least in the eyes of my informants. Even though I have no doubt that this eased my access, I still had to obtain permission from the principal to conduct research at his school, and also had to get written permission from the parents of those students I wished to interview. One might therefore say that the key issue here was making sure that I had been granted access from the adults who

were responsible for the children's well-being; these adults may be termed as my "gatekeepers".

However, even though initial access to children at the school was ensured, I soon found out that unlimited access was not to be taken for granted. I wanted to observe them in "non-computer" situations, to be able to gain a wider impression of how they interacted with each other and adults. In the beginning it was somewhat hard to legitimize such observations, as my surroundings had linked me with the theme "children and information technology". But eventually, after we had become familiar with each other, it was easier for me to "tag along" with different classes without anyone taking particular notice. However, access to the children outside the school environment was a different matter. Even though participant observation is suitable for studying young children, it can be difficult to spend extended periods of time with them since restrictions are set on their time by adults (Caputo 1995). This was the case during my fieldwork, and I found it extremely difficult to cross the line between the "public" world of the elementary school to the "private" domain of individual children's households. The most important reason for this is that the issue of "privacy" is an important one in the western industrialized world, and this is especially the case in the United States (Newman 1988). Privacy of home and family is a value widely respected, including myself as I grew up with such values. This meant that I found it very hard to make myself cross this boundary, and the few times I did it was usually met with a hesitant and skeptical response. Also, it was towards the end of my fieldwork that I felt that I was really getting to know students and teachers. Given more time, I am quite sure that such a developing familiarity would have made it much easier for me to gain access to some of the student's households.

1.3.4.3 Acceptance = Identities?

I found that the quality and type of data I was able to obtain was greatly dependent on the children accepting me; a process that was closely connected to how I was identified. Before meeting the teachers I sent out a letter of presentation to them, to explain who I was and what the purpose of my stay would be. Therefore, when meeting them, I assume they identified me as "The graduate student from Norway". Most seemed very interested in my research, and also in learning about Norway. However, the fact that I was a student of anthropology faded into the background, and was never the topic of our conversations.

The children's identification of me was somewhat different, as they had not had any prior notice of who I was. Only one teacher introduced me formally to her class, while the rest had to figure out on their own who I was and what I was doing there. Their main solution to this problem was to place me in the school's previously existing social networks, based on the various tasks I performed. Therefore, one of the ways I was identified was as a "library volunteer". The school's library was run by volunteers; mostly parents and retired teachers. They took care of checking out and shelving books, and kept the library in general order. But due to the fact that they always had a shortage of volunteers, it did not take long before I was asked if I would mind helping out. However, I was also identified as a "teacher assistant". I quickly fell into the habit of helping the children when they were using the computers, especially in classes where the teacher was "computer illiterate". The children would ask me for help if their teacher was not available or unable to help, or I would offer to help when they were stuck. Also, the fact that I was female (as most of the teachers were) and not much younger than the youngest teacher, meant that in many ways I fit the image the children had of "a teacher". I also believe the fact that I spoke English fluently and had family whom were local residents helped them place me in their social environment⁵. Thus, it seems that the children had a very strong need to identify me in some way that would place me into their already pre-existing social universe. However, when I was not helping them I would sit nearby in the library observing them, an act that obviously did not fit my other "ascribed identities". It usually would not take long before a student's curiosity would get the better of him/her, and they would come and ask me straight out who I was, and what I was doing there. An example from one of my early encounters with some fifth graders:

"One of the fifth graders come up to where I am sitting in the library and asks: "Are you a teacher?" and I answer no. The next question is "Are you training to be a teacher?" Since the answer to this question is also no, the immediate follow-up is "Then what 'ya doing here?" I respond that I am here to watch them use computers. Their reaction is that it sounds "boring", and they continue with other questions, such as: "Where are you from?", "How old are you?" etc. I tell them that I am from Norway in Europe, and I ask them if they know the family I am staying with. The small group of children surrounding me enthusiastically say they do, and for the remaining part of library class I am termed as the girl from Norway, related to so-and-so." ⁶

⁵ This undoubtedly also helped me gain acceptance amongst the teachers.

⁶ A note on form: text marked as *italic* and placed in separate paragraphs are excerpts from my fieldnotes.

Many of the children could not understand why I would be bothered to do something as boring as watching them use computers, and thought it was some type of homework that I had to do. This resulted in a number of children feeling sorry for me, and they would try to “make me feel better” by involving me in several of their activities, such as reading a book, playing a game on a computer or drawing a picture.

After a few weeks of fieldwork the library had become my “second home”, and it seemed as if both the children and teachers took my presence there for granted. I became part of the furnishings, so to speak. One might therefore say that my school identities were closely associated with the fact that I spent most of my time within the physical boundaries of the library. I realized this one day when I was walking around the corridors of the school. There I met a boy going in the opposite direction, and he gave me a thoughtful look. After passing me he turned around and asked: “Aren’t you supposed to be in the library?”

Thus, who I was (and how I was accepted) for the children can be said to be the result of how I presented myself to my surroundings, and how they viewed me on the basis of my actions, my physical locations and my previous relations with a few local residents.

1.3.5 Ethical considerations

There are two important ethical issues to consider when studying children, that of consent and anonymity. The issue of consent has to do with the fact that children are as a rule legally and morally viewed as incapable of making important decisions for themselves. In general, most societies have therefore placed the responsibility of making decisions on behalf of a child on specific caretakers (usually the parents). This means that when one wishes to conduct research focusing on children, one must usually obtain permission to do this from someone other than the research subjects themselves. Legally and practically things might be in order by obtaining such permission, but it still might be a problem for the researcher personally. After all, are children ever asked if they *want* to participate? But then again, if they are asked, would they really understand what the research is about? I would assume that the strength of this dilemma varies according to the type and nature of the proposed research (e.g. controversial subject), but that it in any case would be of importance for how the researcher related to her/his child informant. During my own fieldwork, I was very explicit with the children with regards to why I was at the school and what I was doing there. The reasoning

behind this was that since the children “involuntarily” were subjected to my research, I was at least going to be completely honest with them about my intentions. I must add however, that I am not sure how many of the children really understood what I was doing, or if they even remembered it when I interacted with them as something other than “anthropology student”.

Related to the subject of consent, is the issue of anonymity. The process of concealing the identity of informants in the end product of one’s research has become an unwritten rule in the social sciences. This is usually done even if an informant has expressed a wish to see his or her name in print, or at least has said that they do not mind either way. The reasoning behind anonymity in research has to do with a wish to protect one’s research subjects, especially since they have been willing to contribute information that has enabled one to conduct research in the first place. The question is then, what are we protecting them from? In many cases, the research subject is so controversial that it becomes necessary for the well-being of the informant. However, the issue that applies for all social science studies is *unintended consequences*. There is always the risk that an informant has not fully understood what the research is about, and therefore has not been able to foresee the consequences of the resulting study. Further, the research might have consequences that neither informants nor researchers were able to predict, as one is never fully in control as to how others use the results of one’s work. I would argue that the issue of anonymity is even more important when the informants concerned are children, since they usually are not given the choice of whether or not they want to participate in a study. Since the child itself has not given consent to its participation, it becomes even more important to shield them from any unintended consequences.

But how and to what degree one should change the individual characteristics of one’s informants? In my case this was a difficult problem, as my fieldwork took place in a small town where “everyone knows everyone” and almost everyone (probably) was aware of my presence at the elementary school. In this case the solution was to try to make my informants unrecognizable at least to outsiders of the town, as there are limits to how many informant characteristics one can alter and erase before it affects the validity of one’s research.

1.3.6 Secondary Sources

As I discuss in chapter two, anthropology must deal with a number of problems in the study of large-scale constellations, both in terms of theory and method. Even though the intensity of

fieldwork enabled me to witness the many ways macro forces were a part of the school environment, this method did not provide the opportunity to explore the nature of these forces on a global scale. The “macro” is, of course, difficult to study regardless of which method is applied. However, the “here and now” of fieldwork does not provide enough information of events outside the locality in question. Therefore, when studying macro-micro relations, it is necessary to supplement the data gathered during fieldwork. This can be done by using other methods, such as surveys and the like. As a student, I had neither the means nor the resources to conduct additional research. I therefore came to depend on secondary sources, which have provided me with necessary and valuable information, especially in relation to the task of exploring the complex field of IT discourses. In addition to academic literature, I found the internet to be particularly useful, whether for accessing the news media, governmental information or scientific reports. I also developed several ideas through the use of the “old-fashioned” media, such as magazines, newspapers and TV. I am sure that the diversity of these sources will be noticed in the remaining chapters.

2 A Clarification of Theoretical Perspectives

The theoretical perspectives presented in this chapter enable me to explore how the teachers and children of the elementary school related to information technology. Their relationship to this technology was the result of several processes, occurring on different levels of social life. In “the field” these processes were indistinguishable, as they intertwined in mutual flows of cause and effect, and occurred simultaneously. Any analysis will therefore present a somewhat static and artificial picture of what happened, as seen through the eyes of the researcher.

Traditionally, anthropology has focused on the “micro”, i.e. face-to-face interaction within small-scale societies, as opposed to the “macro”, i.e. extensive social processes that escape direct observation (Hylland Eriksen 1993)⁷. Indeed, our methodological and analytical tools have been developed for dealing with the micro aspects of social life. Alongside this focus on the micro, anthropology has had a tendency to view small-scale societies as closed structures, isolated from the outside world. Such views have increasingly been questioned, and ultimately rejected. Instead, the emphasis is now the fluidity of social boundaries and the ties people have across such boundaries. This shift in focus has, however, created a number of challenges for anthropology. How is one to account for social relations that extend beyond local experiences? I had to ask myself this question several times when writing this thesis, as I argue that the ideas and understandings my informants had of information technology were appropriated from sources external to the school environment.

A number of analytical tools have been developed which enable an exploration of large-scale constellations. However, I still found it somewhat problematic to depict macro-micro relations, as no single theoretical approach seemed to capture such processes. This thesis is therefore the product of several analytical approaches, which focus on different levels of social life. Utilizing different approaches can sometimes be complex and confusing. Therefore, for the sake of the reader, and myself, I have chosen to present my main theoretical tools in this chapter, rather than provide bits and pieces as we proceed. I hope to show how

⁷ The original definitions are in Norwegian: Mikronivå – Det nivå av sosiale prosesser som består i direkte samhandling ansikt til ansikt. Makronivå – Det nivå av sosiale prosesser som er så omfattende at det ikke kan observeres direkte. (Hylland Eriksen 1993:42)

these theories complement each other, and enable me to depict the relationship between the macro aspects of IT discourses with the micro aspects of life at the elementary school.

I begin this presentation with a brief review of some early anthropological ideas regarding macro constellations. I thereafter ask the following questions: What is globalization, and how does anthropology deal with this phenomenon? How can one analyze the global flow of meaning? What is the nature of meanings relating to information technology? And finally: How do people deal with such meanings on a local and personal level?

2.1 Approaching the “Macro” in Anthropology

All meaning, whether concerning computers or other topics, is created at the most basic level: face-to-face human interaction. However, meaning can also become an abstraction, having a presence in our lives without necessarily being created by us. These meanings are nevertheless a reality that we must relate to, whether they are brought to us by other individuals, the media or otherwise. Exactly *how* we choose to relate to such meanings will of course vary – they might be rejected, ignored, reaffirmed or altered through our interaction. When certain meanings are acknowledged, they will set real limitations on how we find it conceivable to relate to our surroundings, i.e. how we view the world. Sometimes they even seem to take on a life of their own, as they are taken for granted and unquestioned by their “users”. These processes also apply to the circulation of ideas and understandings of information technology at the elementary school, as many of these ideas were unquestioned and were appropriated from external sources. It is therefore impossible to understand how the school members relate to IT without accounting for the large-scale contexts they are a part of.

Some early anthropological attempts at exploring the relations between the “macro” and “micro” of social life were made by Fredrik Barth and Reidar Grønhaug in the 1970’s. Their ideas were important attempts to come to grips with the presence of larger societal systems in local, everyday life. In the conclusion of “Scale and Social Organization”, Fredrik Barth claims that all social systems can be traced through our observations of social interaction: “All large-scale social systems have a precipitated constituent on the *micro-level*, in the structure of social persons.” (1978:262 – original italics). According to Barth, if we are to understand the events and encounters of social life, we must understand the systems they are a part of. As these systems differ from each other in various ways, for example in terms of size

or “scale”, they have different consequences for its members. Therefore, we should attempt to discover specific properties of the systems, in order to be able to assess the presence they have in people’s lives. Barth emphasizes that “society” is not the largest scale system; such assumptions are based on previous beliefs of the existence of distinct and separable societies. Reidar Grønhaug also provides us with ideas on how to analyze the wider aspects of social life in his article “Scale as a variable in social analysis: Fields in social organization in Herat, North-Western Afghanistan” (1972). The main focus of the article is not just the scale of a system, but the nature of social systems themselves, labeled as “social fields”. According to Grønhaug, a social field is an aggregate of social relationships which are sets of complementary roles. The size of fields depends on how many people it organizes, and a set of fields can be combined into an account of the society as a whole (Ibid.). Fields are in other words social systems which condition the lives of individuals, regardless of their subjective hopes and strategies. These fields vary from well-defined corporate groups to mere aggregates, and they differ in form and scale. The same people can be part of several social fields, and social events occurring in one field can simultaneously occur in other fields. Locality is therefore not necessarily the most important field in people’s lives, as it is just one field among many. Social codes used by a specific population can emanate from within a far more extensive field of communication, and this is why anthropology should use terms such as “field” to help them observe and analyze social life within its macro-context (Ibid.).

Even though Barth and Grønhaug argue against the view of social systems as closed and homogenous entities, one cannot help but notice that there are some inconsistencies in their attempts at challenging such ideas. Indeed, the use of the terms “field” and “system” is somewhat problematic, as this terminology implies closure and constraint. However, it would be a serious mistake to label them as “structural functionalists”, or the like. Barth has on several occasions addressed rigid anthropological assumptions related to the concept of “society”, as for example in his paper “Towards greater naturalism in conceptualizing societies” (1992). There he states that “(...) “society” cannot defensibly be represented by *any* schema which depicts it as a whole composed of parts.” (1992:19 – original italics) He also argues that what we call societies are disordered systems, characterized by an absence of closure.

The mentioned ideas are important, as they represent early anthropological attempts at exploring the relationships between the everyday “micro” life of people, and the larger

“macro” forces that are a part of such life. As such, it would be possible to relate these concepts to my research problem. However, I argue that even though these ideas challenge the traditional anthropological views of “society”, they are somewhat inadequate tools for addressing the research problem of this thesis. I feel that other, more recent theories are better equipped for this purpose. This is due to the specific nature of IT discourses; they are not merely “large scale” or part of an “extensive field”, but are in many ways *global*. These discourses reach most corners of the world, and are also frequently produced by social entities that operate independently of geographical boundaries. Therefore, instead of utilizing Barth and Grønhaug’s theories, I will make use of anthropological perspectives that deal explicitly with globalization.

2.2 Globalization

“A heightened awareness has emerged that acknowledges that much of what anthropologists observe in a given locale has meaning only in connection with activities and meanings located elsewhere, both temporally and spatially.”
(Rhum 1997:190)

Labeling a cultural phenomenon as “global” does not imply that it is relevant or known to everyone on this planet, but that it is disconnected from any specific geographical area (Hylland Eriksen 1993). This is undoubtedly the case for meanings concerning information technology, in so far as they are associated with an object that transcends geographical boundaries. But what exactly is “globalization”, and what does it imply? Over the past few years, the term has been so heavily debated, and has been used to account for so many different developments that it is almost without any meaning at all. However, there does seem to be a certain agreement that globalization as a phenomenon does exist, even though there are large disagreements as to how one should analyze it. Thomas Hylland Eriksen (2000) explores some of these issues in his review of Manuel Castell’s “The Information Age: Economy, Society and Culture” (1996-1998). According to Hylland Eriksen, globalization is “(...) any type of process that diminishes the importance of distance; that compresses the relation between time and space.” (Ibid.:118)⁸. He argues that there is an informal division of labor between authors that explore globalization, since they often fall within one of the following topics:

⁸ The original quote is in Norwegian: “(...) består i alle typer av prosesser som bidrar til å gjøre avstand irrelevant; som komprimerer tid/rom-relasjonen.”

- Economic globalization
- Cultural aspects of globalization
- Human rights
- Network technology

As such, globalization debates take place within different discursive fields, even though they deal with related issues. Castell's body of work, however, is a synthesis of these topics. His study consists of three volumes⁹, which aim to explain current societal changes from a global perspective. According to Castell, we are currently taking part in a series of radical transformations. These transformations, he claims, will be as dramatic in their consequences as the industrial revolution, the establishment of statehood and liberal democracy were in their time (Ibid.). Hylland Eriksen points to how Castell traces the beginnings of these changes to developments in the 1960s and 1970s, with the revolution in information technology, the crisis and restructuring of capitalism, and new movements related to human rights, feminism and environmental protection. These developments have given rise to what may be termed as the "network society". "The net" refers to the way economies and politics are organized globally, without being hindered by geographical limitations. Whereas the traditional industrial society functioned in "the space of places", today's information society functions in the "space of flows" (Ibid.:122). Globalization does not, according to Castell, imply that distinctive cultural features of various groups of people disappear. However, it does lead to increased and continuous contact between societies.

Hylland Eriksen (1993) has expressed similar views in earlier publications. He argues that we are all part of a global system of communication, interaction and exchanges. Not only have certain aspects of modernity, such as the state and capitalism, become widespread, but the last decades have seen an increasing global flow of people, goods, ideas, information and images. However, like Castell, he strongly emphasizes that globalization is not the same as homogenization. Global aspects are always interpreted, processed and understood according to specific local life-worlds, resulting in different understandings for different people. Therefore, global flows of meaning are actively related to by each individual, and the groups/societies they are a part of. These dynamics of interpretations are linked to the creation

⁹ The subtitles of these volumes are the following: "The Rise of the Network Society" (1996), "The Power of Identity" (1997), "End of Millennium" (1998).

of group boundaries and identities, as people seem to select and project meanings that can support the way they wish to present themselves to the outside world (Ibid.). Hylland Eriksen concludes by stating that it will be an important task for anthropology to explore such relationships between the global and the local.

According to these scholars, one should attempt to counter the widespread assumption that globalization = homogenization, by showing how the global is transformed and appropriated locally. This will obviously be an underlying theme throughout my thesis, as I explore how global IT discourses became a part of everyday life at Columbus elementary school. To be able to do so, however, it first is necessary to gain some sense of how meanings are produced, organized and dispersed on a global scale. Two leading anthropologists, Ulf Hannerz and Arjun Appadurai, have made an attempt at meeting this challenge. As will be shown in the following presentation, they provide us with a number of images and ideas that help us come to grips with new global constellations.

2.2.1 Arjun Appadurai: Global Landscapes

In his article “Disjuncture and Difference in the Global Cultural Economy” (1990), Appadurai discusses the nature of today’s global interactions. The central drive of these interactions, he argues, is the tension between cultural homogenization and cultural heterogenization. However, there is often a tendency in globalization studies to focus only on homogenization processes. Appadurai points out that this focus fails to consider that as soon as forces reach new societies they tend to be indigenized or localized in some way (Ibid.). Therefore, it is not possible to equate globalization with homogenization. Instead, Appadurai states that:

“The new global cultural economy has to be understood as a complex, overlapping, disjunctive order, which can no longer be understood in terms of center-periphery models (even those that might account for multiple centers and peripheries). (...) The complexity of the current global economy has to do with certain fundamental disjunctures between economy, culture and politics which we have barely begun to theorize.” (Ibid.:296)

He continues by suggesting that a framework for exploring such disjunctures is to look at the relationship between five dimensions of global cultural flow. The relationship between the first three is deeply disjunctive and highly unpredictable, since each of them is subject to its own constraints and incentives, while at the same time each acts as a constraint and a parameter for movements in the other. The last two are built upon the first three:

- *Ethnoscape* – The landscape of persons who constitute the shifting world in which we live: tourists, immigrants, refugees etc. They are categories of people which have something in common other than geography.
- *Technoscape* – The global configuration, ever fluid, of technology, and of the fact that technology, both high and low, both mechanical and informational, now moves at high speeds across various kinds of previously imperious boundaries.
- *Finanscapes* – The disposition and flow of global capital.
- *Mediascapes* – Refers to both the distribution of the electronic capabilities to produce and disseminate information (newspapers, magazines, TV, movies etc.), and the images of the world created by these media.
- *Ideoscapes* – Are also images, but often directly political and frequently have to do with the ideologies of states and the counter-ideologies of movements explicitly oriented to capturing state power or a piece of it.

The suffix *scape* is used to indicate that these are not objectively given relations that look the same from every angle of vision, but are perspectival constructs. They are not observable structures or institutions, as their shape is fluid and irregular. These landscapes are the building blocks of “imagined worlds”, that is: “(...) the multiple worlds which are constituted by the historically situated imaginations of persons and groups around the globe.” (Ibid.:297). As we shall see, there are similarities between these ideas and the ones presented below.

2.2.2 Ulf Hannerz: Organizational Frameworks

In his book “Cultural Complexity - Studies in the Social Organization of Meaning” (1992), Ulf Hannerz argues for macro-anthropological studies of culture, in which we turn outward from the “small universes” (Ibid.:20) of communities as things set apart, toward the diverse engagement they have with each other within a wider whole. Most often the larger frameworks which the smaller units are a part of are not described, but just assumed to be out there and familiar to everyone. Of course, as Hannerz points out, one cannot aim to do the ethnography of everything, this is simply not possible. He therefore suggests that we attempt to gain an overview of cultural flow, while focusing on the points where these flows come together and mingle. The interfaces, and the diversity created by these interfaces, rather than the parts, should be one’s focus (Ibid.).

This is Hannerz' point of departure in his ambitious attempt to analyze contemporary cultures. At first glance this analysis might seem confusing, as he argues that these cultures are characterized by a great amount of diversity, while at the same time having certain traits in common. For example, Hannerz points out that one should not underestimate the amount or significance of shared culture which is present in today's large-scale societies. Current societies share many features, such as division of labor, states, markets, formal education, literacy, electronic media etc. However, like many others, he argues that the fact that these traits have become widespread does not mean there is a global homogenization of culture, as there are many variants and mixtures of these elements. Also, non-sharing is systematically built into such cultures, as divisions of labor are divisions of knowledge, communication is uneven and fragmented, and many relationships are narrowly defined and fleeting. As a result, people who make use of certain cultural forms may intend them differently than they are understood by observers; different observers may not understand them in the same way either. Such diversity is an indication of complexity, and Hannerz says that current societies will evince such complexity along three dimensions of culture: ideas and modes of thought, forms of externalization and social distribution. In contemporary cultures, complexity along the first dimension is in a large part a consequence of complexity along the latter two.

Even though the complexity and diversity of contemporary cultures might seem to give the impression that "anything goes", Hannerz claims there are certain recurrent if not even universal patterns in the movement of cultural flow. In particular, he points to four *organizational frameworks* which are said to encompass most current cultural processes:

1. *Form of life* – This is the framework which has most in common with what is the whole cultural process in small-scale societies, but here it is only part of the whole. Here we find a measure of redundancy, and a tendency toward stability in the cultural process. There are not necessarily well-defined boundaries between them, and people may develop some conception of each other's forms of life. The cultural flow is free and reciprocal, diffuse and uncentered.
2. *Market* – Within this framework, cultural commodities are moved. All commodities presumably carry some meaning, but in some cases informational, intellectual, aesthetic, or emotional appeal is all there is to a commodity. Market economy as a whole is increasingly one of signs. More or less centering relationships are set up between producers and consumers – the cultural currents involved come from

particular points. Its agents are in competition with each other, innovating to foster new demand, so there is a built in tendency toward instability.

3. *State* – Involves a degree of control over activities within a territory on the basis of concentrated, publicly acknowledged power. To gain legitimate authority, the state apparatus tries to foster the idea that the state is a nation (tied to conceptions of history and tradition), and to construct their subjects culturally as citizens. This usually involves a degree of homogenization. The flow of meaning is mostly from the center and outward, and there is a tendency toward a stability of meaning.
4. *Movements* – Even when their ultimate concern is with the distribution and use of power and material resources, they are often very much movements in culture, organizations for “consciousness raising”, attempts to transform meanings. This framework is less centralized than the state and market, and relies on voluntary efforts. Movements are outward-oriented, aiming toward specific changes or toward averting such changes. They are also unstable, and tend to either succeed or fail. If a movement becomes completely routinized, it is no longer a movement in the strictest sense.

These frameworks do not work in isolation from each other, and their strength in relation to one another may vary. Hannerz continues by stating:

“The overall contemporary social organization of meaning results from the combination of these tendencies, and its variations result to a great extent from varying combinations.” “(...) These entanglements, involving often mutually contradictory tendencies, also keep the totality alive, shifting, continuously unstable. The frameworks are recurrent; their contents, and their interrelations, differ in time and space. (...) in combination they organize a very large part of the cultural flow.” (Ibid.:50&51)

The similarities between Hannerz and Appadurai are obvious, as they both refer to patterns in the global flow of meaning. In some instances, we find that their focus is overlapping. For example, both refer to the importance of financial global flows. In other instances their focus varies slightly: Appadurai has specifically chosen to emphasize the media, while Hannerz focuses on local environments. In any case, they are both trying to create some sort of order in a seemingly disordered world. In the following chapters, I will show that several of Hannerz’ and Appadurai’s frameworks and social landscapes were significant for everyday life at the elementary school. Many of the ideas and understandings concerning information technology were brought to the school through such constellations, while other frameworks and social

landscapes would in some way constrain or alter the flow of such meanings. However, even though these scholars provide us with tools for understanding the global flow of meaning, they say little about the nature of meaning itself, nor much about how power might be an issue in the creation and exchanges of meanings. How is one to understand the meanings relating to information technology? How do they relate to each other? To answer these questions, I now turn to the concept of “discourse”.

2.3 Meanings as Discourses

In recent years we find that “discourse” is frequently used to help analyze cultural flow in current societies. Traditionally, the word discourse was used interchangeably with “speech” or “conversation” (Veiden 1999). However, in the current social sciences it will often refer to the “(...) whole body of statements referring to a specific subject area.”¹⁰ (Ibid.:32). Another similar definition is: “(...) discourse is a specific way of understanding and referring to the world (or segments of it).”¹¹ (Jørgensen et al. 1999:9). Meanings concerning information technology clearly fit these definitions well, as they are related to a specific topic, and imply certain understandings of this topic. However, apart from such definitions, there is little agreement on what exactly a discourse is, or how we are to locate and analyze them.

Marianne W. Jørgensen and Louise Phillips are the authors of the book “Discourse Analysis as Theory and Method”¹² (1999). In this book they present an overview of the field of discourse analysis, tracing its roots to Michel Foucault. According to Jørgensen and Phillips, there are several ways of approaching discourse studies. Some researchers focus primarily on the written and/or oral language, trying to “decode” patterns in given statements. The assumption is that these patterns will to a certain extent determine the way we talk about various issues, depending on which social domain we are acting within. Likewise, by following these patterns, we contribute to their continuing existence. Other researchers will take a much broader view, and look for regularities not only in language, but in actions, music, films, pictures etc. Accordingly, statements about the world are seen to emerge in very different forms, but carrying the same messages. I will be using this broader definition of

¹⁰ The original quote is in Norwegian: “(...) en helhet av utsagn om et bestemt område.”

¹¹ The original quote is in Danish: “(...) diskurs er en bestemt måde at tale om og forstå verden (eller et udsnit af verden) på.” (original italics)

¹² The original title is in Danish: “Diskursanalyse som teori og metode”

discourses in the following chapters, as IT meanings are conveyed through a number of non-linguistic channels.

Despite such differences, Jørgensen and Phillips argue that perspectives within discourse analysis share a number of theoretical assumptions. For example, these perspectives hold that our knowledge and ideas about the world are always shaped by cultural and historical circumstances. Therefore, “reality” is only available to use through our categories. These categories, or worldviews, hold that certain actions are “natural” while others are unthinkable. In this way discourses are said to have concrete social consequences. They also emphasize the importance of examining the material and institutional base of a discursive order, as discourses are not merely free-floating statements and texts that have appeared out of the blue.

In addition to these assumptions, these perspectives have also developed a number of analytical terms to help them explore discourses. The first of these is *discursive field*, which refers to the meanings which a discourse define as valid. As the number of meanings that are considered valid are limited, it is possible to define a discourse as a reduction of possibilities (Ibid.). *Discursive order* slightly overlaps discursive field, and is defined as a complex configuration of discourses within a specific social area or institution. Simply put, it is a common platform for different discourses relating to the same subject matter. Discourses with overlapping or similar worldviews will reinforce each other, thereby strengthening their position amongst other competing discourses. However, if the discourses within such an order are very different from each other, we will usually find intense competition between them, as they all seek domination. Such power struggles result in highly unstable discursive orders, especially if that discursive order is related to a relatively new subject. In the following chapters we shall see that this is the case with IT discourses. I will also address the fact that people can often choose between several discourses in any given situation. Therefore, an important question is: what leads someone to choose one discourse over another? I answer this question in chapter five.

Although discursive theories are quite detailed with regards to the nature of certain types of meaning, they say little about the actual source and receivers of discourses: the individual. How do people, in the daily routines of their lives, relate to discourses that might be imposed on them from others? How do they take part in creating discourses? How (and why) do they

recreate or alter, reject or accept certain discourses over others? I argue in the following that some answers to these questions can be found in a person's sense of *self* and *identity*.

2.4 The Social Self

One of the concerns of this thesis, which will be dealt with in chapter five, is to give an account of how IT discourses and the technology itself was related to in the “micro” world of the elementary school. This is in accordance with what many anthropologists have defined as their main task within the field of globalization studies: to illustrate that people are not passive pawns overrun by the forces of globalization, but relate actively and creatively with such forces in accordance with their own immediate life-circumstances. It is no longer assumed that all members of a social entity will view nor react to the world in the same manner, despite any “culture” they might have in common. A multitude of individuals therefore implies a multitude of perspectives, with a varying degree of discrepancy. Appadurai (1990) emphasizes the various perspectives of individuals through his notion of social landscapes, as he explores globalization in terms of how people themselves imagine the world around them. Hannerz also notes the importance of acknowledging diversity, as “(...) things look differently depending on where you see them from.” (1992:65). According to Hannerz, an individual's specific point of view is its “perspective”, which is a consequence of where he or she is in the social structure. People's perspectives have implications for how they manage meaning, as it is the device which organizes their interpretations and understandings, as well as their own production of meaning. Hannerz emphasizes that even though perspectives are socially guided, it does not imply that we are merely passive recipients of meaning:

“As soon as he has begun to form a conception of himself and the world, and of what is desirable and not desirable, he is actively involved in dealing practically, intellectually, and emotionally with his particular situation. Thus, he will concern himself with meanings especially as they appear to relate to his own experience and plans; to his involvements with other people, for one thing, and to his material needs and interests, for another.” (Ibid.:65)

In line with Hannerz, I will argue that individuals have various “projects” in their lives, related to their sense of self. Most important is arguably the search for recognition and respect from their surroundings; to be acknowledged by others as a person in his or her own right. In this thesis I will show how members of the elementary school were not merely “directed” by

IT discourses to relate to computer technology in specific ways, but used such discourses as a means of presenting certain images of themselves to others. This argument is based on two presumptions, the first of which is that people are *self-conscious* individuals, seeking out meaningful identities in accordance with one's sense of self. Secondly, identity is *not* just an individual project; we are all, to a certain extent, socially created. This might seem as a contradiction, as the West is so used to thinking in terms of the binary opposition individual vs. society. I make an effort at resolving this contradiction with the help of Richard Jenkins and Anthony P. Cohen.

The most common, everyday understanding of the word "identity" refers to the assumed existence of a set of stable characteristics at the "core" of an individual; qualities which render a person unique in comparison with others. This static and non-social view of identity has been questioned and discussed within the social sciences. The sociologist Richard Jenkins provides an overview of various approaches to the subject in his book "Social Identity" (1996), where he argues that all human identities are created *socially*. Jenkins states that the ideas of George H. Mead and Erving Goffman were particularly influential in shaping his argument, and defines social identity as:

"(...) the systematic establishment and signification, between individuals, between collectivities, and between individuals and collectivities, of relationships of similarity and difference." "(...) Social identity is our understanding of who we are, and, reciprocally, other people's understanding of themselves and others (which includes us)." (Ibid.:4&5)

Jenkins continues by linking individual identity to the self, claiming that they are mutually dependent of each other. The self, according to Jenkins, is each person's reflexive sense of his or her identity, as constituted in relation to others in terms of similarity and differences. The self, and therefore identity, is without meaning if isolated from social life. Even though individuals are unique and variable, selfhood and its identities are socially constructed. This "construction" occurs through an internal-external dialectic, i.e. an ongoing and simultaneous synthesis of self-definition and the definitions of oneself offered by others. Social identity is therefore never unilateral, as it is not enough for a person to assert an identity. That identity must also be validated by those whom we interact with (Ibid.).

However, some feel that the importance of the social has been overstated. Anthony P. Cohen argues in his book ‘Self consciousness – An alternative anthropology of identity’ (1994) that it is time for anthropologists and other social scientists to bring the individual back into focus. More specifically, he wants us to realize that individuals do not merely conform to social structures, as the above theories might claim, but are self-aware. Cohen points to how Western social science usually theorizes from the top downwards, i.e. from society to the individual. This has also been the case in anthropology, where the focus has been on groups and categories, while the individual person was merely treated as a member of such entities. The structures themselves were given priority, rather than what the structures meant to the people that populated them (Ibid.). This focus on the social at the expense of the self was given a boost in anthropology by ideas claiming that “the individual” was a Western concern, irrelevant to other cultures. Cohen states that this is a misunderstanding based on a failure to distinguish between individualism and individuality. He urges us to recognize that the relationship between the individual and society is much more complex than that captured by a simple deductive model.

With the developments in “reflexivity” and the critical scrutiny of ethnographic writing in the late 1970s, Cohen notes that selfhood gained a certain acknowledgment in anthropology. However, he argues that this acknowledgement has not been enough. We need to realize that the inevitable starting point for an interpretation of another’s selfhood is one’s own self. As anthropologists, our self-consciousness should be used to sensitize us to the self-consciousness of those we study. Without doing so, we deny to cultural “others” the self-consciousness which we so value in ourselves. More seriously, we risk misunderstanding, and therefore misrepresenting, the people who we claim to know and whom we represent to others (Ibid.).

In chapter five I draw upon Jenkins and Cohen, arguing that my informants were self-conscious individuals who sought to present themselves in certain ways with the help of IT discourses. This implies, of course, that the teachers and children were aware of these meanings, and that they were aware that others were aware of them. It also implies that the use of IT discourses were only successful if accepted by the person(s) receiving these messages. Therefore, issues of power are not only relevant within the discursive order of information technology, but were also central to questions of identity at the elementary school.

2.5 Structure of Thesis

My research problem involves focusing on different levels of social life, and how they interconnect. Of special importance are the levels related to the “local” and “global” aspects of everyday life. No single theory seems to completely cover the range of processes I am interested in, so it will be necessary to make use of various analytical concepts that complement each other in different ways. These analytical tools are utilized in the following chapters to shed light on my empirical material, gathered through fieldwork and secondary sources. It will become clear that there is a continuous parallel between my use of method and theory in this thesis; my tools vary when moving between global and local social life.

In chapter three, **“The development of IT discourses: origins and contexts”**, I discuss the historical roots and current contexts of IT discourses. I ask if these discourses are new and how political frameworks and landscapes shape people’s views and relations to information technology. In chapter four, **“Exploring the discursive order of IT discourses”**, I deal with the discursive order of IT. What are these discourses saying, who are the sources of these messages, and what are their motivations? Throughout this chapter I also illustrate how the various discourses were expressed by the staff and children at the elementary school. In chapter five and six, the focus shifts from the macro world of IT discourses to the micro everyday life at the elementary school. In the first of these chapters, **“Managing IT discourses in terms of self and identity”**, I explore how the members of the school would deal with the meanings surrounding computer technology in relation to their sense of self and identities. Here, it will be important to show how discourses were used by a person to present him/herself in a certain way towards others. Chapter six, **“The impact of IT on the classroom environment”**, continues to focus on the school, but asks what effects computer technology had on the social environments of the school. How were these effects conditioned by the school’s use and integration of this technology? I sum up and conclude the discussions of this thesis in chapter seven.

Part Two – The Macro

3 The Development of IT Discourses: Origins and Contexts

The main part of my thesis revolves around the question of how the social environment shapes the use and understanding of computers. I use the term “social environment” widely, in an attempt to make two points. The first of these is the fact that everyday local relations are of great importance for how the children and teachers at the elementary school relate to information technology. I will return to this point in chapter five and six. My second point, discussed in the current and following chapter, is that the school members were not just a part of a local community, but also lived within several other social landscapes (Appadurai 1990) and organizational frameworks (Hannerz 1992). These frameworks and landscapes encompass and reflect current global cultural flows. Ideas about information technology are a part of such cultural flows, as they are produced by sources that exist within these landscapes and frameworks. Therefore, many of the meanings concerning computer technology became available to my informants through global, rather than local, constellations.

Who, exactly, are the global sources of IT discourses, and what are they saying? As I soon discovered, these discourses are produced and distributed by several different groups in Western societies: hardware/software producers, the media, social scientists, politicians, computer engineers, psychologists etc. The discourses that flow from these groups are as diverse as their sources. However, after reviewing a large amount of material produced by these sources (e.g. books, magazines, advertisements, newspaper articles etc.), I am convinced that it is possible to trace certain patterns in the content and form of current IT discourses. As I see it, such discourses can be said to consist of several competing perspectives, and they usually revolve around two main issues:

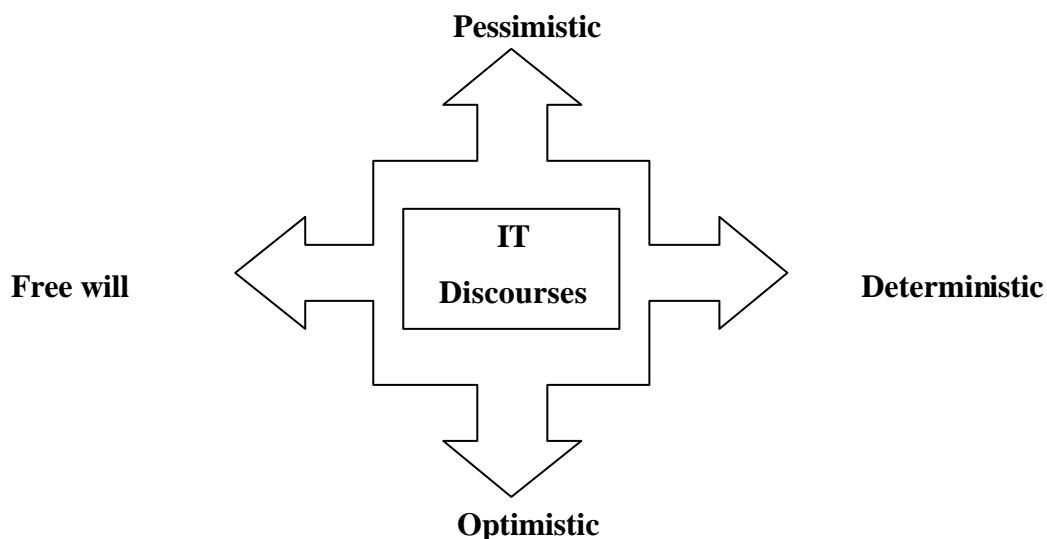
- What kind of historical period do we live in? Many terms are used to describe today’s world: “the information age”, “the computer age”, “interface culture”, “the digital revolution”. The common factor for these classifications is the use of information technology as a symbol or icon of our times, and assumptions on how

this technology has (and will) developed in relation to society. The main line of division falls between those that hold that computer technology determines the form and functions of society, and those emphasizing free will, claiming that mankind is in control of IT developments. These are not ideas that are limited to computers, nor to this day and age. All types of technology are frequently attributed the power to “shape society”, and such views have existed in full since the industrial revolution.

- What is the place of IT in today’s society, and further, what place *should* it have? Often, one will find that two opposing perspectives are expressed in this discussion, namely that of what I have termed as technological “optimists” and “pessimists”. As we shall see, the optimists are convinced that computer technology is beneficial for mankind, while the pessimists hold that this technology has harmful side-effects. The possible effects of IT on children are often a main focus of the debates between these polarities.

As a backdrop for this thesis, and for analytical purposes, I argue that it is possible to isolate four distinct ends on two continuums originating in the patterns of the mentioned perspectives:

1) **Determinism** vs. **Free will**: To what degree humankind is subject to the forces of information technology, and 2) **Optimism** vs. **Pessimism**: To what degree the use of such technology has positive or negative consequences. Discourses focusing on information technology vary with regard to where they place themselves on these two overlapping axes:



The resulting combinations will, in short, express the following:

- A **pessimistic & deterministic** discourse: Information technology will lead to the downfall of human society, and this development is unavoidable.
- A **pessimistic & free will** discourse: Information technology will lead to the downfall of society if it continues its present course, but this development can be avoided through conscious actions of human-beings.
- An **optimistic & deterministic** discourse: In the end, despite current problems, information technology will unavoidably lead to a different and better society than the one that we are part of today.
- An **optimistic & free will** discourse: Information technology holds the potential to help us create a better society, if we choose to use it for such a purpose.

What, exactly, are these IT discourses saying, and how do they relate to each other? I answer this question in chapter four. There I also discuss how they were expressed and dealt with in the social environment of the elementary school. However, the main goal of this chapter is to illustrate how certain social frameworks and/or landscapes constrain and alter the flow of IT discourses. In doing so, I ask how today's understandings of information technology are influenced by certain mainstream ideas circulating within the political frameworks and landscapes of Western society, and how this relationship might have wider implications for how one actually deals with computer technology. I conclude this chapter by showing how children at the elementary school used information technology as a tool to reproduce political discourses central to American culture(s).

Before answering these questions, however, I begin with an account of the historical roots of IT discourses, as a means of illustrating the similarities between previous and current ideas surrounding technology. This will show that technology, in its many forms, has been a focus of Western thought for much longer than the existence of computer technology.

3.1 Historical Roots: Is Our Fate in the Hands of Technology?

“Of all the changes taking place in our time, none has more profound effects than the new ways in which we communicate with one another. For the first time in human history, there is a realistic prospect of communications networks that will link everyone on earth. (...) There are no historical precedents to guide us through this momentous change in how we deal with one another. No one knows the ultimate effects of this new order of instantaneous links.” (Dizard 1989:1)

This way of describing current Western societies has become increasingly common. Daily we encounter terms labeling these assumed developments, such as “The information society”, “The computer age”, “Digital culture”, “The knowledge society” etc., in the media and elsewhere. Although one finds that these terms are often used uncritically without any real thought and discussion as to what they actually describe, they still carry a cluster of related, overlapping and implicit ideas. It is possible to “read” and discover these ideas and meanings by examining their actual use in everyday life¹³, and often one will find that they are concerned with defining the “essential characteristics” of current societies. For example, mankind is seen as living in a world wrought with constant change (some describe it as revolutionary change), where time and space are less and less a hindrance for social interaction, and where information/knowledge in itself has become a commodity of value. However, of importance here is the fact that for most of these descriptions, computer technology is not only used and promoted as the main symbol of our times, but is assumed to be one of the most important instruments in creating such a society. This technology, with its capabilities for processing, storing and transmitting enormous amounts of data, is seen as inducing and perpetuating the mentioned characteristics of the “information society”. In a nutshell, it is argued that the digital revolution has become a social and cultural revolution (Frønes 1998).

Just how common is this mode of thought? Is it of such relevance for people that it has an influence on the way they view information technology and its relationship with other parts of the world? People have always sought explanations as to what gives shape to our lives, and such explanations are usually found in forces external to us. For some these forces have the characteristics of deities, while to others they are present in more materialistic entities such as

¹³ These terms came to my attention when expressed by some of my informants while we were discussing information technology. For example, I once asked a teacher why the school had found it necessary to purchase computers, and the answer was that the children had to be skilled in the tools of the “information society”. This, and similar terms, are also frequently found in the media.

technology. Recent social critics have even claimed that we no longer make distinctions between spiritual and material forces:

“Since the religious object is that which is uncritically worshipped, technology tends more and more to become the new god.” (Wilkinson (Ellul) 1964:xi)

“(…) the adoration of technology pre-empts the adoration of anything else. (…) The elevation of one god requires the demotion of another.” (Postman 1992:165)

It is, of course, impossible to quantify the extent as to which people lean towards technological determinism; all I can do is make an educated guess. But judging from the attention such ideas are given in the media and scholarly publications, and the numbers of times I heard it expressed at Columbus elementary school, the determining force of IT is feared and taken for granted by many people.

3.1.1 From Marx to Ellul: Different Times, Same Ideas

As the perceptions of information technology are intricately woven into the social and cultural circumstances of current times, it follows that they are not isolated from other discourses, nor have appeared from “out of the blue”. IT discourses have, as all other discourses, “inter-textual”¹⁴ characteristics, referring to the fact that all communicative events build on previous events; we never start with a completely “clean slate” (Jørgensen et al. 1999). Therefore, as a starting point, it might be useful to trace the origins or historical roots of IT discourses. Even though it might seem that the arguments of technological determinism are as new as the technology they focus on, this way of perceiving machine technology has been with us in full from the beginnings of the industrial revolution. Nineteenth century Europe was the scene of massive changes in all parts of society, and the development of industrial machinery was one such change. The new machinery, deriving their energy from steam and water, led to an unprecedented growth in production – a feature which meant it fit well into the existing capitalistic economic system. The owners of such businesses became enormously wealthy, and their economic power was often transmitted into political power. This led to the promotion of the “Laissez Faire” ideology, which held that the market mechanisms functioned best if left alone, i.e. without government intervention (Cuff et al. 1992). These changes in the economic sphere coincided with several other changes in the area of politics, such as the strengthened emphasis on certain basic rights for each individual (social and political), democracy etc. However, the occurring developments of that period often had dire

¹⁴ Translation of the Danish term “intertekstualitet” (Jørgensen 1999).

consequences for the “masses”, since increasing tendencies of urbanization and underpaid industrial jobs led to terrible living conditions and the disruption of family relations (Ibid.).

The negative effects resulting from the onset of industrialization caught the attention of social theorists, which sought to find the source and explain the dynamics of the changes taking place. Some found their answer in the technology of this period, claiming that the industrial machinery had set off a chain of events unprecedented in human history. It has been debated as to what degree the most famous of these social theorists, Karl Marx, held that technology actually determined the course of societal development. However, there is little doubt that Marx argued that a society’s productive technology was of great importance for the overall characteristics of that specific society (Ibid.). Simply put, Marx worked from the perspective of *historical materialism*. The main thrust of his ideas came from the view that change in the social world is not random but has order and regularities, the key of which is to be found in subsistence (the need to make a living). How a society achieves subsistence will therefore have consequences for its structure and traits. According to Marx, changes in society stem from the “economic base” (“substructure”), which consists of the “forces of production” and the “relations of production”, the latter of which is determined by the first. By “forces of production”, Marx is mainly referring to the manner in which goods are produced in a society, i.e. to the sorts of technical knowledge in operation, the types of equipment in use and the types of goods being produced (Ibid.). Although Marx was by no means claiming that man is completely lacking free will and the ability to influence his/her surroundings, he was certain that we meet serious and real limitations in our material environment. His greatest concern was therefore that if we are not aware of these processes, then we would not be able to act in a conscious way in relation to them. This would lead to a number of unintended and undesirable consequences, such as human alienation from itself and its surroundings. The end result of alienation, such as Marx saw it, would be an eradication of the human spirit, as the individual would no longer be capable of finding purpose in life.

Although it is over a hundred years since Marx let his thoughts be known to the world, one can still trace his ideas in the works of current scholars. A prominent example is the book “The technological society”, written by the French sociologist Jacques Ellul in 1954. In his book Ellul describes the condition of Western society at the time, arguing that was completely dominated by *technique*: “Without exception in the course of history, *technique belonged to a civilization* and was merely a single element among a host of non-technical activities. Today

technique has taken over the whole of civilization.” (1964:128 - original italics). Technique, as Ellul uses the term, is any complex of standardized means for attaining a predetermined result, i.e. behavior that is deliberate and rationalized, committed to the search for “the one best way” to achieve any objective. It is, thus, the translation into action of man’s concern to master things by means of reason (Ibid.) There are, according to Ellul, a number of different techniques in modern society, but since they all have the same goals and preoccupation, they are thus closely related. The spread of technique is not the result of anyone’s plan; it is not the “will” of any one person. Nor is it to our benefit, as the very traits that make us human, such as creativity and spirituality, are ignored and forgotten in our efforts to find perfect rationality for all things. Ellul paints a dark picture of mankind as not understanding what technique is doing to him and his world, and that is why modern man is beset by anxiety and a feeling of insecurity (Ibid.). To be fair, Ellul does mention the possibility of man “(...) overcoming and transcending these determinisms.” (Ibid.:xxxii), but that current developments do not give much reason for optimism. One might ask what this has to do with the question of technological determinism, as Ellul clearly is referring to a certain mindset and way of perceiving the world, rather than technology in its strictest sense. The answer is found in the first few pages of “The technological society”, where he explores what he considers to be the source of technique:

“Technique certainly began with the machine. It is quite true that all the rest developed out of mechanics; it is quite true also that without the machine the world of technique would not exist.” “(...) the machine (...) represents the ideal toward which technique strives. The machine is solely, exclusively, technique; it is pure technique one might say. For, wherever a technical factor exists, it results, almost inevitably, in mechanization: technique transforms everything it touches into a machine.” (Ibid.:3&4)

Ellul further elaborates on how technique integrates the machine into society, by constructing the kind of world the machine needs. In a nutshell, this means bringing efficiency to every aspect of our lives. The main point here is therefore that even though the “offspring” of technology have developed and spread on its own, they are still rooted in and emulate the machine.

There are clear connections between the ideas of Marx and Ellul. They both claim to have discovered the main force that determines the overall characteristics of society: technology. Indeed, by shaping the external aspects of our lives, the power of technology also extends to

our minds, as it sets constraints on how we perceive the world. Both, however, hold that it is possible to overcome these constraints, but that it requires conscious and collective action on our behalf. If such action does not take place, Marx and Ellul predict a bleak future for mankind.

More or less elaborate ideas concerning technological determinism have held continuing relevance as technological inventions have “popped” up throughout the twentieth century, and have seemed to gain renewed interest with the advent of information technology. However, as we shall see, not everyone agrees with these causal explanations.

3.1.2 Breaking the Chains Held by Technology

Deterministic ideas are still highly relevant in public discussions surrounding information technology, at least in the Western world. And as will be shown, deterministic ideas are often implicit assumptions in pessimistic and optimistic discourses on IT, especially those regarding children. But does the apparent popularity of these ideas mean that everyone agrees with them? Certainly not. Even Marx had a clear opponent in Max Weber, who argued strongly against the way Marx described societal processes. For example, Weber (1992) held that religion was not merely a product of techno-economic realities, but was in itself a source of societal change and structure. In recent years we find that members of various academic disciplines have also attacked technological determinism, arguing that it oversimplifies our relationship with our technological surroundings. These theorists tend to emphasize what they see as a *reciprocal relationship* between man and technology. On the one hand, man has created technology, and is also capable of deciding how it will be used, and for what purpose. On the other hand, technology is a real material presence with specific capabilities, setting limitations and providing opportunities for what can be done.

American anthropologist David Hakken describes the tendency of believing that IT is the central cause of current socio-cultural change as the “computerization hypothesis” (1993:2), and claims that this belief can be termed as mythic, in the sense that it is taken for granted in popular discourse. He argues that this “myth” is rooted in the *scientific technical revolution perspective (STR)* (Ibid.:3) - the view that we are living in a science and technology induced revolution. He further holds that it is possible to distinguish two versions of the computerization hypothesis. The first is termed “Computopia” (Ibid.:4), which is an optimistic view of information technology. Computers are said be able to solve almost any

problem, and it is argued that rapid technological progress is the best way to ensure that any social difficulties following from computerization would be overcome quickly. “Compputopia” (Ibid.:5) holds the opposite view: that computing is socially degenerative, and leads to the degrading of workers conditions and skills. These perspectives will be dealt with in the next chapter. Hakken is strongly critical of such technological determinism, and characterizes the debate between “Computopia” and “Compputopia” as based on ideologically derived hunches, as they are empirically unproven. The best evidence of this is that the course of computerization has varied substantially in different societies, revealing it as a social rather than technological process. In his view: “(...) the connection between computing and social change is largely indirect, the direct connection being highly mediated by several other social structures and processes.” (Ibid.:91).

Anthropologist Arturo Escobar also takes a stand against technological determinism in his article “Welcome to Cyberia. Notes of the Anthropology of Cyberculture” (1994). He argues that anthropological research concerning the latest technology must “(...) pay attention to the social and cultural relations of science and technology as central mechanisms for the production of life and culture in the 21st century.” (Ibid.:217). However, one must remember that any technology is a cultural construction, as it emerges out of particular cultural contexts, and in turn takes part in (re)creating new ones. Sociologists Merete Lie and Knut H. Sørensen (1996) claim that in theory, technology is viewed as a standardizing, globalizing, and bureaucratizing force. In practice however, it is always appropriated and re-embedded in a local context when it is put to use. Human action is therefore a key concept. We consume technologies by integrating and using them. We are also consumed by them when they gain our attention and make us react to them and become occupied by their abilities, functions, and forms. One must therefore acknowledge the dual relationship that exists between man and technology (Ibid.).

Even though it is clear that ideas emphasizing the reciprocal relationship between “the machine” and the human race have become more and more widespread in academic circles, it still seems that the deterministic discourses were dominant in the minds of my informants. Why this is so is hard to say, but I will address the issue in the following chapters. At this point, however, I focus on some of the main political ideas of Western society, as a way of understanding current IT discourses. Co-existing discourses “feed” on each other in both positive and negative ways (i.e. by supporting or disclaiming other worldviews), in a

continuous and dynamic process characterized by feedback (Jørgensen et al. 1999). The resulting mix and strength of particular discourses will to a certain extent “push” people’s views, ideas and attitudes toward computers in certain directions, thereby limiting the number of ways people find it feasible (or even possible) to practically relate to this technology in everyday life. I argue that widespread political ideas in the West have provided a favorable environment for the development of optimistic IT discourses, but that variations in these ideas have led to very different strategies for the actual use and implementation of IT in local life.

3.2 The Political Cheerleaders of IT

In the following sections I focus on Western political ideas regarding the relationship between the individual and society. I have chosen to label these ideas as *individualism* and *collectivism*, and they are political discourses which undoubtedly dominate their discursive order. Individualism and collectivism have both evolved from *liberalism*, an ideology that developed in the West during the eighteenth and nineteenth centuries. In many ways one might say that liberalism has provided the foundation for all political systems in the Western world:

“In the West and increasingly elsewhere, most major political groupings now generally employ the liberal language of rights, democracy and the market to legitimize their views. From New Right conservatives to democratic socialists, it seems that we are all liberal now.” (Bellamy 1993:23)

Liberalism evolved in the aftermath of the British (1688), American (1776) and French (1789) revolutions, which led to the establishment of laws meant to protect individual freedom (the right to private property, religious freedom etc.) from the “tyranny” of government (Ibid.). Democracy followed as an important liberal principle, as it was argued that government must be held accountable to “the people” through the process of election. Liberal ideas have both shaped and reflect the current character of most states, at least in North America and Europe. In many ways it is the basic political ideology of this area, judging by the value placed on its key concepts of equality, liberty, and rationality. The political values related to liberalism can therefore be labeled *ideoscapes*, which “(...) frequently have to do with the ideologies of states and the counter-ideologies of movements explicitly oriented to capturing state power or a piece of it.” (Appadurai 1990:299). In the West, these values have become institutionalized in various organizational frameworks, the most important and obvious of these being the

nation-state. Hannerz (1992) holds that the state is one of four major frameworks channeling the flow of meaning in today's world, and that this particular framework involves a certain degree of homogenization. Such homogenization is achieved since the flow of meaning in the state is asymmetrical, i.e. will mostly move from the center outward. However, the internal consensus that might exist within the state framework greatly contrasts with the political differences we find between nation-states. Despite a common liberal heritage, the specific cultural and historical circumstances of each Western country have led to various interpretations of classic liberal values. Perhaps the most striking differences are those found in the relationship between society and its individual members. Public perceptions of which obligations and rights their nation-state should have in relation to its citizens, and vice-versa, has implications for the political organization of the state in question. Two contrasting cases in this regard are The United States and Norway. They each represent a political embodiment of "individualism" and "collectivism". In the following discussion I will show that the liberal roots of these ideas have led to an embracement of optimistic IT discourses. However, through a brief comparison of the American and Norwegian public school systems, I will also show that the differences between these political ideas have consequences for the acquirement and views of IT.

3.2.1 American Individualism

"Modern Western civilization has been characterized by individualism in the sense that the individual is ideologically in the foreground while the social whole is in the background, and in the sense of strong egalitarian ideas." (Gullestad 1992:146)

Although the above quote refers to the Western world in general, it is an especially appropriate description of the United States. The roots of American individualism can be traced to the liberal ideas of eighteenth and nineteenth century Europe, although the original meaning of these ideas has changed since then. In the US, liberalism is currently associated with leftist political values, and often used to describe the politics of the Democratic Party. However, liberalism in its original form is an intrinsic part of this country's national heritage. Refugees fleeing from religious persecution in Europe brought with them liberal doctrines such as freedom of conscience, limited government and economic ideas associated with the Protestant work ethic to the new continent (Bellamy 1993). These values helped fuel the revolutionary war against colonial Britain (1775-1783), in which the refugees sought complete independence from their European oppressors. Historical circumstances following this war have ensured that the emphasis on individual freedom still is a central value in

American society. For example, many of the current US states waited for several years before joining the union created after the war, for fear of losing their independence to a central government. This led to the development of a federal state, in which the individual states were (and still are) ensured a great deal of self-rule. Further, the protection of individual citizens against the power of government was ensured in the Constitution, which declared that the relations between government and the people of America were to be founded on the affirmation and protection of individual rights. Government was to be held accountable to its citizens by mandatory elections, and the freedom of speech, assembly and publication was not to be abridged (Bowles 1993).

Such antipathy to government in general, and to centralized government in particular, still has a prominent place in American politics. Likewise, civil rights are rigorously defended to ensure equal opportunity and individual freedom. However, as several scholars have pointed out, this emphasis on individualism has come at a price. There is constant tension between the freedom enjoyed by individuals and groups to pursue their own interests as they see them, and public interests. Such conflicts are heightened by the fact that the United States consists of highly diverse social groupings, due to its history as an immigrant nation. Also, the pursuit of individual freedom combined with a capitalistic economy has meant that there is minimal government involvement in the redistribution of society's wealth. As such, competitive individual freedom in the pursuit of positional goods has had inequality as both its motive and result (Ibid.). One might ask why Americans have remained such strong individualists if such values promote obvious material inequalities. A likely answer is the belief in social mobility, which is expressed in the myth of "The American Dream". This myth tells the story of every individual being able to control the circumstances of their lives, and that hard work and self-confidence will guarantee achievement of social and material success. However, it is not assumed that everyone will be able to realize this dream:

"American culture is based in large part on an underlying social Darwinism that sees justice in the rule of the survival of the fittest. We believe that those who are well equipped to compete will reap the material rewards, and that, conversely, those who cannot "cut the mustard" will (and should) suffer deprivation." (Newman 1993:18)

How does the American form of individualism relate to current messages about information technology? With the onset of the twentieth century came a threat towards the concept of individual agency, as mass industrial society, large scale corporations and administrative

organizations in the Western world enveloped the individual in an environment of rules and a hierarchy of bureaucratic agencies. The sheer size and scale of these developments raised concerns that it was impossible for a person to make rational decisions for him/herself (Bellamy 1993). However, alongside a growing concern of the powerlessness of the individual, came the idea of the computer as an angel in disguise. In the US one has turned to this device as a means for the individual to reclaim control and act upon its civil rights. As we shall see in the next chapter, computers are often promoted as enabling the user to access vast amounts of information. An underlying assumption of classic liberalism is that information allows for rational and informed choices, and is therefore a necessity for full and equal participation in society. Computer technology is seen as a tool capable of empowering the individual, as it enables people to access the information they want or need, regardless of socio-economic status. It is also argued that this technology can reinvigorate the democratic process, as it allows for easier ways for people to participate directly (e.g. vote online) or express their views in an efficient and concrete way (e.g. e-mail a politician). However, these arguments have been criticized. For example, they tend to overlook the fact that access to IT and the necessary skills to use it often follow socio-economic divisions in wider society. There are also fears that the computer has in fact been a main contributor in the development of bureaucracy and “information overload”, making our lives more complicated rather than easier. One of the main concerns in the US, however, has to do with privacy. Increased computerization is viewed as a threat towards individual privacy, as it provides government and other institutions the means to closely monitor, and therefore control, its citizens.

As many Americans view information technology as an instrument that promotes and symbolizes individual freedom, it is no wonder that widespread use and distribution of computer technology is encouraged in this country. Optimistic discourses concerning IT have eagerly embraced these arguments, claiming that the use of computers will contribute to the continuing existence of democracy and human rights. One might therefore say that these discourses reinforce and “feed” off each other, in a continuous spiral of exchange. However, the United States is not the only country with a political climate that nourishes a positive attitude towards information technology. The common liberal roots of the Western world have ensured that optimistic discourses are dominant in public discussions of computer technology. This is also the case in Norway, but this country’s version of liberal values has led to a slightly more skeptical attitude towards information technology.

3.2.2 Norwegian Collectivism, or “Egalitarian Individualism”

Even though classic liberalism is to a certain extent the base of all political ideas in Europe and Northern America, there is still considerable disagreement between states as to what individual liberty actually involves and how it can be expanded equally for all. As the Norwegian anthropologist Marianne Gullestad states: “(...) people living in different regions may give the same central notions a slightly different emphasis and content.” (1992:183). In her book “The Art of Social Relations: Essays on Culture, Social Action and Everyday Life in Modern Norway” (1992), she explores the some central characteristics of Norwegian culture. Of relevance here is her discussion of how Norwegians understand “individualism”, as opposed to, for example, the American understanding of the term. Gullestad claims that Norwegian culture is fundamentally individualistic in the sense that independence is highly valued, but that their individualism coexists with a strong emphasis on equality defined as *sameness*, i.e. being and doing the same (Ibid.). Whereas equality in the United States means equal opportunity, equality in Norway emphasizes a collective similarity in social life, as differences are perceived as unwanted hierarchy and injustice. Gullestad links these different perceptions of individualism with the conceptualization of society:

“(...) the basic social ideology of Norway seems to imply that society is regarded as a moral totality of stable norms which all citizens have a similar responsibility. This stands, for example, in partial contrast to the American view of society as a more casual product of the mobile competition between equal individuals.” (Ibid.:197)

One might argue that Gullestad’s notion of “egalitarian individualism” is an oversimplification. Taken at face value, it might give the impression that Norway is a homogenous society, with less internal differences than other countries. This is only true to a certain extent. Despite the fact that Norway only has 4.5 million inhabitants, it is quite possible to find large differences between people in terms of lifestyle, material resources etc. However, Gullestad does not claim that every Norwegian is the same. She merely points out that “sameness” as an idea or value is important, as Norwegians have a tendency to ignore differences and emphasize similarities during interactions with others (Ibid.). As a result, Norwegians might experience their country as relatively undifferentiated, even though this is not necessarily the case.

As in the US, the ideas Norwegians have of the relationship between the individual and society are mirrored in their political institutions. Norway is frequently described as a *social*

democracy, a political system based on the idea that it is morally correct for the state apparatus to be responsible for some of the basic needs of society, ensuring all citizens equal access to services such as: education for children, healthcare, care for the elderly. A necessary consequence of this is a highly centralized political system, to ensure redistribution of society's wealth. The reasoning behind this type of political organization is that an active interventionist state is thought to be able to overcome cyclical instabilities of capitalism and to curtail the negative side-effects of unrestricted individualism (Write 1993).

Norway has, as the rest of the Western world, embraced what are seen as the “liberal” qualities of the computer. The optimistic discourses relating to its potential for reinvigorating the democratic process, and for empowering the individual are frequently part of the public debate. That said, it is also true that other aspects of its use are contested, and that the objections are related to collectivistic ideas. An example is the ongoing discussion regarding free speech on the internet. In Norway free speech on the internet is encouraged and supported, but not at all costs. As in “real life”, encouraging illegal activities or storage of illegal material (e.g. child pornography) on websites are a target of Norwegian law and can be shut down (if contained on computer servers in Norway, that is), not to mention that the producers of such websites can be fined or sentenced to time in prison. One finds similar debates in the United States, but here one is much more reluctant to in any way limit the right to “free speech”, a right which is upheld by the US Constitution¹⁵. It is therefore quite possible to find websites in the US that would be considered illegal in Norway – a telling example of how the use of IT is influenced by how these respective countries choose to balance state intervention and individual freedom.

The ideas people have about information technology can vary, and we have seen how the course these discourses take can in some ways be conditioned by particular values within political landscapes and frameworks. However, it is important to emphasize that these are not just processes that take place in the world of thought and theory, but are present in everyday life. The line between thought and action is a blurry one, some would say that they cannot be separated – they are intertwined in an inseparable spiral of mutual influence. Therefore, one should also take into account that the applied, practical actions following from certain policies will also feed into the actual use of computer technology. In the following comparison of the

¹⁵ Free speech, a free press, freedom of religion, assembly etc. are ensured through the “Bill of Rights”, as stated by the American Constitution (MacQueen 1991).

Norwegian and American school systems, it becomes clear how certain political ideas and policies can set the stage for how information technology is acquired, implemented and related to.

3.3 Same Problem, Different Solutions: The Norwegian and American School Systems

The comparison of the two school systems is mainly based on my own experiences as a pupil in Norwegian schools, and my fieldwork at Columbus elementary school¹⁶. Perhaps the easiest way to start off such a comparison is to point out their similarities, for there are indeed similarities. First, and perhaps most importantly, both countries view the school system as a fundamental institution. It provides what is seen as basic knowledge necessary for an individual to cope in today's society, while at the same time ensuring that society obtains the competence it needs for its existence. Schools in both countries are also important for what one might term as the "socialization" of its citizens. Although this function is rarely an explicit issue in public debates, schools are one of the most central instruments that states have to promote and teach certain values and ideas. The fact that the large majority of a country's population is exposed to the same worldviews creates a common bond and sense of identity, contributing to the internal stability and perpetuation of its existence. As such, Hannerz argues that one might term such educational systems as a "cultural apparatus", which he defines as: "(...) all those specializations within the division of labor which somehow aim at affecting minds, temporarily or in an enduring fashion; the people and institutions whose main purpose it is to meddle with our consciousness." (1992:83). Therefore, such relationships are characteristically asymmetrical, i.e. they involve a provision of meaning from the few to the many.

There are, however, large differences in the specific content of the values and ideas circulating in these two school systems, depending on the country's socio-political characteristics. One might therefore conclude that the similarities are limited to goals (socialize citizens) and form (children spend their days in class, have specific subjects, timetables, curriculum etc.). However, with the onset 1990's, the idea of bringing computers into schools became a central issue in public debate, at least in the Western hemisphere.

¹⁶ Although I should mention that I did attend American schools until the age of seven.

Norway and the United States were no exception, and on both sides of the Atlantic educational departments have struggled to outline guidelines for the introduction of information technology into their respective school systems. As such, these political systems have declared that access to and use of this technology is of value for their children, and that the school system should take responsibility for making sure that all children are exposed to it. Both countries also seem to be remarkably similar in their motives for wanting computers in their schools. Not only are computers seen as instruments promoting the very values their political systems are built on, but they are also thought to help ensure a country's future prosperity. Computer skills are viewed as a necessity for competing in tomorrow's global economy, so teaching the future workforce how to use IT is argued to be a wise investment. However, as we shall see in a moment, how these two school systems have dealt with the actual introduction of information technology into their schools has varied due to the presence of their respective collectivistic and individualistic ideas.

3.3.1 The Norwegian School System

Some of the major differences between school systems are a direct consequence of political ideologies, i.e. the presence of the central government in the everyday life of its citizens. Not only is the "political makeup" of the country we live in central to people's sense of identity, it also sets limits and provides opportunities for how we live our lives (Hannerz 1992). Even though there is a certain degree of de-centralization in Norway, as regions and local communities have limited self-rule, the state has main authority in many issues – including education. This is clearly stated on the website of the Department of Education:

"Parliament and the government set the goals and standards for education. The Department of Education (KUF) is the head of administration for the educational system, and is responsible for implementing national school policies. A common standard is secured through national laws and a national curriculum."¹⁷
(Author's translation) (www.odin.dep.no/kuf)

Such centralization is, in several ways, highly visible in the Norwegian school system. Perhaps the most obvious aspect is the fact that the school system consists to a large degree of public schools; the number of private schools is very low compared to other countries. The public schools receive most of their resources from the central administration, with additional

¹⁷ Original text is in Norwegian: "Det er Stortinget og regjeringen som utformer målene og vedtar rammene for utdanningen. Kirke-, utdannings-, og forskningsdepartementet (KUF) som er landets øverste forvaltningsorgan for skole og utdanning, har ansvaret for å gjennomføre den nasjonale skolepolitikken. En felles standard blir sikret gjennom lover, forskrifter og læreplaner."

funds provided by their respective local communities. In 1997 Norway spent 6,8% of its national budget on education, a number which is quite high compared to the 4,9% average spent by other OECD countries (Ibid.). Furthermore, Norway has an official state religion, Christian Protestantism. As a result, Christianity is a mandatory subject for all Norwegian students. There is also a national curriculum containing certain standards all public schools must follow. Even the values emphasized in schools are similar, as they reflect a social democratic ideology, with a strong focus on fairness and equality. However, it should be mentioned that a considerable degree of decentralization has taken place within the Norwegian school system in recent years. Consequently, schools and teachers now have the opportunity to influence what is taught and how things are taught, but must still take into account the rules and regulations set forth as a framework by the central government.

As a result of parent demands and strong government recommendations, teaching computer skills has become a priority in Norwegian schools. For example, a number of plans for the introduction of IT into the Norwegian school system were made during the 1990's. The most recent of these plans is aimed at the 2000-03 period, and is meant to provide guidelines for how schools should spend their part of the 757 million NOK set aside by the government for such purposes (Ibid.). The main goal stated in these plans is to ensure a population of skilled and competent IT users, so that Norway does not lag behind in what is seen as the new global and "digital" economy. Unfortunately, there is one major obstacle to the achievement of this goal, namely money. Even though the mentioned sum may seem substantial, it is estimated that it will not be enough to ensure a new generation of tech-savvy Norwegians. All in all, public schools have not been able to avoid the fate of other governmental institutions, where the reduction of funds seems to have become a yearly ritual. Since the situation is similar in many local communities, attempts to pass this responsibility over on lower levels of administration have been futile.

What is the solution to this problem? For some time now, the government has set its eyes on the private sector. The department of education has encouraged all companies in Norway to donate used computers to local schools. At first glance, this seems like an excellent idea. Since government cannot handle this task alone, they ask for help from other parts of society. However, this plan has not produced the results one was hoping for. Although some donations have been made, they have not been nearly enough to meet the demand, and have not matched the number of computers that were being replaced in businesses each year. One might ask:

what about the parents? After all, they have often been heard voicing demands for computers in schools – how have they reacted to the lack of action on behalf of government and private corporations? The truth is they have not reacted, at least on a large scale. We have read in the newspapers about parents that have raised money for computers, but this is the exception rather than the rule. Given the political culture in Norway, it should not come as a surprise. Businesses and parents cannot be accused of being lazy or greedy, they are just reaffirming the social democratic principle of the state taking full responsibility for certain societal tasks. As a consequence, it is taken for granted that the central government should be responsible for providing schools with computers (especially since Norway is one of the richest nations in the world). In the meantime, schools are left “sitting on the fence” while they wait for someone to take responsibility for the full realization of society’s IT dream. Although the situation might seem bleak, close to 80% of high school students in this country have access to computers at their school, which is quite high compared to other countries. However, these numbers say nothing about the age of the computer equipment, teacher and student skills etc. Further, the younger a student in Norway is, the less likely it is that he/she has access to this technology at school. For example, only half of elementary school students have the opportunity to use computers at their school (Ibid.).

Unfortunately, my experiences with information technology in the Norwegian school system ends here, as computers were not a major issue when I was in school, nor have I conducted fieldwork in these schools. It is therefore not possible for me to provide an empirical example of how political ideologies have influenced actual implementation of and attitudes towards this technology within a Norwegian school. However, I do so in the following discussion of the American school system.

3.3.2 The American School System

The United States is a federation, unified by a central government. The union consists of fifty states, and each of these is independently responsible for all functions of government not explicitly appointed to the federal government in the Constitution (MacQueen 1991). This independence, combined with variations in geography, climate and population size, has led to large differences between individual states with regards to state laws and economy. These differences are reflected in the school system, as education is mainly considered to be a state and local matter. On the federal level, the Department of Education generally has only advisory and service functions. Elementary and Secondary schools are run by locally elected

authorities (school boards), which are bound to follow broad guidelines from an elected state board of education, but most decisions are made at the local level. The federal government provides approximately 6% of all funding for schools, but schools are mainly dependent on funding from the local economy (usually through a special property tax) and the state they are situated in (Ibid.).

The extent of political decentralization in the United States is closely related to their specific form of individualism. The embracement of individualism is reflected in the “invisibility” of the federal government in the day-to-day routine of most people, and schools are no exception. For example, there is no “national curriculum” in a strict sense, only federal recommendations and guidelines. Further, religion is not included in the public school system (neither as lessons nor as holidays), as there is no official state religion. Instead, most schools have their students recite the “Pledge of Allegiance” every morning, where they promise loyalty to the US flag. However, there are many similarities between schools with regards to form, i.e. the structuring of levels in the school system¹⁸. I also argue that there are similarities in the values and ideals promoted in public schools, such as leadership, self-reliance and social responsibility.

Like Norway, the US has emphasized the importance that their children learn to use computers, and that schools should take part of the responsibility of ensuring access for all children, regardless of socio-economic status. These arguments are given a boost by the fact that the US has always been, and still is, a leading country when it comes to developing and using information technology. The school where I conducted fieldwork is in the state of Maine, and like most other states they have taken notice of these attitudes and messages regarding IT. The Maine Department of Education has recently developed the *Maine Goals 2000 Statewide Education Technology Plan* (the term *technology* refers to computer technology); the primary purpose of this plan is “(...) to improve student performance and enhance the teaching/learning process through the effective use of technology.” (Executive Summary), i.e. to integrate IT into educational settings (www.state.me.us/education/). This means using such technology as a tool for assisting and strengthening learning processes, rather than focusing on the computer as an isolated object. Another important reason given for developing such a plan is that one assumes that the demand for technologically literate

¹⁸ These levels are usually kindergarten, elementary school, middle school and high school.

workers will increase dramatically in the future, and that producing workers with such skills will create a promising climate for economic development in Maine. To help realize this plan, the department has created the *Maine Goals 2000 Technology Task Force* (formed fall 1994), whose main tasks are to continuously assess the current status of IT in the public school system, and to recommend changes or further developments. Recent findings of the task force include:

- Currently there is little systematic integration of technology tools in the teaching and learning processes.
- The current level of human resources and professional development to support effective technology practice in the schools is inadequate.
- There is a considerable lack of equity in the distribution of and access to technology resources across Maine schools.
- Local school districts lack sufficient funding to significantly increase the effective use of technology for teaching, learning and instructional management. (Ibid.)

Based on these findings, some of the task force recommendations are:

- Technology should be used throughout the curriculum as a tool in the hands of learners in order to maximize their potential learning results.
- Educators must be provided with the training, equipment, time, and ongoing support to enable them to use technology in their work.
- Local education agencies are responsible for comprehensive technology planning.
- Funding for technology and its application must be an essential priority at the state and local levels. (Ibid.)

Of these recommendations one might say that funding is the most crucial, and it has also turned out to be the most problematic. The Departments of Education on a state and federal level have been very productive in coming up with guidelines and recommendations for IT implementation, but funds for such projects are limited. This is related to the current economic crisis in the entire public educational system; the US spends approximately 4% of its gross national product on education, ranking 14th out of 16 industrialized countries (MacQueen 1991). The IT industry has been particularly worried about this situation, as they find it increasingly difficult to recruit properly qualified workers. As a result of these

developments, they have started donating money and equipment to schools at all levels, with the dual purpose of doing good and establishing their products.

This said, many local school districts have answered the challenge of obtaining computers for their schools; in 1999 63% of US classrooms were connected to the internet (www.ed.gov/Technology/goals.htm). However, it should be kept in mind that there are still large differences between what one defines as “high poverty” and “low poverty schools” – the percentage of internet connections are 39% and 74% respectively (Ibid.).

3.3.2.1 How Does a Small American Town Deal With These Challenges?

Schools that have struggled most in their attempt to acquire IT equipment are the ones that have not received company donations, and are situated in economically disadvantaged states. Maine is one such state – with its main industries being tourism, agriculture, fishing and manufacturing, it is relatively poor compared to the other New England states. The schools in Columbus have been hit hard financially twice, since they are situated in a poor state *and* a town struggling economically. Columbus has mainly been able to stay “afloat” thanks to its geographical location. It is a busy port of entry to the United States on the Canadian border, which creates a cash-flow based on tourism, the transportation of goods and Canadians coming across the border to shop due to a lower sales-tax. Even so, the school system in this town is going through the same crisis as other schools across the US, a point that was aptly illustrated during my fieldwork period. At the time there was a huge debate regarding the fate of the middle school building. It had fallen into such a state of disrepair that it was condemned, so the school board had to decide whether to immediately build a new school or place the students in temporary locations. Eventually they decided on temporary locations for an indefinite period of time, since this was the least expensive alternative.

With such economic and political realities, the elementary school has more than enough to worry about in terms of getting enough funds for basic school equipment and teacher salaries. A situation like this does not allow computer acquisition to be a priority. However, the town of Columbus has responded to the message stating that it is important for their children to start using computers at an early age. A few enthusiastic individuals started a fundraiser so the elementary school would be able to buy computers. The money raised was mostly from individual donations, meaning that many of the town’s 4000 inhabitants had contributed. Thanks to the fundraiser, the elementary school was able to buy eight up-to-date computers

for the library and one for each classroom. The downside to such fundraisers is that they are usually only sufficient for one-time purchases. For example, there is no money for training the teachers how to actually use this technology, or for professional maintenance of the computers.

This fundraiser expressed a value related to American individualism: community spirit. In the United States, the expression “community spirit” is often used to indicate a positive common bond of identity between inhabitants of a certain small scale social unit, most often a geographical area such as a neighborhood, town etc. A “strong community spirit” has a positive ring to it, as it indicates that the community is important to its members, and that they are willing to contribute to the continuation of its existence. This emphasis on the community can be seen as a way of compensating for the lack of federal government involvement in people’s everyday lives. In the US it is not taken for granted that public officials will step in every time a local problem must be solved, so people are used to taking care of pertinent issues themselves. In Columbus one of the most common ways to contribute to the community is through unpaid volunteer work, which usually involves performing a task that is in some way beneficial to town members. The fundraiser is only one instance of such work, other examples are that volunteers are responsible for running the elementary school library and several youth sports teams.

Summing up, there seems to be noticeable differences in how Norway and the United States have dealt with the implementation of IT into their schools, depending on the dominant political ideology of the country in question. The relationship between the state framework and local communities are clearly different in Norway and the US, with the local proving more dominant in certain situations in the latter country. Despite that both central governments have claimed the importance that their young citizens learn to use computers, certain worldviews and the practical consequences of such views have set the stage for very different ways of dealing with this challenge. However, as I discuss in the next section, the computer is not just a passive device being defined in different ways as a result of various worldviews. It is also used in an active way to reproduce and promote certain dominant discourses in American society, most noticeably their specific form of individualism.

3.4 The Use of IT as a Tool for the Reproduction of Cultural Values

The principles of individualism are taught to American school children in several ways, some more easily revealed than others. The most obvious evidence of these values is the institutionalized practice of grading, where students from a young age are given a “score” on a scale from A (top grade) to F (failed), according to what they have been able to achieve throughout the school year. This method for evaluating students is common in all types of institutionalized education, and is therefore not unique for the American school system. However, in addition to grading, there was one other way of acknowledging individual achievement at the elementary school that I have never experienced in a Norwegian school. At the end of each school year, the school arranges a “diploma ceremony”, which proceeds in the following way: the whole school is gathered in the school gym, and one by one (starting with the first graders) each teacher distributes diplomas and awards to the students in her/his class that have earned them. Diplomas are given for all sorts of reasons, not just outstanding academic skills. For example, one second grade student was given a diploma for being helpful and kind to her fellow students, while another was given one since he had made such progress in his reading skills during the past year. Each student that is awarded a diploma must walk up to the teacher to receive it, while receiving a roaring applause from the other students and teachers. It is not hard to imagine the effect this “ritual” can have on someone’s self-confidence, and it was often used as a way to motivate a child that was struggling in some way – positive reinforcement, so to speak. The underlying message of this ceremony was clear: if you work hard, and never give up, you will obtain results to show for it.

However, these values were also communicated to the children in less obvious ways, such as during their use of computers.

3.4.1 “Hurray, I Won!”

I find it highly unlikely that the children at the elementary school consciously considered that their use of computers promoted “personal freedom” and “independence”, as the optimistic discourses might claim. However, the computers did function as a vehicle that enabled the children to learn, reproduce and assert these values.

I observed three types of situations involving information technology that provided the opportunity for the school children to act out and reinforce the above values, and the common ingredient for all of them was *competition*. Two of these situations were teacher initiated and

controlled, the first of which was a book test. All the computers in the classrooms were installed with a program that could test a child on a book he or she had read, usually a library book. My first encounter with this program was when I met the third grade class of Mrs. Brown, one of the two classes I spent most of my time with. The teacher of this class knew very little about computers, something she often would comment on. In fact, I rarely saw her even touch a computer; if it was necessary to use one she would get help from someone else. However, she never discouraged the children from using it, and was one of the teachers that most often had her children take the mentioned book test. One of the first days I was with them in the library I was asked if I would like to accompany a girl, Erin, to their homeroom as she was going to take the readers test. The test involved answering several questions (multiple-choice type) about a specific book. Depending on how many questions were answered correctly and what type of book it was, the student was awarded with a certain amount of points. The computer program would keep a record of the books each child had read, how many tests they had passed/failed, and how many points were earned. These records were usually printed out for the children to take home to their parents. It quickly became clear that these programs were more than a vehicle for learning. Almost every time a child had successfully finished a test he/she would run back to the library to tell the teacher and classmates what they had accomplished, and they would almost without exception receive praise from one person or the other. However, individual praise was not the only goal. At the end of the school year, the students and classes with the most points would be rewarded in some way, sparking intense competition in the race to read the most books.

The second situation that caught my interest involved the use of a program called “Swift Talking Typing Tutor.” When I first started out my fieldwork, a fifth grade teacher, Mrs. Driscoll, had started teaching all the fifth graders how to type on the computers. Her students were usually told to type homework that was handwritten first, or she would dictate things for them to type. After a couple of months she installed a program on the library’s computers that was designed to help people learn how to type. The first time they used this program, the students had to sit in pairs, and the first one out of each pair was told to enter their name and go to lesson one. The goal was to type on the real keyboard the letters that lit up (and were spoken by the computer) on the onscreen keyboard. The students started lesson one, but it took a while for them to get used to it. One boy blurted out: “I hate this. It’s too hard.” while the girl next to him said in response: “This thing is getting me confused. It’s making me dizzy.” However, Mrs. Driscoll (or “Mrs. D.”, as she was called by the children) later asked

them if the program was more fun than her telling them what to type, and they all said yes, definitely. The boys were slower at typing than the girls, but both sexes seemed to have trouble trying to type without looking at the keyboard (I think some found it hard enough to spell the words correctly). When they were finished with the first lesson, they were told to proceed to lesson two. After a few weeks, when the children had gone through a few lessons, Mrs. Driscoll told them that they were going to take a test on the Typing Tutor. Half of her class went on the computers, while the rest anxiously waited for their turn. The test consisted of them copying texts in a box above where they typed. The room was very quiet, and all of the children on the computers were very concentrated. One girl was frustrated that things were moving slowly, and said to Mrs. Driscoll: "I don't like this. The computer doesn't like me!" When the test was done, the program gave statistics on how many mistakes they had made and how many words they had typed per minute. The teacher made a note of this before the children switched places with their partners. When they were all finished they went around comparing "scores", and declaring themselves "winner" if they beat the others. One might add that after using this program a few times under the instruction of the teacher, many of the children would choose to use it on their own initiative, when given a free choice of programs. They would compare which level they were on, and discuss how hard and long a lesson was.

Last, but not least, the children's competitive behavior and their wish to excel was often expressed in computer activities they chose for themselves. The library had a shelf with various types of computer software, and most of the teachers would let their pupils use these programs during computer classes. Many of these programs were so-called "edutainment" programs, which have two goals: keep the user entertained, while at the same time allowing the user to acquire new skills. The appearance and content of the computer programs varied according to the age-group they were aiming at, but they were all basically designed to resemble *computer games*. The reason for this is quite obvious – children use and enjoy computers by playing games on them. By designing the programs with colors, sounds, movement and tasks that provide the opportunity to "win", one hopes that the child will stay interested enough to learn something, whether that is reading, writing, math, geography etc. The wish that the children would acquire "useful" knowledge while using the computers was one of the main reasons the school had purchased such programs; indeed, there were very few programs at the elementary school that were purely for "fun". Whether this goal was achieved is very hard to assess, but I can without a doubt conclude that the children found them very entertaining. When they had chosen a program to use in computer class, most of them were

completely engrossed with it till the school bell rang for recess. However, what I found most interesting was the importance they placed on winning, and on communicating their win to others:

“I decided to sit in with Mrs. Smith’s first grade class. As usual they are all using “Jump Start First Grade”, and are sitting in pairs at the computers. I say hi to Mrs. Smith, who is sitting at a table reading a book with a student. I then say hi to some of the children, and sit down next to Jim and David. They barely seem to notice that I’m there; they seem very concentrated on what is happening on the screen. David is in control of the mouse, and is trying to decide which room to enter in the on-screen school house. He starts discussing with his partner whether they should “go” into the cafeteria or to the art room where they can color some pictures. They decide for the cafeteria, and the “guide” (a dog) tells them what to do. Onscreen cartoon children start lining up in front of Jim and David’s counter, and they have to add what each person has to pay according to what they have on their trays. The boys take their time, but are usually able to add together the correct amount. After ten or so trays, the dog says something like “Hurray! You did it! You got them all right!!” and Jim and David start shouting in excitement: “We did it! We’re the best! We won!” David runs over to some of the other children to declare his victory, and they ask what game David had done. David tells them, and decides to see if they can do the same. Others are so occupied with what they are doing that they don’t notice the commotion. The boys run up to their teacher to tell her the good news, and she says that she is very proud of them.”

This pattern of using the computer programs as ways of promoting one’s personal capabilities was present in every class I was with, even though the tendency would, of course, differ from child to child. For example, boys would at times seem slightly more competitive than girls, but this was not always the case. Also, some children did not communicate their win to others – they just quietly noted that they had succeeded in their task, and moved on to the next challenge. However, over and over I observed children seek out acknowledgement from others (teachers, peers and myself) based on what they had achieved by using these programs. As such, the computer became a tool they used to become “no.1” in the social world of the elementary school. The desire to be the best is of course linked to how social worth is defined in American society. To a large extent success is measured in terms of individual

achievement, i.e. one is successful if one exceeds other individuals in some way, whether that be in terms of money, looks, intelligence etc. By using the computers to achieve such ends, the children were in effect reproducing and reaffirming the specific type of individualism that is unique to American culture.

3.5 Summary

In this chapter I have traced the origins of IT discourses, as a way of illustrating that current ideas and understandings of computer technology are not as new as we may think. Indeed, mankind has expressed similar thoughts since the beginnings of the industrial revolution, when machine technology first became a noticeable presence in many people's lives. In addition, I have discussed how IT discourses are constrained and influenced by the relation they have to certain political discourses. This relationship will, in effect, set the stage for how computer technology is actually used and implemented in everyday life. However, as I have also shown, computers are not only acted upon, but are also used as tools to reproduce and act out such discourses.

Now that I have clarified the historical and current circumstances of IT discourses, it is time to ask: What are these discourses telling us? What are their messages, who is producing them and for what purpose? The answers to these questions unfold in chapter four.

4 Exploring the Discursive Order of IT Discourses

“Consumption of new material objects such as PCs, CD-ROMS, modems, scanners and digital cameras is an economic phenomenon, entering the cycle of economic exchange. But consumption is also a cultural phenomenon, entering the cycle of symbolic exchange that is contemporary consumer culture.” “(...) What has been popularized as “the information superhighway” is at once a material, discursive and social construction fashioned by a number of influences: global capitalism, global and national culture industries, government policy and cultural practices.” (Nixon 1998:25&21)

It is now time to explore what IT discourses are actually telling us, and how they want us to perceive information technology. Unfortunately, mapping out the discursive order of computer technology is not an easy job. As many other aspects of our world, the computer is the site of continual cultural struggle over its meaning and appropriate uses (Murdock et al. 1992). When taking a closer look at the universe of meaning surrounding computer technology, one is struck with how diverse the messages are. Indeed, many of them directly contradict one another. Also, it is not always clear who is saying what about information technology, for what purpose, or in what ways the messages are interpreted. However, one certainty is that *children* are a frequent focus of IT discourses. As Sefton-Green (1998) has pointed out, children and new technology are terms often yoked together in discussions about the nature of contemporary social change, precisely because they both embody similar teleological assumptions about growth, progression and development which underpin late modern society. We are also being told that children are “born to use computers”. At the same time, computers are depicted as being harmful to a child if it is “overexposed” to this technology. One is tempted to ask: who is to say exactly what is a “negative” or a “positive” effect of IT? Are these statements “facts” or ideological constructs?

One might argue that these discourses reflect changing realities, but mostly they are bound up with much broader ideological, moral and social motivations (Ibid.). Therefore, when discussing these various contradictory public discourses and their interplay with the members of the elementary school, there are a number of questions which are important to ask. An obvious and basic question is: What are these discourses saying, i.e. what are their *messages*? However, this question cannot be answered without taking issue with related questions, such as: What are the *sources* of these discourses? After all, they do not appear out of thin air; someone has thought them out and made them public, in one way or another. Also: What are the *goals* and *motivations* of these sources, i.e. what does one hope to achieve with these

various discourses? As we will see, the goals are as varied as the messages depending on where they originate.

If we take as our starting point the messages (i.e. the discourses themselves), a pattern quickly emerges. As explained in the previous chapter, one finds that discourses about information technology often divide themselves into the dichotomy of optimists, which claim that computers are beneficial to mankind – a tool for providing modernization and progress, and pessimists, who see computer technology as promoting a de-humanized society. This may seem as an oversimplification, but I hope to show that the categories of “pessimists” and “optimists” are useful analytical tools, especially when exploring the messages regarding the relationship between children and IT. For example, one finds that they are often described in terms of binary oppositions, e.g. children as pure and tainted, ignorant and intuitive; technology as fragmenting society and uniting it, destroying education or re-making it, transforming culture or conferring privilege on a few (Ibid.). These binary oppositions nicely capture the essence of the pessimistic/optimistic polarity.

This chapter is mainly structured according to what I consider to be the main sources of IT meanings: the producers and developers of computer hardware and software, academia, and the media. As we shall see, these sources largely coincide with specific social landscapes and frameworks, as defined by Appadurai and Hannerz. I conclude this chapter with a discussion of the ongoing struggle between these discourses, in an attempt to assess which of them are “winning” this battle, at least at the elementary school.

4.1 Producers and Developers of Information Technology

“The optimistic belief in the future, so common among romantic engineers, is in marked contrast to the ambivalence and pessimism often found among social theorists and philosophers. (...) a view of technology as a force out of control, as a human creation coming to haunt its creator. Humankind becomes the victim of the designs of the few.”
(Lie et al. 1996:6)

The above quote is an oversimplification; not all social theorists and philosophers are pessimistic in their views of IT. However, I do agree that one can link an optimistic outlook with the IT industry. In fact, I would say that the developers and producers of computer hardware and software are some of the main contributors to the optimistic discourses. This

contribution is considerable, and has gained strength through the IT industry's participation in global "finanscapes" (Appadurai 1990) and "market frameworks" (Hannerz 1992), terms which both refer to the global flow of capital. The IT industry's products and rhetoric seep into our lives as they flow through these constellations, which most of us must relate to on a daily basis, whether we want to or not. The industry gains additional strength by the fact that their hardware and software products are the building blocks of "technoscapes". According to Appadurai (Ibid.), "technoscapes" are fluid and global configurations of technology that move at high speed across any geographical boundary. Without geographical limitations, and with economic power achieved through the global capitalistic market, the IT industry has become a noticeable force in Western societies.

The computer industry aims at selling its products to two societal segments: the business world and the individual, private home. Helen Nixon (1998) describes in "Digital Diversions" how these groups are sought out by transnational conglomerates who construct and market futuristic visions and the technologies likely to realize them. In these "futuristic visions" we will often find traces of the deterministic discourses discussed in the previous chapter. It is argued that information technology will create and be an integral part of tomorrow's society, whether we like it or not. However, computer technology is not only seen as creating the new world of tomorrow, but also as providing the tools necessary to be able to survive in this world. As such, they play on the fears people might have of not being able to keep up with what is said to be a society changing at an accelerated pace (Picture 1).

The most prominent message sent out by the industry is that IT is *empowering*. As other types of technology, it is a means to manage more than can be achieved by pure manpower (Picture 2). The arguments supporting this message are somewhat different depending on whether they are aimed at businesses or individuals, but are in many cases overlapping. For example, computers are said to be empowering for a company in the sense that they can perform complicated tasks quickly and reliably, without the risk of human error. For this same reason it is also often suggested that a computer can replace a number of employees, thereby cutting costs and increasing a company's profits. Access to information is another important sales pitch. The IT industry argues that by gaining access to relevant information before other companies, it will ensure a competitive edge. Unlimited access to information is also an argument aimed at the individual, as it is said that use of a computer ensures personal freedom

and creativity (Picture 3). The computer is said to be an extension of “the self”, providing unlimited opportunities for individual growth and self-sufficiency.

At some level, these discourses are clearly being taken seriously. The computer industry is to date a multi-billion dollar industry, fueled on people agreeing with the image that in some way or other “computers are beneficial for you, your family and/or business”. Related to this glorification of the various qualities of computer technology is the industry’s self-promotion. The constant reaffirming of the importance of IT has created a feedback “loop” where the producers and developers of hardware and software have been given an artificially high status in Western society. The inflated salaries of many computer engineers are an example of these processes. Therefore, it is not hard to imagine the computer industry’s motivation for wanting their perspectives to be generally accepted as “true”, namely substantial socio-economical benefits.

4.1.1 Children as a Target Group

Within the flow of discourses streaming out from the computer industry we find messages not only aimed at businesses and individual adults, but also at children. The main use of computers by children is for games, and this is a use that is heavily encouraged and reinforced by the creators of computer game software. Games and the computers they run on are depicted as “cool”, “fun” and “exciting”, while at the same time offering challenges to a child’s game-playing skills (Picture 4). The children at Columbus elementary school had clearly appropriated these discourses, and would often seem to re-enforce them. While the younger children using the “Jump Start” programs would quickly figure out which “rooms” in the application contained game-like features, the older children, when given a choice of programs, would often chose those resembling games:

“Mrs. Lyon’s class (third grade): All 14 of her students come storming into the library, and wait eagerly for their teacher to come in and tell them which half of the class gets to go on the computers first. When Mrs. Lyon comes in with the parent assistant Mrs. Collin, she tells them who is to do library, and who can go on the computers. The seven kids that are to go on the computers let out small squeals of delight, and rush over to the shelf containing the computer programs. There is a short struggle between Tom and Andy as they have picked the same program, but they decide that they’ll use it together instead of wasting time fighting over it (which is a

real concern for them since these kids only get a total of 40 minutes computer time each week). Another pair of boys had already decided to share a computer, but have a long discussion on what program to pick. They end up choosing “Math Blaster”, “Cause it’s most like a game” as Steven tells me. “Math Blaster” is designed with a space setting, and the kids are supposed to choose the correct answer to a math problem by “shooting” it. The two boys using it are very excited and noisy as they decide what to target and shoot on the screen. I ask them if they wouldn’t rather use the computer to type home work, and they both give me a weird look stating matter-of-factly: “Computers are best for playing games. Anyway, how often do we get to play games in school?””

There are three particularly noticeable trends in the discourses connecting children and computers. The first of these has become so widespread and taken for granted that it seems to have become common-sense knowledge: the idea that children have a *natural talent* for using computer technology (Pictures 5 & 6). It is said that in some mysterious way they are born with the necessary skills to use a computer, as if they have an inert understanding of IT. Anyone who has studied a child using a computer for the first time (including myself) can dispel this myth. A child is no better equipped than an adult to “figure out” a computer on its own. However, a child might accomplish more than an adult through its qualities of fearlessness and curiosity, qualities a techno-phobic adult lacks when dealing with information technology. An example of is the first grade class of Mrs. Smith. When I first met them they had only tried out the new computers a couple of times. Mrs. Smith said to me “I don’t really know how to use computers”, while at the same time emphasizing that she thought the students managed fine without her help. Her students seemed to have understood that their teacher was not of much help with computers, as the only time I observed them seeking contact with Mrs. Smith was when they had “won” and sought her praise. Lack of teacher instruction did not, however, seem to slow the children down. They were very energetic in their use of the program “Jump Start First Grade”, and were not afraid to explore by clicking on different images or trying out different levels.

However, I am quite sure that the benefits from using the program were limited for these children, due to the lack of adult guidance. Even though they were obviously entertained by the images and sounds, most of the mouse clicking was random, and none of the children seemed quite sure what the purpose of the different tasks were, nor how to perform a certain

task. I observed this same pattern in all classes without a computer-competent teacher, with the exception of children who had acquired computer skills from friends or family. Therefore, in my experience, the claim that children are born with an innate understanding of information technology is a myth, not a reality. Even so, it seems that the myth has kept its hold on people, placing parents in a peculiar situation: on the one hand they are encouraged by the computer industry to buy a computer, but at the same time they are constructed as reluctant to do so since they are outmatched by their children with respect to computer competence. A generational gap is first constructed and then enlisted as a marketing tool to convince parents to “keep up” with the younger generation (Nixon 1998).

The second trend found in IT discourses aimed at children is the undeniable emphasis on *masculinity*. Even though it is said that children in general have a special understanding of IT, this is assumed to be a given for a *male* child. According to Merete Lie (1996), a classic image of masculinity is connected partly to the mastery of machines, which has in recent times been extended to include computer technology. The link between men and technology has been strengthened by the association of the two with “scientific-rationality”. Technology is seen as the result and expression of scientific/rational thinking, and men are viewed as having their strength in this type of reasoning, as opposed to “emotional” women. The strength of this image in the general population is clearly illustrated by the US labor market, where women make up only 20 % of the high-tech workforce (www.cnn.com - 12.04.00). The reasons that very few women are recruited to computer engineering are of course many, and far too complex to discuss here. However, it is worth mentioning that when women are asked why they are not interested in pursuing a career in the IT industry, they often point to computer classes in high school and college. It seems that many American women find computers uninteresting, largely due to the computer instruction they experienced when they were younger, which focused mostly on programming and hardware functions – the traditional interest areas of boys (Ibid.). As such, schools seem to be strengthening the ties between computer technology and males, while weakening any budding interest girls as a group might have to this technology.

The IT industry has also played its part in ensuring that boys take an interest in computers at an early age, as the large majority of computer games are aimed at boys. These games are clearly masculine, both in design and content. The most common type of games are often called “shoot ‘em up” games, and the goal of such games are to defeat opponents through

violent actions (e.g. shooting, stabbing, hitting etc.). Their titles, ranging from “Doom” to “Blood Sport”, leave no doubt as to their content. Add to these themes increasingly detailed graphics and sound, where one can see and hear blood splattering all over the screen, and it is no wonder that younger girls are a small consumer group of computer games. However, some software producers are trying to change this trend by developing games that might appeal more to girls¹⁹, but it will take a while before the selection of female oriented games matches that of the male selection.

The boys and girls in my research did not, however, seem to show large differences in their interest in computers. Both groups seemed just as enthusiastic when allowed to use them. I assume that this is largely due to two factors. The first is the context in which the use of the computers occurred, namely the school environment. In the Western school system we find an idea of equality between the two sexes. Such ideas were expressed in computer situations at the elementary school by giving all the children equal access and instruction in using this technology. Boys were not singled out as privileged in this respect. Further, computer classes were mainly centered around developing skills of computer *use*, rather than on learning about the more technical aspects of the machine. Secondly, the programs used at the school were much more “gender neutral” than other computer games, in the sense that they were non-violent and oriented toward school subjects. Combined, these circumstances might have made it more interesting for the girls at the elementary school to use the computers. Such lack of gender differences in use and attitudes toward information technology has also been shown in other studies: “In preschool and the early elementary grades, no significant sex-typed differences are apparent.” (Knezek et al. 1996:108). However, these same studies emphasize that differences develop and strengthen as children grow older, and are pronounced by the time they reach high school (Ibid.). This is most likely related to the mentioned characteristics of computer classes for these age-groups.

It is worth noting that the interviews I conducted with some of the children revealed that equal interest in IT did not hold when they were outside the school environment. In their spare time, boys were much more likely than girls to use computers, mostly for playing games when “hanging out” with friends. I asked some of the girls why they did not use computers after

¹⁹ Most computer games aimed specifically at girls are much less violent than typical “boy” games, and will often involve some sort of creative activity. Examples are computer programs that allow girls to design clothes for themselves or their Barbie dolls.

school, even though they had access to one at home. Most answered that their father or brother would use them, and it was therefore a “guy toy”. So even though these young children were part of a school environment that seemingly promoted gender equality with regards to computers, they were obviously being told by others that “IT is a male domain”.

The third message promoted by the IT industry is somewhat contrary to what most adults seem to associate with the activity of using a computer. Although using computers can be done alone, the main message directed at children is that this activity can be a highly *social* activity. Studies have shown that this is often the case: “Given certain opportunities and constraints, children transform a game for one player into a group activity defined by a sophisticated social structure and activated through play.” (Orr Vered 1998:44). Examples might be children crowding themselves together in front of a single computer to watch and comment on the one playing, or interacting through the game itself with the help of networked computers. If given a choice, the children at the elementary school would always choose to sit with someone. Sometimes several children would group together around a computer, and they would organize themselves with one “mouse-clicker”, i.e. the one controlling the mouse and keyboard. The others would be “pointers”, i.e. would give the mouse-clicker suggestions by pointing on the screen. This computer based interaction would vary in character, ranging from good natured and light hearted, to very serious and concentrated. Such interaction would clearly strengthen previously existing peer bonds, and would often serve as an opportunity to reaffirm the power structure in the group. An interesting observation of such interaction was the fact that boys were more likely to gather in large groups by a computer than girls, who preferred to sit in groups no larger than three. Such choices with regards to group size are consistent with previous studies on gendered interaction among children, and illustrates nicely how the use of a new technology is influenced by pre-existing social patterns (Ibid.).

One might assume that patterns of interaction were disrupted when the children were told to sit alone at a computer, but this was not the case. Due to the close proximity of the computers it was not difficult for the children to talk to each other, and this was exactly what happened, if the teacher did not mind. Children would sometimes go on the same program and “follow” each other around in it, even though they were on separate computers. Other times, they would use different programs, but would discuss what they were doing, ask and give suggestions for their next move etc. I asked several children why they did not prefer using the computer alone, and the answers were always “That’s boring” and “It’s more fun to do games

together”, etc. For example, once I was observing in Mrs. Macmillan’s third grade, and a girl named Sarah had decided to use a program in the “Living Books” series, a program which tells a story. On each “page” one finds texts and colorful pictures, with the opportunity to click on different items on the screen, whereby they respond and “do” something. Sarah apparently enjoyed using this program, but quickly got bored doing it on her own, so she started nudging and talking to the boy next to her. I sat there expecting him to get annoyed and tell her to leave him alone, but the reaction was the opposite: he started watching and asked what the story was about, and occasionally suggested what she could click on. Here one clearly sees how the discourse that “computer games can be a social experience” is acted out and reproduced with the help of the social aspects of playing.

4.1.2 Aiming at the Moneybag: The Caretakers of Children

The computer industry puts serious effort into influencing how children view computers, hoping that they will persuade their caretakers into purchasing a range of IT related products. However, the industry does not limit itself to reaching out to children. The adults that are responsible for the children’s well-being have also become an important target group. The most important reason for this is the simple fact that it is the parents of children that have the resources and means to buy IT equipment. Although the cost of computer equipment has fallen in recent years, it is still at a level well beyond the purchasing capacity of a child. Therefore, the producers of computer hardware and software will often strive to create an image of this technology as something beneficial to the development and future of children: “The vision of the micro as an essential aid to educational and career advancement played a key role in encouraging parents to invest in one.” (Murdock et al. 1992:154). The depiction of the computer as an educational tool is commonly seen in IT advertisements, where it is said that information technology can help a child strengthen its basic skills in the “3 R’s”²⁰ and other school related talents (Picture 7).

One might ask how this is enough to persuade a person to invest the necessary time and money in these products. The answer is that the machines are said to provide a unique learning situation which is fun and exciting, in contrast to the type of learning today’s adults grew up with. The development of so-called “edutainment” software is used as proof that computers can be both entertaining and educational. As I mentioned in chapter three, these programs are designed to resemble computer games, with moving figures, color, sound, and

²⁰ An abbreviation for Reading, wRiting and aRithmetic.

most importantly: interactivity. The producers of such software argue that using these programs entice children to learn, thereby motivating them throughout the educational process. This, of course, hits right at home with any adult concerned with a child's education, since favorable results in the school period can ensure success for the child later in life. In this way, a discursive construction comes to be taken as a common-sense link between proficiency with computers and increased chances for educational success (Nixon 1998). The discursive link between computer skills and educational success is strengthened even further by predictions of an increasing presence of computers in the workplace. The underlying message is that lack of basic knowledge in the use of IT will substantially weaken a person's chances and choices in the job market.

It is quite clear that the above discourses play on the hopes and fears parents have for the future of their children. However, these discourses are not aimed exclusively at a child's primary caretaker. Similar messages are directed toward other societal institutions responsible for the well-being of children. The institution of most obvious interest to the IT industry is a country's school system, and in most Western countries this system is financed by various levels of governmental bodies. The marketing strategies aimed at those responsible for the educational system contain arguments as to why computer technology should be a part of the school environment of a child. Here, as is the case with parents, the messages center around ideas concerning the future, or more specifically: the future of a nation. The future of a nation is linked with its future workforce, and it is argued that this workforce must be skilled in the use of IT, if it is to be able to meet international competition. This is because participation in the new global "digital culture" necessitates certain levels of skill and understanding in the "new literacies", such as for example the interactive characteristics of communication between users and IT (Sefton-Green 1998).

Such discourses are especially forceful in the United States, as this is a leading country in the development and use of information technology. For example, American researchers developed the microchip in 1959, thereby laying the foundation for today's computer technology. Some of the world's largest software and hardware producers (e.g. Microsoft and Intel) are found in this area, as well as renowned technologically oriented research institutions (e.g. The Massachusetts Institute of Technology – MIT). Policy makers listen when these companies warn that the nation's children should be exposed to IT at an early age, so as to ensure the future status of the US. Similar arguments have also been appropriated by other

netnet:

**It's e-business
or out of business.**

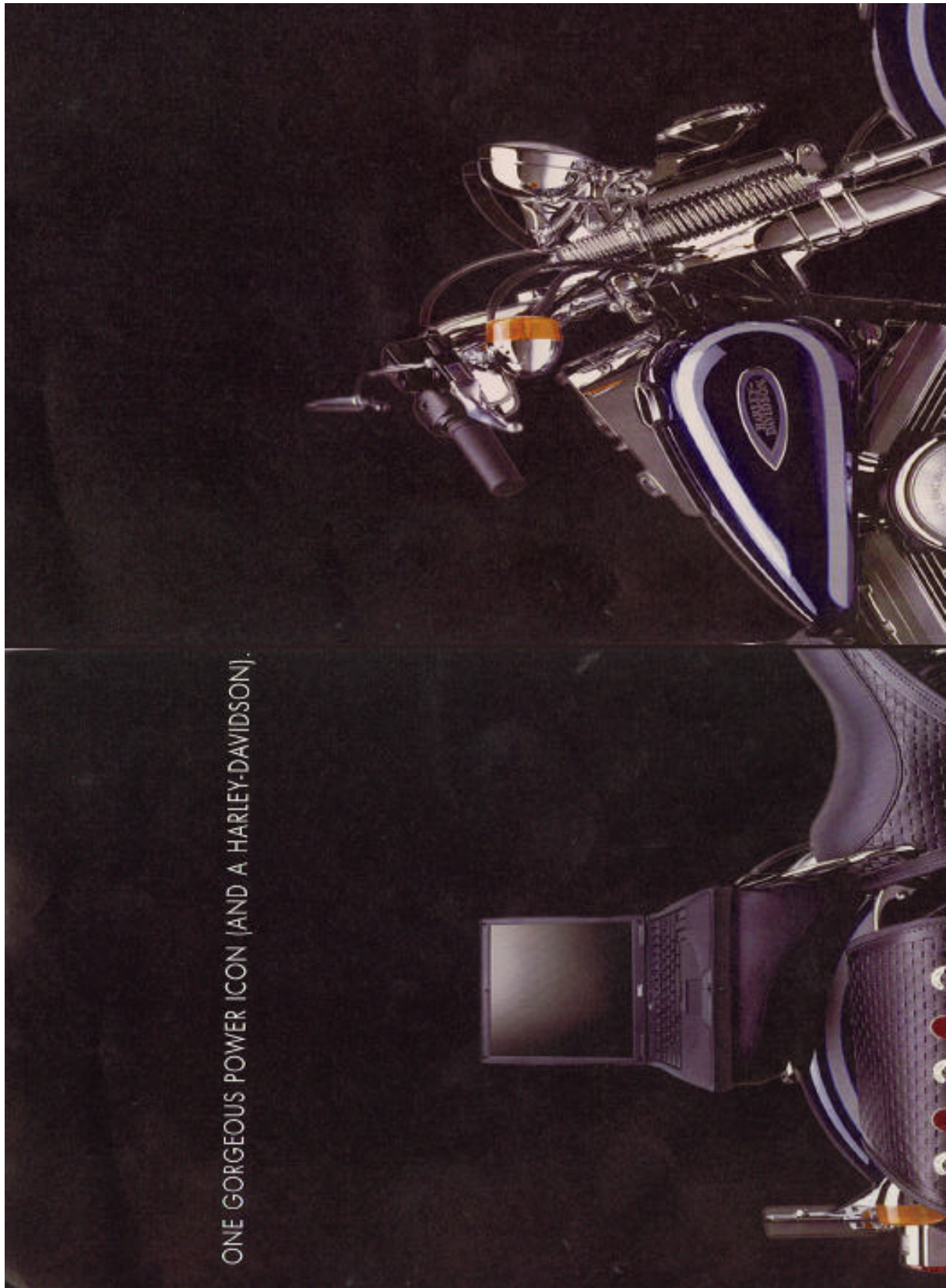
**65 of the Fortune 100
run Oracle for e-business.**

ORACLE®
SOFTWARE POWERS THE INTERNET™

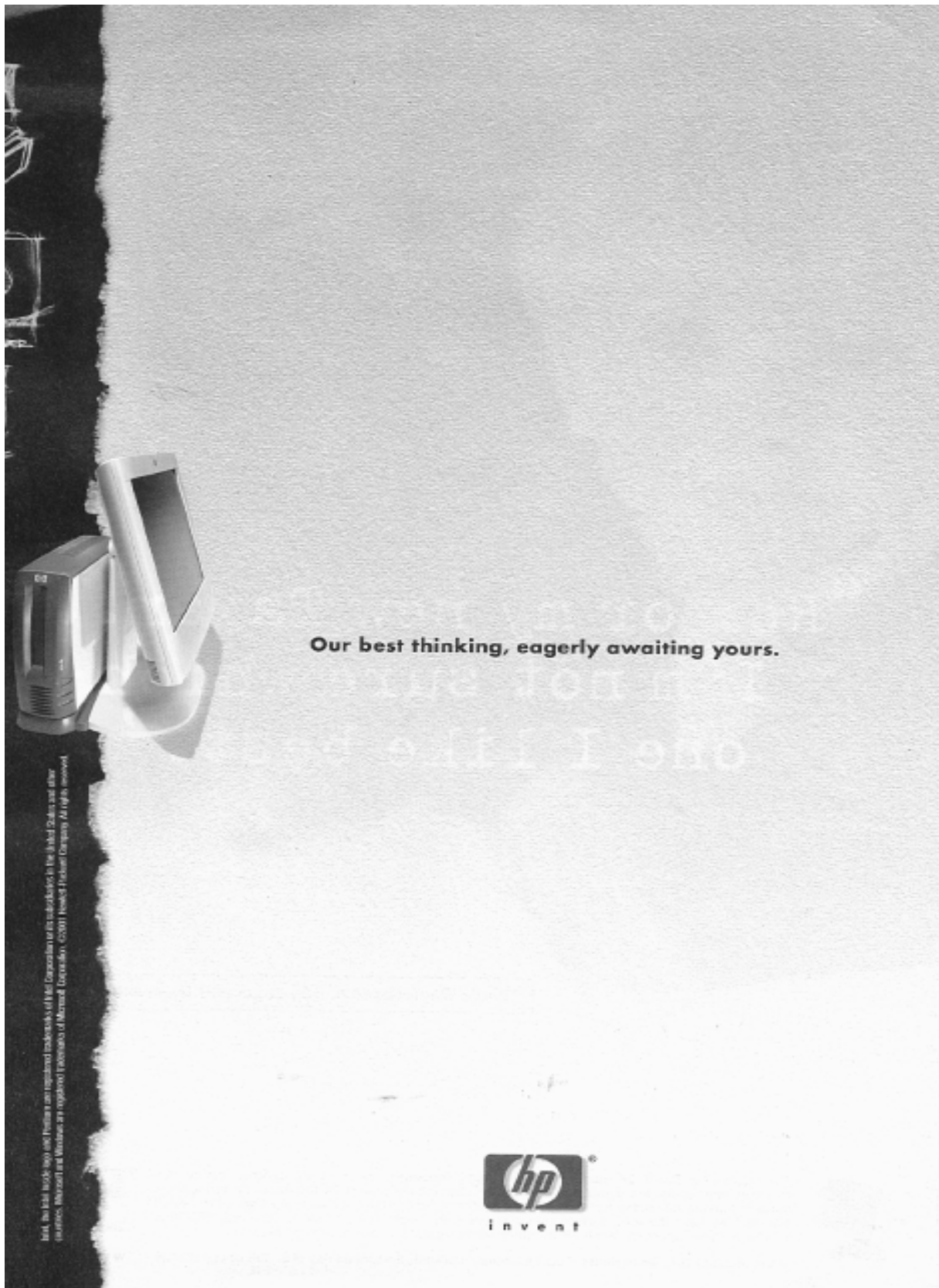
www.oracle.com

©1998 Oracle Corporation. All rights reserved. Oracle is a registered trademark of Oracle Corporation. Other names may be trademarks of their respective owners. Statistics according to the Internet Research Group, Jersey, 1998.

Picture 1: Advertisement for Oracle software, claiming that their product is a necessity for companies that want to stay in business.

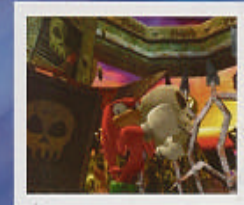


Picture 2: Advertisement for Dell computers, creating an associative link between their product (a laptop computer) and a symbol of freedom, power and masculinity: the Harley-Davidson.



Picture 3: Advertisement for Hewlett Packard, claiming their product can be a valuable tool for creative activity.

THE DESTINY OF OUR CIVILISATION LIES IN THE PALM OF YOUR HAND. WILL YOU SAVE THE WORLD OR CONQUER IT?



FREE ORANGE MOBILE PHONE OFFER - SEE IN-PACK LEAFLET FOR DETAILS

Picture 4: Advertisement for Sonic pc games, in which people (mostly children) are promised variety and challenges for their game-playing abilities.



Pictures 5 & 6: Dan Piraro comments on the assumed IT proficiency of children.



Your computer isn't going to do your homework for you.

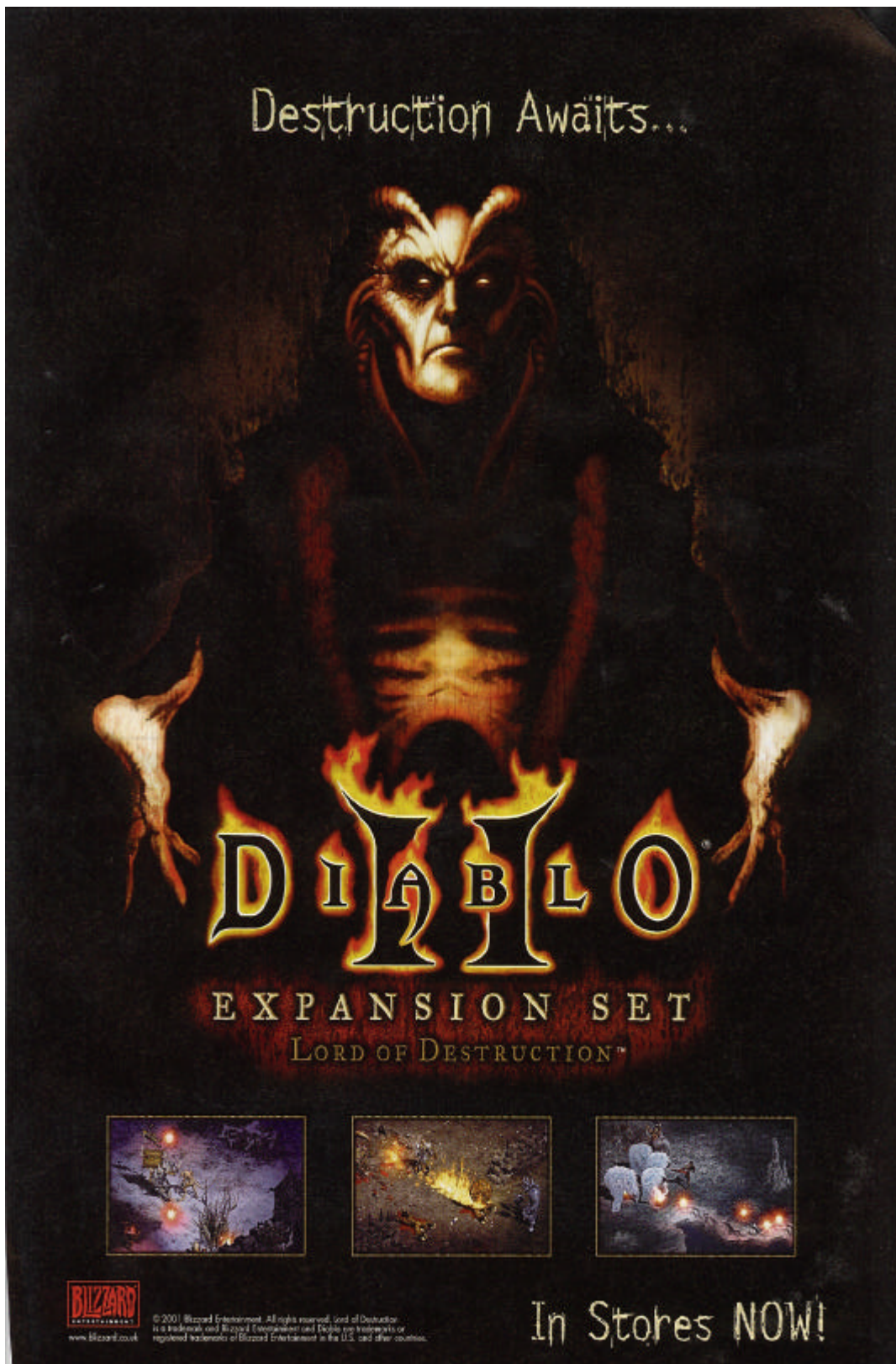
It's not going to finish your book report. Or figure out what happens when a train leaves Chicago going 50 mph. You get to do that. But we make software that can help.

After all, there's a lot of homework in the world and there's only one of you.

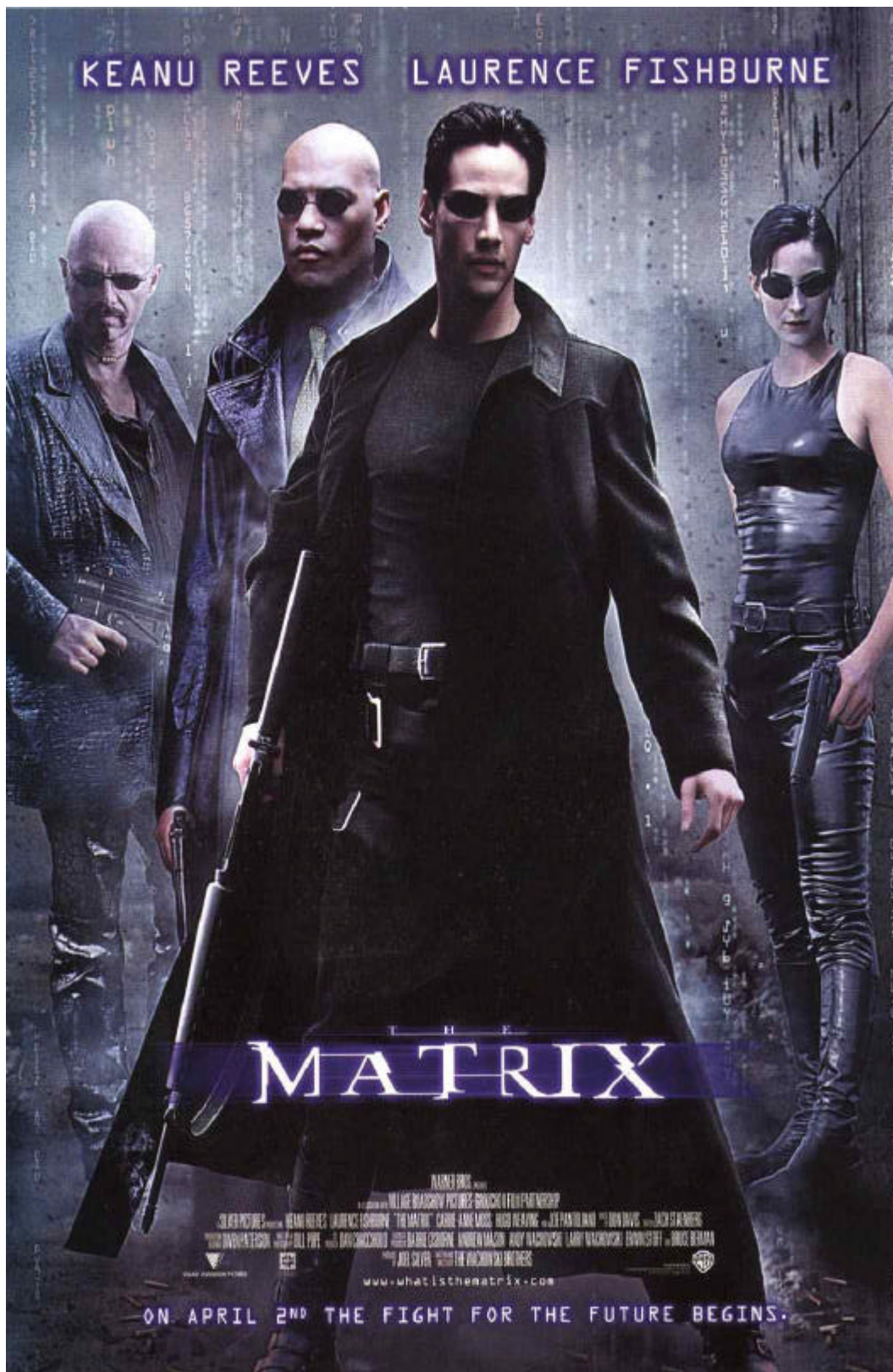
Microsoft
www.microsoft.com

Where do you want to go today?

Picture 7: Advertisement for Microsoft, arguing that their software products can assist with school-related tasks.



Picture 8: Advertisement for the pc game “Diablo 2”, promising a virtual environment full of violence and destruction.



Picture 9: Movie poster for “The Matrix”.

Western nations, pushing it to the center of political and public debate. The rhetorical pairing of the social with the economic good has served as a strategy to enlist support for government policies, and public support for the introduction of computers into schools has grown steadily over the recent years (Nixon 1998). However, as I have discussed earlier, political and economical realities often set serious limitations on wishes to secure an IT-competent population through the educational system. The strength of the message “Children must learn to use information technology to help ensure our (and their) future” is revealed when local communities are able to overcome these limitations and live up to governmental recommendations.

4.2 The Academic Side to IT Discourses

The voices embracing information technology are by no means limited to producers and developers of this technology. Many of the meanings supporting IT are produced by academicians, i.e. research and studies conducted in the various disciplines of the academic world (universities, research centers etc.). The most prominent and obvious discipline leaning in the direction of IT optimists is computer science, and other related fields that have information technology as their focus. Here, we find that the promotion of IT is related to a discipline’s prestige. By feeding positive associations and continuously stating the importance of computer technology, a field of research related to this subject matter is at the same time confirming its own importance. It should be noted, however, that academic discourses are not in themselves easily accessible for most people. Many become familiarized with research results through the media, in an altered and reduced form.

Under the term “academic studies” I would also like to include the huge number of so-called “independent” scientific studies published every year, even though they are without any formal connection to academic institutions. The reason for this is simply the fact that such publications are often enormously influential on Western public opinions. These studies will tend to be either purely optimistic or pessimistic, and are often financed by groups or institutions that have an interest in promoting specific views of information technology. An example of this type of research is Don Tapscott’s book “Growing up Digital. The Rise of the Net Generation.” (1998). The focus of this book is what Tapscott terms as the “Net Generation”, i.e. children and young adults between the ages of 2 – 20. Through the analysis of over 300 interviews conducted over the internet with children roughly in this age-group, he

argues that it is possible to identify specific cultural and social traits characteristic of the Net Generation, which are to a large part a result of their use of and familiarity with information technology. Many of the “cultural traits” that Tapscott describes are similar to the optimistic discourses explored above. Among other things, he argues that today’s children are much more confident in their use of IT than their parents are:

“For the first time in history, children are more comfortable, knowledgeable, and literate than their parents about an innovation central to society.” “(...) Because N-Gen children are born with technology, they assimilate it. Adults must accommodate – a different and much more difficult learning process. With assimilation, kids view technology as just another part of their environment, and they soak it up along with everything else.” (Ibid.:1&40)

He continues to describe the N-Gener’s as fiercely independent, emotionally and intellectually open, socially inclusive, mature, innovative, curious, and preoccupied with immediacy. With this highly optimistic perspective on IT and its young users, Tapscott also attacks many of the pessimistic discourses I discuss below as being rooted in the fears of the older generations:

“An old generation that is comfortable with its old communications media is being made uneasy by a new generation and a new communications media that is being controlled by no one. (...) This challenge to the existing order is a formula for confusion, insecurity, and some nasty books, articles, and TV shows about youth and their culture and the media.” (Ibid.:50)

Tapscott has also written a study titled “The Digital Economy: Promise and peril in the age of networked intelligence” (1996), in which he continues to state the advantages and positive effects of information technology. However, as I argued, the motivation behind such optimistic views are undoubtedly related to professional affiliation: Tapscott is chairman for the Alliance for Converging Technologies, described as a research think tank funded by many of the world’s leading technology, manufacturing, retail, financial, and government organizations. This connection has not gone unnoticed amongst those criticizing such an overly optimistic and uncritical stance toward IT. For example, in a review of “The Digital Economy”, Bill Rosenblatt states:

“A book like this exemplifies, more than anything else, how much uncertainty and how little real knowledge there is about the world being enabled by digital technology, and how few real, impartial visionaries we can trust to lead us into the future. (...) Maybe I’m being too cynical, but I look at the think tank that sponsored this work as a

group of people who are there to protect and advance their own interests rather than to produce any constructive research.” (www.sunworld.com – 08.05.00)

However, as we shall see, pessimistic discourses seem to go just as far as the optimists, but their motivations lie elsewhere.

4.2.1 Introducing the Pessimists

It is not possible to single out a discipline or field of study that can be said to propose a clearly negative view of computer technology. Often, publications painting a doomsday picture of IT belong to the “fringes” of what is seen as truly academic bodies of work. In these studies, the optimistic and rosy image of information technology is picked thoroughly apart. One-by-one, the messages seeping out from the producers of computer hardware and software are discredited and opposed. For example, the claims that IT can make a person “smarter” due to access to vast amounts of information, are answered by the pessimists as untrue. Too much information, they say, results in stressed out individuals that are incapable of making simple decisions. Worries are also expressed that we are becoming “stupid” as more and more decisions are being made by machines instead of people, and as a result creative and independent thinking is becoming a rare skill (Holm 1996). Furthermore, the politically supported claims that the use of information technology will lead to greater equality and democracy are attacked as utopian wishes, as pessimistic discourses tell a story of a “digital divide” between the rich and poor. A recent study that supports this argument is the 1999 UN Human Development Report. It claims that the internet can provide enormous benefits in terms of improved information and contacts, but that it is mainly used by educated young white males with access to money – a trend that the report concludes is likely to continue (www.un.org).

However, according to the pessimists, one of the most worrisome effects of IT is that its use leads to isolation, as information technology becomes a filter of human dialogue (Ibid.). As people spend more time in front of screens rather than interacting with each other, the human race will enter a spiral of social and physical deterioration, resulting in a number of socio-psychological problems for a large proportion of the population. As such, the spread of information technology becomes linked to changes in ways of thinking and living; indeed, for many pessimists information technology is the main cause of such developments.

We see here how the optimistic and pessimistic discourses seemed interlocked in an endless public quarrel, as every message concerning the relationship between IT and society seem to have a counter-response of some kind. This is also the case with pessimistic discourses that focus on children. As the optimists, the pessimists are fiercely deterministic, claiming that we are headed for a bleak future if things do not change. Children are here also used as a symbol of the future, and any attempt to influence future developments must start with them. They are seen as a particularly vulnerable group, since they are being exposed to the negative aspects of computer technology from an early age. As they are not fully developed emotionally and mentally, it is argued that children are unable to relate to IT in a critical manner, i.e. are unable to understand the harmful effects this technology has on us as individuals and on society as a whole.

I heard few, if any, of the above pessimistic discourses expressed at the elementary school. However, this is not to say that the computers were viewed as unproblematic and purely beneficial to the children at the school. The teachers in particular, were worried about three things: computer games, the internet and the weakening of traditional academic skills. Many of the concerns they voiced in connection with these issues were similar to the ones found in pessimistic discussions of children. The first issue, computer games, is an important target in pessimistic discourses as they are seen as designed to lure children into the world of computers. The games are linked to the above fear of isolation: time in front of a computer screen is time that should be spent with peers or family.

There are also fears that use of violent computer games will lead to violent behavior in children. It is argued that the artificial world of the computer becomes so real that the child is unable to distinguish between real life and fantasy, and will therefore act out the behavior it has been taught through the games (Picture 8). There are several cases illustrating that these arguments are being taken seriously: during October 2000 a federal judge ruled that a city ordinance banning minors from playing violent and sexually explicit video games (on public coin-based machines) without parental permission could take effect immediately. The city of Indianapolis (U.S.A.) had set the law to go into effect earlier, but had been stopped by a lawsuit filed by the video game industry (www.usatoday.com - 13.10.00). Another example is that during the summer of 2000, authorities in British Columbia (Canada) classified a computer game ("Soldier of Fortune") as adult material, making it illegal to sell or rent it to anyone under 18 – the first time this has ever been done with a computer game in Canada

(www.usatoday.com - 14.07.00). Columbus elementary school was also quite clear in their attitudes towards computer games: they had to be non-violent and have some educational value. I would like to add, however, that a number of the children I interviewed expressed their preference for what would be classified as violent games when they used their home computers. An example is one of the fourth graders (James) I interviewed:

Question: Do you have a computer at home?

Answer: Yes

Q.: What do you use it for?

A.: Games mostly....

Q.: What kind? Are they good?

A.: Action games...you know, the kind where ya' blow stuff up and stuff...and they're a LOT more fun than the ones they have here at school.

Q.: Do you have a lot of games?

A.: Yeah, a whole bunch!

Q.: Do you play them alone?

A.: Sometimes....but mostly with my friends.

The wish to shield children from the content of certain computer games is related to the issue of children "surfing" the internet. A day rarely goes by without warnings of adults lurking the internet with the purpose of misusing the trust of some innocent child in one way or the other. One also warns of the possibility that children can access indecent material on the net, such as pornography. Such fears were clearly expressed at the elementary school, by the fact that the teachers were very strict with the children's use of the internet. Usually, they were only allowed to go on specific sites related to solving school assignments. The few times they were allowed to go on for fun, their teacher would keep a close eye on them.

Finally, we have the fear of the teachers that the use of computers might in some way weaken the children's ability to learn and use basic skills such as reading and writing. This is a fear shared by many pessimists, and the proposed solution to the problem is to avoid implementing computers in schools – period. Espen Holm, author of a book titled "Intelligent Idiots"²¹ (1996) argues that the use of computers in education leads to a fragmentation in the

²¹ The original title is in Norwegian: "Intelligente Idioter"

learning process, i.e. it lacks the holistic quality of traditional learning. He points to the fact that a computer provides information in bits and pieces, and does not explain on how these pieces fit together. According to Holm, if children are not taught how to construct “the big picture”, they will end up as confused and incompetent adults. Few of the teachers at the elementary school were as critical as Holm toward the children’s use of computers, but some had developed their own strategies to ensure that computers did not interfere with traditional educational values. Take, for example, the third grade teacher Mrs. Brown. Since she was relatively unskilled with computers, her choice was easy: let the children use the computers as a medium for entertainment once a week, but not as a part of other classes. Of course this was related to her lack of knowledge of IT, but she also expressed a fear that using computers would “distract the children from real learning”. Another teacher, Mrs. Driscoll, was responsible for teaching all the fifth graders how to use word-processing programs such as Word. She told me that she was very strict on having the children handwrite their homework before being allowed to type them into the computers. The reason was that Mrs. Driscoll (and other teachers, as she told me) was concerned that the children would lose the ability to produce a comprehensible style of handwriting. Some of the children did not quite agree with this logic though. One boy complained that this way of doing things made them “work double”, and that he was not going to use handwriting much in the future anyway, as he planned to do all his writing on a computer.

It might be of interest to point out that these pessimistic messages regarding children and IT seem to have a parallel in previous and current debates on the subject of children and television. For example, TV has also been blamed for creating violent children, for being a hindrance in the development of skills in reading and writing, and for weakening children socially and physically as they spend too much time watching TV instead of playing with peers. However, such claims have also been countered here, as others hold that children are not passive “zombies” that absorb everything they watch, but are highly critical viewers. It is also said that TV can be educational, and can actually develop skills, instead of weakening them (Adamsen 1996).

One might ask: what are the goals of these pessimists? What do they hope to accomplish with such discourses? Obviously, their goals are not aimed at economic profit, such as the producers and developers of computer technology. Some might even claim that their messages are harmful to global and national economies, as they are attacking a profitable

sector of the economy. In my opinion, the pessimists want to stop what they see as harmful developments, and to prevent an even worse future. Indeed, one will often find that such discourses are the focus of philosophical and moral debates regarding the nature of current Western societies. In these debates, pessimistic discourses are often used as evidence pointing to the decline of Western “civilization”. To prevent such developments, pessimists argue, one must awaken people to what is happening to the societies they live in, so as to provoke some sort of resistance within the heart and mind of the “common man”. As with the optimists, an important focus is children, but it seems as if the worries concerning children are mostly aimed at the adults responsible for them, and not the children themselves. By playing on the concept of being “better safe than sorry”, we find that many of the mentioned discourses are taken seriously by teachers and parents who want the best for their children.

4.2.2 Only Pessimists?

Even though there are indeed studies in the academic world that are dominated by either optimistic or pessimistic discourses, they are usually not the product of “legitimate” academic institutions, such as universities or research centers. Although the social sciences might be said to promote a skeptical and distanced perspective on technology, the main goal is usually to provide some sort of *balanced* view of IT. Many of these studies, usually conducted within sociology, wish to explore the vast universe of meaning surrounding technology, while at the same time trying to take issue with the place it has in our everyday life. I have already referred to several such publications in previous chapters, such as the collection of papers in “Making Technology Our Own? Domesticating Technology into Everyday Life”. The overall purpose of these papers is clearly stated in the foreword written by the editors Merete Lie and Knut H. Sørensen:

“This collection of papers is a response to the intellectual challenge of making sense of modern technologies and their role in everyday life. We believe that both the pessimistic outlook of technofobians and the optimistic views of techno-utopians need to be challenged by careful empirical analysis. This is what we aim to do in this book.” (vii:1996)

In this book, a number of Norwegian sociologists seek to study the users of different technologies (PCs, cars, telephones etc.). This is in contrast to previous research, which mainly studied the design and production processes of such artefacts. By studying individual users, they wish to show that even though technology is assumed to be a standardizing force, it is always appropriated and re-embedded in a local context when put to use. By taking an

“action perspective” and focusing on micro relations, these studies seek to understand how each person, individually and collectively, incorporates technology into their everyday lives – transforming an alien object into something close and familiar. As an analytical tool the concept of *domestication* has been put to use, here defined as: “(...) the practical as well as emotional adaptation to technology. It is a process of appropriating an object to make it meaningful to one’s life. Once meaning has been attributed to it, it functions as an expression of self.” (Ibid.:17). When domesticating an artefact, the authors argue that we consume it through integration and use. But we are also consumed by the technology when they attract our attention, have us react to them, and are occupied by what they can do. As noted in the book, this understanding of “consumption” demands that we transcend the common divide between consumption and production – a divide which assumes consumption as passive and adaptive in contrast to production which is seen as active and creative (Ibid.).

Lie and Sørensen also stress that the use of “everyday life” and “domestication” does not mean that focus is exclusively on the household; “everyday life” points here to the routine activities of human existence and the “domestication” of technology may occur in any setting. As such, the book focuses on how users acquire and master technology in different social contexts, and examines how they actively create a relationship with, and define themselves through, that technology. A publication with a similar agenda is “Digital Diversions. Youth Culture in the Age of Multimedia.” (1998), edited by Julian Sefton-Green. Also here we find several papers that attempt to challenge the way young people are portrayed in the ongoing debate of how digital media shapes current society:

“Young people are frequently positioned in these debates in contradictory ways: as privileged users of new cultural and entertainment forms – new cyberkids on the block – the future citizenry of the digital age. Alternatively they are described as hopeless objects of anxiety – hapless digital junkies, glued to the computer screen.”
(Ibid.:book-cover)

The aim of both of these studies is therefore to take a close empirical look at how people actually use and relate to current technology, as opposed to how various discourses say they do.

4.3 The Media: “Machineries of Meaning”

“The defining feature of the media is the use of technology to achieve an externalization of meaning in such a way that people can communicate with one another without being in one another’s presence; media are machineries of meaning.” (Hannerz 1992:26)

Even though Hannerz does address the issue of the media in current societies, he has not defined it as a framework that channels cultural flow. Appadurai (1990), however, labels one of his social landscapes as “mediascapes”. His definition of the term is similar to that of Hannerz: “‘Mediascapes’ refer both to the distribution of the electronic capabilities to produce and disseminate information (...); and to the images of the world created by these media.” (Ibid.:298). Mediascapes are constantly shifting and have relatively diffuse boundaries. Despite these characteristics, however, the media has a strong and persistent presence in our lives. A large portion of the flow of meaning in current societies passes through the media, and its reach extends to just about every corner of the world. However, due to the heavily asymmetrical nature of the media’s channels (i.e. newspapers, magazines, radio and TV stations), it becomes virtually impossible for most people to become involved in the production of these meanings (Hannerz 1992). The majority of world populations are therefore mere consumers of “media messages”. This type of media imperialism is not only limited to national entities, it extends globally, as a large part of the media is based in the West (Ibid.).

Included in the meanings flowing through the media are the various optimistic and pessimistic IT discourses. In my opinion, the media is by far the most widespread and accessible source for these discourses, which can be related to Helen Nixon’s idea of the media as having an important *cultural pedagogic* function:

“Cultural negotiations are necessary to pave the way for the development and adoption of new technologies. (...) How new technologies are named, talked about, and promoted in the media and advertising are integral to the process of cultural negotiation and actual take-up and use.” (1998:22)

As one might expect, a great deal of the ideas concerning IT in the media are reproductions and presentations of perspectives from other sources. For example, one will often find news bulletins reporting the results of research (academic and otherwise). Advertisements stemming from the IT industry are another important expression of discourses in the media, and are the main way that the industry presents its ideas to the general public. But it is

important to emphasize that the media is not merely a tool used to present the opinions of external voices. The producers of media products are also highly visible participants in the ongoing debate between optimists and pessimists. However, the choice of discourses and the way they are presented will vary strongly depending on the political inclinations of the media in question. Take as an example the many computer magazines²² in stores today. It is highly unlikely that this type of magazine will present an overall negative view of computers, simply because it is the object that keeps them in business. Without computer-interested people buying the magazine, and without the IT industry placing ads in them, there would be no magazine to publish. New information and communication technologies are also closely connected with established media via patterns of ownership of content and means of delivery (Nixon 1998). Such ownership patterns will undoubtedly influence the messages sent out by the media in question.

At first sight, things might seem a bit more complicated when one takes into account media aimed at the general public; I am here referring to the “news-media”, and not special interest or “hobby” publications, TV shows etc. Apart from the ads for the IT industry, one might assume that the presented views on information technology were to a certain extent balanced and debated. This does not seem to be the case, however, at least for a majority of the news media. Two trends seem to work against giving serious academic debates center stage in the media. The first of these relate to how news-stories are currently presented. Most of the time, the news is fed to the public in bits and pieces. It is argued that viewers, readers etc. do not have the time and patience to engage themselves in every event that comes to their attention, so presentations are kept “short and sweet”. Secondly, and simply put: sensational news sell. In the vast sea of newspapers, magazines, TV programs etc., dramatic and straightforward messages grab people’s attention. As we have seen, many of the optimistic and pessimistic discourses focusing on information technology fit these criteria quite well. As such, it is no wonder that headlines such as “Teenagers addicted to the internet” or “Computer games increase aggression” seem to dominate media portrayals of computer technology.

Another important source of IT discourses within the media is the so-called “entertainment industry”. As the name implies, this industry aims to entertain the public in one way or the other. Such entertainment is usually lighthearted and easygoing, so as to reach as large an

²² Such as: PC World, Computer World, PC Magazine, Computer Business Magazine, Computer Today etc.

audience as possible. A huge amount of magazines, TV programs, movies, music etc. are produced for our consumption every year, which has made the entertainment industry a highly profitable business. In recent years computer technology has frequently been a theme in this industry, especially in relation to products aimed at children and youth. These products often contain IT discourses similar to those found in the media in general; usually clear-cut optimistic and/or pessimistic discourses, rather than a balanced view. An example is the 1999 movie “The Matrix”, which starts off on a pessimistic note (Picture 9). The story takes place in a bleak and distant future, where the world has been laid waste and taken over by advanced artificial intelligence (AI) machines. The computers have created a false, computerized version of 20th century life – the “matrix” – to keep their human slaves satisfied, while the AI machines draw power from them. However, the movie ends optimistically, as a young man is hailed by a group of human rebels as the one who will lead them to overthrow the machines and reclaim the earth.

In the next chapter, I will argue that mediascapes were indeed one of the most accessible and common sources of IT discourses for the elementary school members. But first, as a conclusion of this chapter, I would like to share some thoughts on what I consider to be the dominating form of IT discourses at the school.

4.4 The Continuing Battle of IT Discourses

An often cited objection to presentations of information technology in the media are that they are uncritical, overly simplistic and biased; but then again one might say that such traits seem to be inherently characteristic of these discourses. In many ways there is an ideological battle going on between the two camps of optimists and pessimists, and in the line of fire are often researchers trying to give some sort of balanced and “objective” contributions to the ongoing discussion. I would argue that the main drive behind this ideological battle is *power*, or the desire for it. Once power is achieved it becomes possible to reach the various goals that motivate the different discourses.

In what way is the power they seek distributed and present in our lives? More importantly, how does power relate to the term “discourse”? According to Manuel Castell (2000), power has become largely global and fluid, even though our experiences continue to be local. This does not mean that power is irrelevant in everyday life, but that it has moved to the global

networks that have replaced many previous forms of organization. Power is real in the sense that is everywhere, but no longer solely in permanent institutions. Power with a “global” reach is, of course, the ultimate goal for both the proponents of pessimistic and optimistic discourses. But what exactly is power? One possible answer is the definition of power found in the Macmillan Dictionary of Anthropology: “(...) the ability of a person or social unit to influence the conduct and decision-making of another through the control over energetic forms in the latter’s environment (in the broadest sense of the term).”²³ (1986:230). Eric Wolf (1994) holds that there are different kinds of power implicated in different kinds of relationships. Roughly, Wolf distinguishes between two types of power: structural power and relational power (i.e. as an aspect of face-to-face interaction)²⁴. Structural power refers to forces that go beyond any influence an individual might have on his or her surroundings, and is exactly the type of power proponents of the various IT discourses seek to obtain. Wolf states that:

“Structural power shapes the social field of action so as to render some kinds of behavior possible, while making others less possible or impossible.” “(...) Power is implicated in meaning through its role in upholding one version of significance as true, fruitful or beautiful, against other possibilities that may threaten truth, fruitfulness or beauty.” (Ibid.:219&226)

Wolf holds that structural power is universal, as all cultures seek to determine what is significant, while at the same time trying to stabilize it against alternatives. This does not necessarily imply that there is only one version of “the truth”, but that certain perspectives and ideas hold more weight for how members of different cultures perceive the world than others. This aspect of structural power is of key importance for understanding the current battle between IT discourses. How people view the world has implications for how they choose to act in relation to it, and being able to influence such views is an effective way of obtaining certain societal goals. We have already seen the goals behind many current IT discourses, such as economic profit. If people are persuaded to accept certain ideas concerning computer technology as true, such goals will be within reach. However, as the spread of information technology is relatively recent, we find that the discursive order on the subject is still quite unstable. This is in contrast to other stable discursive orders, such as the

²³ According to the dictionary, this definition of power was originally provided by R.N. Adams in “The Anthropology of Power” (1977).

²⁴ To be exact, Wolf (1994) distinguishes between four modes of power: 1. Power as an attribute of a person, as potency or capability 2. The ability of an ego to impose its will on an alter, in social action, in interpersonal relations 3. Tactical or organizational power 4. Structural power.

political values discussed in the previous chapter. Many of the ideas that underpin individualism or collectivism are taken for granted and rarely questioned, and they seemingly exist without the help of human intervention at all. This type of consensus means that certain versions of the truth have won over others, and that which seems “objective” is really sedimentation of power (Jørgensen et al. 1999). Judging by the intensity of the debate surrounding IT, this process of “naturalization” has not yet taken place within the order of IT discourses. However, it does seem that the optimistic discourses are leading the race, at least at the elementary school.

4.4.1 Which Discourses Were Heard at the Elementary School?

Who is winning the ideological battle surrounding information technology? It certainly seems as if the “in-between researchers” are relatively low-keyed contributors to the debate; their whispers are mainly heard within the academic groups they belong to. As for the polarities, one might say that to a certain extent, the one who yells the loudest is the one who is heard. In my opinion, it is without a doubt those who place computer technology on a pedestal and bestow it with extreme social value that have the strongest vocal cords. One only has to take notice of the amount of IT related advertising that is present in the media on a daily basis. This was also the case at Columbus elementary school, where optimistic discourses seemed to have the “upper hand”. Even though some of the teachers expressed some skepticism towards computers, this was usually because of their personal lack of skills regarding these machines, and not because of a negative attitude towards IT in general. For example, I never once heard any of the teachers question the idea of teaching the children computing, or question the usefulness of this technology. Computers as an object of value were time and time again re-affirmed before me at the elementary school, through the interaction between teachers and students. The most striking examples of such interaction was the way access to the computers was systematically used as a reward by the teachers, even by the teachers with “computer-phobia”:

“Mrs. Lyon (third grade): As usual, the class rushes into the library, and Mrs. Lyon informs them on which half of the class is to go on the computers first. The group of children going on the computers let out a cheer, while the other half slowly starts moving toward the bookshelves to find a library book. A few of them seem to know what kind of book they want, while the rest seem quite uninspired and spend more time talking to each other than studying the selection of books. After a kid finds a book (the

girls were quicker than the boys), he/she checks it out, and sits down at one of the tables to start reading it. Most of the children chose to sit at one of the tables behind the computers, which gives them the opportunity to watch what the others are doing on the machines. Especially Tim and Allen have a hard time concentrating on their books; they are constantly talking to one boy (David) that is sitting right in front of them on a computer. Mrs. Lyon tells them to be quiet and continue reading, which they manage to do for about 30 seconds. They soon start discussing (in whispers) between themselves what David is doing, and it does not take long before they no longer can restrain themselves – they resume their talk with David. The teacher has obviously taken note of the boy’s disobedience, because when it is time for the groups to switch activities, they are told to continue their reading. They respond by “mouthing off” to her, and she threatens to withdraw their access to computers next week as well if they do not behave.”

I witnessed the use of computer access as a “carrot” to obtain desired behavior in a student several times in several classes, and in most instances it had the effect the teacher sought: good behavior in her class. I would like to emphasize, however, that even though the optimistic discourses did seem to dominate does not mean that this was the case all the time, or for all of my informants. Indeed, a complex blend of IT discourses emerged as a product of the local environment, as will be discussed in detail in the next chapter.

4.5 Summary

The strong voice of IT optimists does not necessarily directly translate into wide and uncontested acceptance. However, add simplicity and a powerful message, and what you have to say starts getting noticed - that is why some of the discourses regarding computer technology often seem to lack nuance. In this chapter I have explored the content such discourses, i.e. their messages. Many of these discourses are aimed directly at children, their parents and the institutions responsible for providing children with an education. In some cases the message is to acquire and use information technology as much as possible, while other times one is told to show caution in relation to IT. The sources of these meanings are as diverse as the messages, ranging from the producers of computer hardware and software to the fringes of the academic world. The discursive order of IT is therefore highly unsettled, as various parties seek to determine how we view computer technology.

In this chapter, I have also shown how a number of these discourses were expressed at the elementary school. However, this has not captured the complexity of how my informants related to these meanings in local, everyday life. How did they understand IT discourses on a personal level? Why did they reproduce, alter or reject such meanings? I deal with these issues in the following chapter.

Part Three – The Micro

5 IT Discourses in Terms of Self and Identity

I have established in previous chapters that certain global frameworks and social landscapes are present in the lives of my informants, and how these constellations play an important role in the flow and constraint of IT discourses. It is now time to sharpen my focus, and assess the place these meanings had in the micro world of the elementary school. How were these discourses expressed, reaffirmed and rejected in the social interaction between children and their peers, and between the children and their teachers? The goal of this chapter is to discuss specific aspects of these processes, in relation to analytical perspectives presented in chapter two. The main focus of this discussion is how individual school members related to IT meanings in terms of their sense of self and identities.

The first part of this chapter explores the lives of a third and fourth grade teacher. Thereafter, two children take center stage. I discuss these cases separately as these age-groups varied somewhat in their dealings with IT discourses, due to different concerns and perspectives. However, before I portray the lives of these informants at the elementary school, I wish to say a few words about self and identity formation within this particular social environment.

5.1 A Sense of Self in the School Environment

As discussed in chapter two with the help of Anthony P. Cohen (1994), the individual is a self-conscious and active participant in his or her own identity formations. I also argue, as Richard Jenkins (1996), that social identity is created through interactions with other people. Issues of identity were a highly noticeable aspect of social interactions at Columbus elementary school. To be able to understand such processes, however, it is first necessary to gain some sense of the school environment itself. The social characteristics of such an environment can be described in several ways. According to Hannerz (1992), shared meanings tied to specific, likewise shared, experiences of people, settings and events might be termed “microculture”. Such “microculture” somewhat overlaps with his “form of life”

framework, within which cultural flow is free and reciprocal, such as the kind one experiences within small-scale societies. Erving Goffman (1996) provides similar analytical tools to explore face-to-face interaction. For example, he labels specific social settings as “frames”, each of which are characterized by certain meanings and rules that organize social interaction. However, perhaps more familiar to the reader is his term “interaction order”, which refers to an orderly domain of activity. Within such domains, Goffman continues, individuals negotiate their identities, seeking to present an image of themselves for acceptance by others. As we are moral creatures, which inhabit a moral universe, we want to appear creditable to others; we want to make a good impression (Goffman 1959).

It is safe to say that Columbus elementary school was a clearly defined interaction order, or microculture, in terms of the rules and expectations associated with the positions of “teacher” and “pupil”. For example, a teacher was expected to provide his or her pupils with a variety of skills and knowledge, and a pupil was expected to pay attention and work through the tasks as presented by his or her teacher. Formal differentiation within the category of teacher was made based on which subjects a person taught, and which classes one was responsible for. A student, or child, was differentiated based on which grade he or she was in, and who their teacher was. The flow of communication would follow these positions, being relatively symmetrical among peers, but asymmetrical between the teachers and children. This, of course, was not surprising, as the whole teacher – student relationship is traditionally based on domination of the former.

In general, the members of the elementary school sought to meet the expectations associated with being a teacher or pupil, so as to be acknowledged as a member of the school. As such, these labels were a part of their identities, and therefore their sense of self. However, my informants were not just “teachers” or “students”, but were individuals with unique qualities and biographies. Their lives and relations outside the school environment also shaped who they were. This “whole” person and sense of self was not left behind at the school gate, but was always a part of his or her actions, thoughts and feelings. Assuming such individuality also implies the existence of a multitude of different perspectives, goals and ambitions, which will vary depending on the person in question (Hannerz 1992). The question is, how can one express such individuality within a school environment, when everyone is formally labeled as a “teacher” or “pupil”? There are of course many ways of being noticed in such an environment, perhaps some viewed as more positive than others. However, I argue that in

some situations it was possible for an individual to use IT discourses as a way of presenting him- or herself to others in certain ways, i.e. one could use such meanings to create an impression of oneself (Goffman 1959). Therefore, one might say that a person used discourses as resources (Minnich, supervision June 19'th, 2001). As we shall see, however, this was not a straightforward process. The validity of a person's presentation was highly dependent on how his or her surroundings reacted to such presentations.

5.2 The Teachers: Tech-savvy vs. IT Intimidated

I start off with the story of the tech-savvy teacher Mrs. Blair, such as I experienced her life at the school. This is followed by the contrasting case of the computer intimidated teacher Mrs. Brown, as a way of illustrating the different ways these adults related to information technology and its discourses.

5.2.1 "I want to teach the kids something useful about computers"

The above quote was made by Mrs. Blair, as a response to my question "What do you hope to achieve with your computer classes?". Mrs. Blair was an energetic fourth grade teacher in her 40's, which kept busy in her spare time by coaching a local basketball team. She was from the beginning very interested in my research, and became one of my main information sources with regards to how the computers were used at the school. In general, Mrs. Blair was known as strict, but fair teacher. Her classes contrasted strongly with other classes, as her students were much more obedient and polite than most other children. Many parents specifically requested that their children attend her class, in the hopes that the discipline would have a positive effect on their child's behavior.

Mrs. Blair's main passion within the school walls was computers, and teaching the children how to use them (Picture 10). She was by no means a computer genius, but her knowledge far exceeded that of the other teachers. Indeed, Mrs. Blair was known as the "computer whiz" of the school, a label she eagerly seemed to embrace. Mrs. Blair was therefore not just a teacher like the other teachers; her role as a teacher was unique and personalized through her IT competence. The school would provide fertile grounds for her skills, as both children and staff would support Mrs. Blair's "IT identity" in several ways. The most obvious affirmation of her status was the fact that any member of the school, ranging from the principal to a child, would come to her for computer help – whether that be to have a problem fixed or shown how to use

a program. If Mrs. Blair was unable to solve a problem, she was the school's link to those who could. During my fieldwork, high school students were usually contacted for repairs and upgrading, but Mrs. Blair was not always satisfied with their efforts. For example, her classroom computer did not function properly for close to twelve weeks, due to the slowness of these students. She was clearly upset about this, especially since the students were paid for such repairs.

Mrs. Blair's skills were also formally acknowledged by the school, as she had been given responsibility for all computer instruction in the fourth grade. There were three fourth grade classes at the school, and all of them had computer and library classes on Tuesdays. Two teachers, Mr. Johnson and Mr. Matthews, took care of their respective classes during library time, while Mrs. Blair took over during computer classes. She would provide her classes with a broad introduction to IT, with an emphasis on the many ways computers can be used for different tasks. For example, her pupils were taught how to use word processors and "surf" the internet. They were also taught how to use computers creatively, such as for drawing pictures.

I argue that the support within the school for Mrs. Blair's identity as an "IT teacher" was influenced by the value placed on information technology locally, nationally and globally. The dominance of optimistic IT discourses within this discursive order has already been established, as well as their overwhelming presence in the media, government agencies etc. The town of Columbus confirmed its acceptance of these meanings by organizing and contributing to the fundraiser that enabled the elementary school to purchase the hardware and software necessary to educate their children in the use of computer technology. As such, Mrs. Blair had indirect support for her identity not only from the town itself, but also from Western society in general. It is therefore not surprising that the school members enthusiastically supported her IT persona.

However, Mrs. Blair the "computer whiz" would not exist if she were only defined as such by others. Without her own active and positive response to the way she was related to, I am quite sure her surroundings would have seen her in a different light. In other words, Mrs. Blair had to present herself the way she wanted others to see her; she had to manage the impression they had of her (Goffman 1959). The internal-external dynamics of identity formation were clearly at work here, i.e. the simultaneous synthesis of self-definition and the definition of oneself

offered by others (Jenkins 1996). Mrs. Blair would present herself as “computer competent” while at the same time being defined as having such skills by others. As these definitions were to large extent the same, there were few or no conflicts in these social exchanges.

Mrs. Blair had been interested in computers long before the school acquired such machines. Through my many conversations with her I found out that she was “self-taught” with regards to information technology. She had learned how to use computers on her own initiative by attending courses, reading computer books and magazines etc. Her main sources for IT meanings were therefore, at first, outside the school. However, it was not until she became one of the main initiators for the mentioned fundraiser that her talents in this area were made “public”. The perceived link between Mrs. Blair and information technology was ensured by her continuing interest in the subject. She always wanted to learn more about computers, and was always up-to-date on the latest developments in the world of IT. Mrs. Blair enjoyed passing on recently acquired skills to her students, such as the day she introduced digital cameras to a class of fourth graders:

“During this Tuesday lesson, Mrs. Blair is introducing Mr. Johnson’s class to a digital camera – which they have never seen before. She passes out a disk to each student, and explains to them that they will be able to save a picture of themselves on the disk, and then open and print it out from the computer. She starts out with a girl, and takes two head shots of her. After taking a picture, she asks each child if they like it (as one can see the image on small screen on the back of the camera) before saving it to disk. The whole class is gathered around Mrs. Blair to watch, and there are many outbursts of “Cool!” and “Neat!” during the taking of pictures. When finished with the first eight students, she tells them to go on the computers and open Word; the rest are to stand behind and watch while she instructs these children. She then tells them to go into WordArt, which they had all done before without problems, and write their names. When they have done this they are given step-by-step instructions on how to insert their picture from the disk. However, this takes some time as they have never done it before and seem worried that they might do something wrong, e.g. many of them would repeatedly check with the person next to them that they are proceeding correctly. This problem is even greater with the second group of students that go on the computers; without instructions they are very insecure about what to do and constantly ask the teacher or their peers for help. Sometimes it seems as though there

is too much on the screen for them – they cannot see the icon they are meant to click on even when it is “right in their face”. However, when they are all done and have printed out the results, they seem very proud and say how “fun” it was. Unfortunately for the kids, this feeling does not last long as Mrs. Blair tells them at the end of class that they are not going to be doing computer next week since they have been so noisy.”

This example also illustrates one of the many ways Mrs. Blair would signal to her students that computers were something of value. Revoking access to the computers was used as a form of punishment: the children had not behaved as told to, so Mrs. Blair consequently informed them that they would not be using the computers next week. Interestingly, the use of computer access as a form of reward or punishment occurred in almost every class I was in, not just the fourth grade. Time and time again, I observed teachers telling their students that they could use the computers when finished with an assignment, or that they had to get off the machines if they did not behave. The discourses claiming that IT is “fun and cool” were in this way systematically utilized as a method for disciplining the children – a very effective way of communicating such optimistic ideas.

No one at the school proclaimed the positive attributes of computers as much as Mrs. Blair. In a sense, one might say that she became an “embodiment” of optimistic discourses. In fact, she told me that she would rather have the children use computers than read, so in most cases her class would spend their library period continuing their computer related work rather than focusing on books. Such attitudes were clearly passed on to the children, as they would respond to her computer projects with enthusiasm:

“Mrs. Blair instructs her class to start up the program Power Point. The children are sitting in pairs, so there is some talking between them, although mostly in whispers. They have used this program before, but Mrs. Blair is going to show them some new features. As she gives step-by-step instructions, Tom gets confused and is not quite sure what to do. Paul, his partner, tries to take over the mouse in order to help him, but Mrs. Blair quickly tells him “He can’t learn if you do it for him.” She then whispers to me: “I have to restrain myself from doing things for the kids...so they can learn themselves from trying.” By the end of class, they have been shown how to insert the pictures taken by the digital camera, adjust the size of the pictures, add text,

choose background color, and how to vary the way the picture slides were presented. All of the children got through this relatively easily, and are impressed with what they have been able to create – there are many loud “oooh’s” and “aaaah’s” when they view the results. A couple of the children express disappointment when Mrs. Blair tells them class is over, and ask if they can work on their presentations on the classroom computer during recess.”

By communicating such positive attitudes towards computer technology, one might say that Mrs. Blair was indirectly boosting the status of her “IT identity”. I would like to emphasize that I am not claiming that she consciously sought to “promote” IT for her own personal advantage. Mrs. Blair was genuinely interested in computers, and had the opportunity to cultivate this interest at her place of work. However, as Mrs. Blair received nothing but positive reactions to her association to IT, it should not come as a surprise that she would reproduce the very discourses that initiated such reactions in the first place.

One might be tempted to conclude that Mrs. Blair was an uncritical “fan” of information technology. This was not the case. On several occasions she would express and act on pessimistic discourses, especially the discourses warning about the dangers of the internet. An example is the day I met Mrs. Blair and her class for the first time. They were in the process of learning Word, which they had been using for approximately one month. The children had been typing in recipes for ice cream, had created a title and inserted a picture that had been taken of them with a digital camera. When this was done, they printed it out to take home. Afterwards they were allowed to freely choose what they wanted to do on the computer, which did not happen very often as they were usually given systematic instructions in the use of applications. However, they were told explicitly *not* to go on the internet. I asked Mrs. Blair why, and her reply was: “There is too much junk on the net that kids shouldn’t see...I let them go on occasionally, but only on school related sites for projects and homework. If they go on, I usually keep a close eye on what they are doing.” By expressing such meanings, Mrs. Blair was not only agreeing with them on a personal level, but was signaling to her surroundings that she was a responsible adult – which is of particular importance if one is a teacher.

Mrs. Blair would also signal responsibility through her concerns for the children’s IT future at the school. At the end of one class Mrs. Blair mentioned that the computers would soon need

upgrading, which she thought was “a pain” since it meant that they had to start a new round of fundraising. She then mumbled that she wished that the school would take more responsibility. On another occasion Mrs. Blair was concerned over the lack of computer instruction at the middle school: “I’m worried the stuff the kids learn about computers here won’t be used again until they start high school...if they don’t have a computer at home, it will mean that they probably will forget what they’ve been taught, which is such a waste.”

As a conclusion to the story of Mrs. Blair, one might ask: What did her identity as a “computer whiz” do for her sense of self? Due to the widespread presence of optimistic discourses at the school and in society in general, being associated with IT was undoubtedly a positive experience, as she gained admiration and respect not only from her students, but also from the other adults at the school. Such acknowledgment and support from others is important for every individual, as it builds feelings of self-worth and confidence in a person. In addition, we must not forget the presence of ideas relating to American individualism: the wish to excel and to be “the best” are powerful motivators to uphold the position Mrs. Blair had achieved at the elementary school.

I now turn to a teacher that might be best described as the exact opposite of Mrs. Blair: the third grade teacher Mrs. Brown.

5.2.2 “I really don’t know much about these machines”

Mrs. Brown was a teacher in her 40’s, in charge of a third grade class of fifteen students. Her class had, like all other classes, two hours a week in the school library. The teacher was responsible for deciding how a class was to spend these two hours. Mrs. Brown kept library and computer time strictly separate, so her class would only do one or the other activity at a time. This was somewhat different from the other teachers, who would often conduct computer and library classes simultaneously, so as to ensure as much computer time as possible for their students.

Compared to Mrs. Blair, Mrs. Brown was very different. She was much quieter and not as strict with her students. The greatest difference, however, was their relation to information technology. One of the first things Mrs. Brown said when she met me was “I know nothing about computers.” She repeated this to me several times during my fieldwork, as if she wanted to make sure that I did not forget. The extent of her inexperience became apparent to

me one day when she decided to go on the internet to look for Mexican recipes. I remember being surprised, as she was much more inexperienced than I thought. She had obviously seen the children on the net before, as she knew how to use “Yahooligans” as a search engine. However, the search was unsuccessful, so I showed her “Yahoo”, where we got a number of hits. The keyboard and mouse both seemed to be giving her some trouble, and Mrs. Brown apologized to me for being slow. After a while we found a site she liked, and I showed her how to highlight a recipe, copy it into Word, and print it from there. Several times Mrs. Brown said to me “You do it. I’ll watch.”, but I managed to convince her that she should do it herself while I gave instructions. She was very pleased with the result after printing a couple of recipes. This was the only time I ever saw her use a computer, as she rarely interacted much with the children while they were using them, nor was she able to help them with computer problems.

Mrs. Brown was clearly active in defining herself as “computer illiterate” through her actions and statements, both in relation to others at the school and myself. She was quite happy with this, as she never really took the initiative to learn more about computer technology. None of the other teachers, staff or children seemed to find her lack of skills or interest problematic, as I never witnessed any negative remarks or suggestions that she should make an effort to learn about computers. This was not just the case for Mrs. Brown, however. There was not any pressure on any of the computer illiterate teachers to change, but nor were there many opportunities for them to do so either. The school did not offer any form of computer training, due to a lack of funds. Any knowledge about information technology had to be acquired on a person’s own initiative.

Despite the intimidation and skepticism Mrs. Brown felt toward the computers, she never once said anything negative about this technology, nor did she hinder the children’s use of it. In fact, she would often state the importance that the children learn how to handle IT: “Even though I don’t know how to use them, I’m glad the kids are getting a chance to learn a bit...it seems as if computers will become more and more important, so they need to be able to use them before they start work or college. It’s especially important that the school has them, since not all the children have computers at home.” Such positive statements about computer technology told me two things. First of all, it was further evidence to the existence of optimistic IT discourses at the school, as we can trace clear similarities from her statement to the discourses linking computer competence to the future of children. Secondly, Mrs. Brown

was, just as Mrs. Blair, presenting herself as a responsible teacher. She was sending the message that she cared about the future of her students, while at the same time not standing in the way of Western, scientific “progress”, despite her own fears. There was therefore clearly some pressure for computer “illiterates” to have a positive attitude toward this technology, even if they did not know how to use it.

A teacher’s lack of computer skills, such as in the case of Mrs. Brown, would often become an issue in teacher – child interaction, especially with regards to what one might term as the classic power struggle between generations. According to sociologist William A. Corsaro (1997), a large part of a child’s actions are directed at challenging adult authority, in an attempt to assert his or her autonomy. IT was often the focus of such struggles at the elementary school. For example, access to computers was a constant issue. The children wanted to use the computers as much as possible, while most teachers wanted to make sure that the time spent on a computer did not affect the amount of time spent on other activities, such as reading library books.

A particularly interesting aspect of such struggles was revealed to me when I asked Mrs. Brown how she felt about her student’s use of computers without her guidance. She answered: “I don’t mind letting them use the computers. They don’t need me for that anyway.” I asked her what she meant, and referred matter-of-factly to the children’s natural talent for using computers. Other teachers would express themselves in a similar manner, i.e. they would emphasize the need for children to learn computing, but would assume that they were able to do this on their own. These statements are obvious examples of the optimistic discourses discussed in the previous chapter, which proclaim the god-given gift children have for understanding this technology. As a result of their belief in these discourses, the unskilled teachers would stay away from the computers, as if they feared that the children would find out that they knew little or nothing about these machines. It is not hard to imagine why: a lack of knowledge is a threat to a teacher’s sense of competence and authority, and undermines the traditional teacher – student relationship. As such, a lack of computer skills might cast their identity as a “teacher” into doubt. The teachers would therefore protect this identity by avoiding any situation where their lack of skills could be revealed by their pupils – a clear example of “impression management” (Goffman 1959).

Most of the children also seemed aware of the fact that adults identified them as “IT competent”, even though their own lack of computer skills would leave them in doubt as to whether it really applied to them individually. Even so, they would attempt to reinforce the image of computers as the realm of youth as often as possible. In Mrs. Brown’s class, the children would ask a peer for help, try things out on their own or simply pretend that they knew what they were doing, so as to be left alone by their IT illiterate teacher. As such, the discourses linking young people with information technology seemed to contribute to the construction of a “cultural gap” between some teachers and their students when dealing with this technology. Janet Schofield argues that instead of shying away from their students, teachers “(...) need to adjust to the fact that their classrooms now contain another source of expertise (...)” (1995:21). Only then will it be possible to transcend the gap that has been created.

Summing up, it was possible for teachers at the elementary school to avoid relating to information technology, even though it would result in an identity as “IT incompetent”. However, even though Mrs. Brown chose not to learn how to use computers, she was fully supportive of the school’s wish to expose the children to this technology – a telling example illustrating the presence of optimistic discourses in this environment. Such discourses were also at the root of a common power struggle between teachers and children, while at the same time providing the children with a collective identity as IT proficient. As we shall see, this was an identity most children eagerly embraced.

5.3 The Children: Embracers of Information Technology

It is important to emphasize that the children at the elementary school were actively involved in their own identity formation, much in the same way as the adults. They also sought respect and recognition, and would use IT discourses as resources, i.e. as a means to present themselves to their surroundings in certain ways. By focusing on the children’s active involvement in their social environment, I wish to modify the common view of children as merely being molded by their adult caretakers; as being socialized. William A. Corsaro (1997) also argues against the idea of socialization, since it focuses on what one is becoming, rather than who one is. As such, “socialization” is an adult perspective, which suggests passivity. He argues that the notion of “interpretive reproduction” might be more useful, as the social development of a child cannot be solely regarded as the child’s private internalization of adult

skills: “(...) socialization is not only a matter of adaptation and internalization, but also a process of appropriation, reinvention and reproduction.” (Ibid.:19). In the following I attempt to portray the children in this manner – as active rather than passive agents in their own lives.

The children at the school would most often seek recognition from their peers. This was also the case for the teachers, of course, but seemed to be more of a concern for the children. This is not surprising, as research has shown that children interact with peers more than 40% of their time when between the ages of 7 – 11, meaning that peers are some of the most important relationships that children have (Santrock 1997). Peers can be defined as that cohort or group of children who spend time together on an everyday basis, and children’s peer culture as “(...) a stable set of activities or routines, artifacts, values, and concerns that children produce and share in interaction with peers.” (Corsaro 1997:95). In his discussion of peer cultures, Corsaro also identifies what he terms as “childhood material culture”, which consists of clothing, books, artistic and literary tools (crayons, pens, paper, paint etc.), and especially toys. Most studies in relation to this topic have focused on the effect toys have on individual development. Studies by historians and marketing researchers have, on the other hand, emphasized how children collectively and creatively appropriate, use and infuse toys with meaning, both within their families and their peer cultures. Children are said to often extend and transform the material culture they first attain in their family, in their interactions with peers (Ibid.). Therefore, if we add information technology to Corsaro’s list of objects of childhood material culture, then the pupil’s families and peers are likely sources of the IT discourses they utilized during self presentation.

5.3.1 “Computers are fun, ‘cause you can do different stuff on them.”

The above quote is from Erin, an eight-year-old girl in Mrs. Brown’s third grade class, with whom I spent a fair amount of time. As most other children at the school, she was overwhelmingly enthusiastic about computers, whether she was using them for a reading test or a Jump Start program (Picture 11). She would not hesitate to use them if given the choice between the computers or reading a library book. As a person Erin was cheerful and outgoing, and this made her popular amongst her peers. However, she also liked to be the center of attention, and to be in charge of the situation when interacting with other children. Her friends did not seem to mind this, and usually let her have her way. Some of her other classmates, however, were not too happy about being told what to do by another child, and had defined her as “bossy”. These children would usually not interact with her, so she was not aware that

they had labeled her in this manner. Therefore, one might say that Erin actively took part in the creation of her identity as a popular girl, while these same actions led her to be defined as bossy by others.

Erin's identity as "popular" (and "bossy") would often be acted out and reaffirmed during computer classes. This was possible as Mrs. Brown would leave the children alone and let them do as they pleased on the computers, which enabled the children to interact freely. Most of the time Erin would be sharing a computer with one or two other girls, and with few exceptions she would be the one in control of the mouse. By letting her be in control of what was being done on the computer, the other girls were in effect confirming Erin's status in the group. Such reenactment of previously existing relationships would not just occur in Mrs. Brown's class. Intense social interaction of this kind happened in all computer classes, if the teacher allowed it. Discussions between the children would revolve around issues such as whose turn it was, what should be done next, how to get to a certain level etc., and the tone of these discussions would range from serious (verging on fistfights) to light and "goofy". Through the outcome of such discussions a child's status among peers would become very clear.

Erin's identity as a popular child was further enhanced by her computer skills, which were above average compared to the rest of the class. Other children would often ask her for help, something Erin enjoyed doing:

"The children of Mrs. Brown's class come running in so as to get first choice of computers. After a few minutes things calm down, and they sit in pairs by the computers. All of the kids are using Jump Start programs, while Mrs. Brown is correcting some test papers. There is a lot of laughing and talking, as the children discuss what to do in the program. Erin and her friend Sarah decide to do the cafeteria game, which involves adding the prices of food brought to the cashier. A couple of girls sitting next to them, Jessica and Karen, are having a go at the recipe game. The onscreen character, a dog, tells them the ingredients they need to make an apple pie, and they are supposed to click on the correct amount of flour, sugar etc. to "make" the pie. They are somewhat confused however, and are not quite sure how to move the ingredients into the bowl. After a few tries they give up, and turn to Erin and Sarah. Jessica gives Erin a nudge, and asks carefully: "Do you know how to do this?"



Picture 10: Mrs. Blair helping her class create Power Point presentations on library computers at Columbus elementary school.



Picture 11: Erin taking a readers test on the classroom computer.

We can't figure out how it works..." Erin turns to see what game they are doing. "Oh, that's not hard, you just have to put the right stuff in." Erin says. Karen replies "We know that, but how do you get it in the bowl?" Erin resolutely takes hold of their mouse, and says, "Here, I'll show you." She then explains how they have to "drag" the food with the mouse, and let go of it over the bowl. After a few tries they get the hang of it, say thanks, and Erin goes back to her activities with her partner."

Erin was always curious about learning new things on the computer. During one computer class, Erin approached me and asked if I would come and play Solitaire with her, since she had a computer to herself. After doing this for a while, she decided to try something else and opened a word processing program. She typed her name, and then tried to open a file named "Erin". I asked what she was doing, and she answered, "I don't know. Just trying it out." I explained to her that you could not open a file without making one first. I then showed her how to change the font and size of words in a document, which she seemed very interested in. She immediately started trying out different fonts, wanting to write her name in cursive. At the end of the class I showed her how to save (she named her file "Erin's Secret") and open a file, and in the following computer classes Erin spent most of her time trying out and asking about various aspects of Word.

Alongside Erin's interest in learning new computer skills, was her positive view of IT in general. In fact, the more she learned the more positive she became. Erin would frequently communicate such views to her friends, for example by telling them how easy and fun it was to use computers. She was therefore reproducing the very discourses that enhanced her status in the first place, despite the presence of a computer phobic teacher. However, Erin did not seem fully conscious of her use and reproduction of optimistic discourses. In fact, it is not unlikely that Erin, and the other children, were even less aware of such discourses than their teachers. Children are usually not capable of grasping complex issues which extend beyond their immediate social surroundings. Therefore, their relationship with the school computers was quite uncomplicated: they liked to use the machines simply because they were fun, and provided variation to the traditional classroom environment. I discuss these issues further in chapter six. This said, children take note of the prevailing attitudes of the adults in their environment. As the pupils at Columbus elementary school were constantly subject to their teacher's overwhelmingly positive attitudes toward IT, the positive experiences they had with

this technology were reinforced. It is therefore not surprising that I never once heard any of the children express pessimistic discourses.

An interesting aspect of Erin's relationship to IT was that she at times seemed confused as to the "legitimacy" of her computer skills. She would sometimes express that she did not like computers that much, because it was a "guy thing" and that girls "(...) really don't like it as much as boys." I realized that the source of her confusion lay in Erin's gender, i.e. the fact that she was a girl. Although the computers were clearly a female domain at the school, in her home the computer was a male tool. She was rarely allowed to use her father's computer, and also told me that her mother never used it. Add to this the fact that Erin and her girlfriends never used computers together in their spare time, and it is understandable that she was somewhat confused.

A child that was not confused, however, was Paul.

5.3.2 "Mrs. Blair shows us cool computer stuff."

This statement was made by Paul, a nine year old boy, as an answer to my question "What do you like about having Mrs. Blair as a teacher?" Paul shared Mrs. Blair's enthusiasm for information technology, and was one of her most eager students. He was known by his peers and teacher to be a computer whiz and a good student, identities that he eagerly embraced and sought to present to others. Being a good student was not always an advantage though, as some of the children thought he was a bit "nerdy". However, his skills in computing seemed to balance this negative definition, as knowing how to handle a computer was considered "cool" by the children. Paul's skills and zeal for IT is illustrated in the following example:

"As soon as the kids have settled down at their computers, Mrs. Blair starts passing out papers which contain questions about the author Laura Ingalls Wilder. Mrs. Blair tells them that they are to go on the internet to find the answers to these questions. When the students log on to the internet, the program automatically goes to "Yahooligans" (a search engine for children). They all type in the name of the author, and then let the program find different sites for them. All the children seem to be able to do this without any problems, although some are a bit more hesitant than others. Paul and John are sitting together, and Paul is in control of the mouse. They are not satisfied with the results that Yahooligans has given them, so Paul suggests

that they move on to the “mother site”, “Yahoo”. They are the only children using a different search engine than the others. There they finally find a web page that they are happy with. After all the children find a relevant site, Mrs. Blair shows them how they can save a picture from their site to disk, and then how one can open it in Word. They are very excited, and become more interested in doing this than in finding answers to the questions. When the pictures they had downloaded are printed, many children comment that it is “cool” or “awesome”. After a while Mrs. Blair reminds them that they have to find the answers to the questions, and not just look for pictures. Soon after, an argument occurs between Paul and John and the pair sitting next to them (David and Matthew). Paul and John start accusing David and Matthew for copying their answers, i.e. for “following” them on the internet. Especially Paul does not like this; he considered the site they had found as “theirs”, and had wanted to show it to Mrs. Blair.”

We see here how Paul’s knowledge of how to navigate on the internet enabled him to find web sites that none of the other children discovered. This example also illustrates how computers became the site for negotiating power in peer relationships, as discussed in the previous section. In this particular situation there was a dispute as to whom had found a particular web site first, which was also a conflict about who had the best computer skills. One of the main reasons Paul was so upset that the other boy’s had “stolen” his site was that he missed the chance to demonstrate his skills to Mrs. Blair, thereby reinforcing his identities as “good student” and “computer whiz”.

As Mrs. Blair and Erin, Paul’s knowledge of computer technology went hand in hand with a positive attitude toward this technology. He would often express such views to his teacher and peers, especially when taught new features on the computers. One day Mrs. Blair introduced her class to the program ICQ (“I seek you”). ICQ is a program that allows you to chat in real-time with someone over the internet. It will also inform you when you log on to the net if someone else is online (that is, the people you have registered in your “address book”). The majority of the children had never even heard of this program, and paid close attention when their teacher started explaining. The screen contained two boxes – one where they wrote a message, and a second where the receiver wrote their reply. The computers in library had been given each other’s “addresses”, and during this class each one was connected with one other. The children started out slowly and typed benign things such as “Hi”, “What’s your

name?" etc. while getting used to the features of the program. After a while, and especially when the teacher was not paying attention, they loosened up and started writing silly things to each other; e.g. "Mary loves Tom", "This is my kind of sign language!" etc. Especially Paul seemed to enjoy teasing a girl sitting on a computer across the room, as she was having a hard time figuring out who was sending messages to her. He also quickly found out that you could alter the font and size of the letters, and started experimenting with the appearance of his messages. Now and again he would utter things like "This is fun! I love computers..." or "We have to try this at home" to his partner. None of the children seemed interested in any serious communication, and there was a lot of talking – both on and offline. Often it would seem as if the on- and offline communication would complement each other, as they would clarify things being written, or express emotions that could not be written. They frequently made spelling a topic of their "conversations", and would tease the source of misspellings. The only thing that seemed to slow them down was their limited typing abilities. At the end of class Mrs. Blair told them it was time to shut down the computers, and Paul immediately started asking her "Can we do this next time too? Can we? It was awesome!" Mrs. Blair replied that yes, they would continue using it next time as well.

Paul clearly took part in strengthening and reproducing optimistic discourses, which claim that computers are "cool" and "fun" for children to use. He had good reason to do so: it created a common bond of interest with his teacher, and gave a boost to his status as computer competent. After having a few conversations with him about his use of computers at home, I realized that he had also appropriated other optimistic discourses. Two discourses in particular were important for his views of IT. The first of these are the ones stating that computing can be a social experience. Paul told me that he would play computer games almost every day with his friends, sometimes at home, other times at his friends house. I asked if he preferred playing alone, and he answered: "I almost never play alone. That's boring. It's more fun to play with others 'cause then you can get help...or win over them. I usually watch TV when I'm alone, but computers are more fun 'cause you get to do something. With the TV you just sit there." Paul also expressed some annoyance over his mother, who did not understand that using computer games was "real playing": "Mom keeps telling us to go outside and play with each other, instead of the computer...I try to tell her that we are playing together, but she doesn't get it." He clearly linked the use of computers to his social life, even though his mother did not seem to agree. This is not surprising, as computing was a highly social activity

at school, and the IT industry sells computer games under the notion that it can be a “social” experience.

Paul had also taken to the idea that using computers was mainly a male activity. This is not to imply that he thought that girls should not use computers, for that was not the case. After all, he was surrounded by females at school who knew how to use computers just as well as he did. However, at home his mother never went near the computer, and he did not have any female friends. As noted, the opposite was true for Erin, who was somewhat confused as to the value of her knowledge. Paul, on the other hand, never displayed any such confusion – he seemed utterly comfortable with his identity as male computer user. I asked him why boys used these machines more than girls, and his reply was: “Girls just don’t like computers as much as we do. They don’t like games with cars and shooting and stuff...they’d rather play with Barbie dolls (starts laughing). Some girls like them though...like Tom’s sister. But I guess boys like to use it for fun. Girls use it sometimes for school, grownups for work...yeah, that’s the main difference.” It seems, therefore, that the discursive link between “male” and “technology” was rarely questioned at the elementary school, neither by the adults or children. However, as I discuss in the following, other IT discourses were challenged on a daily basis.

5.4 Imperfect Computers

As a conclusion to this chapter, I illustrate with some empirical material how the children and staff reacted when certain IT discourses were proven untrue. Most of the time, many of the meanings surrounding computer technology were taken for granted and assumed to be “true”, and my informants would act accordingly. However, sometimes a situation would occur which would challenge certain discourses; their legitimacy was questioned, so to speak. How did my informants react? Would it lead them to reject the discourse in question? Or would they ignore such inconsistencies? The discourse that seemed to be challenged on a daily basis was the optimistic meaning(s) claiming that information technology is an embodiment of Western rationality and scientific reasoning. As it turned out, the hands-on experience my informants had with IT often altered or at least weakened the image of the computer as a logical, “perfect” non-human entity. More often than not, something would be wrong with some of the computers at the elementary school, proving to everyone that these machines were far from as perfect or intelligent as claimed.

As a way of dealing with these imperfections, the children and adults would often react and relate to the computers in an emotional way, i.e. by attributing them with human-like qualities, even though they knew that they were just machines:

“Mrs. Macmillan comes in with her third grade class. As usual, the kids rush over to the shelf of computer programs, to get the first pick. They all sit down in pairs, and start loading the programs. After a couple of minutes a couple of children raise their hands, to get help from their teacher. It turns out that for some reason it won’t open the program they have chosen. Mrs. Macmillan takes out the CD, puts it back in, but it still won’t work. She tries different things, while mumbling under her breath: “You stupid computer. Why can’t you behave like you’re supposed to?” One of the children asks her: “Is the computer being bad?” and she replies: “Yes, it’s being disobedient.” As a last resort she decides to restart the computer. After the computer is re-booted, they finally manage to get the program working. The two children let out a “Hurrah!” and one of them says: “I guess he finally learned to behave...that’s a good computer!” The last remark is said as she gently pats the computer screen.”

One might, of course, argue that these emotional responses to the computer are a result of familiarity. After all, people have a tendency to relate to other technologies in their immediate surroundings in the same manner, especially if these technologies have been used for a long period of time. The children and their teacher talked to the computer much in the same way that a person might talk to an old car. However, I argue that familiarity is only part of the picture. In particular, it seems that it was easier for the members of the elementary school to handle computer weaknesses if these faults were in some way redefined as “human”, rather than suggest that a product of Western scientific thought was in some way imperfect. They never once suggested that the computers in and of themselves were faulty; only their human qualities were to blame. Such reactions to computer error were also related to their lack of IT knowledge. After all, if one does not know how to fix such problems, the only thing left to do is to vent one’s frustrations at the machine itself²⁵. This would usually be followed by expressions of guilt for not possessing the knowledge that was needed for fixing the problem. As such, my informants would rather attribute the faults of a computer to their lack of

²⁵ According to a British study, it is quite common for people to express their frustrations when facing computer problems. 30% of British office workers report seeing their co-workers physically attack their computers, while 70% have heard their co-workers verbally abuse the machines (www.dagbladet.no - 24.08.01).

knowledge, than suggest that certain optimistic discourses were incorrect. Therefore, in the discursive battle of man versus the machine, the machine would emerge as victor, at least at the elementary school.

5.5 Summary

This chapter has been an exploration of how my informants dealt with the presence of global IT discourses in their everyday lives. In particular, I have discussed this issue in relation to their sense of self and identity within the school environment. Through four empirical cases it has been shown that the children and teachers would use IT discourses as resources, i.e. as a way of presenting themselves to others. More often than not, they would associate themselves with optimistic discourses, which would apparently enhance their status amongst peers and colleagues. However, as we have seen, a person's self-presentation only became valid and "true" if accepted as such by others.

Up till this point, I have been concerned with how our social worlds condition how we perceive and relate to information technology. But is this technology merely something acted upon by its human users? Or does it also affect our lives? In the following, I assess the impact of computer technology on the social environment of the elementary school.

6 The Impact of IT on the School Environment

Although this thesis is concerned with how various social landscapes and organizational frameworks have influenced how my informants talked about and related to information technology, it would be a mistake to view this technology as something only being acted upon. It is an object with a real material presence, capable of performing certain tasks when “told” to do so by the person using it. Material surroundings have a great impact on social life, as they set limits and provide opportunities for how it is conceivable to think and act. I argue that in this regard, information technology is no exception.

However, I argue against any purely materialistic explanations. The presence of a computer will not, in and of itself, determine a person’s life, nor is computer technology a force outside human control. Information technology is created and used by people, and is never completely separate from its environment. Therefore, the effects of computers will depend, to a large extent, on the social contexts within which they are embedded. As such, extracting the “impact” computers have on its surroundings is for analytical purposes; it will never be that simple in “real” life.

What kind of impact did information technology have on the elementary school environment? In what way was the impact contingent on how IT was integrated into this environment? The fact that computer technology was acquired and integrated in the first place is, of course, related to the prevailing positive attitudes towards IT within the school and local community. As we shall see, however, even though optimistic discourses were dominant at the elementary school, a number of barriers hindered the use of their computers, thereby limiting some potential effects of these machines.

Before discussing these issues, I would like to refer to a debate within the American school system which is related to the optimistic – pessimistic debate in Western society. This debate is of importance as it might play a part in how a school chooses to integrate IT into its environment.

6.1 Reform vs. Status Quo

The dividing line in this debate goes between those who wish to use computer technology as a tool to initiate and promote changes in the American school system, and those who wish to integrate this technology into the existing school structure. The former party argues that the public sector of the American school system is an outdated and dysfunctional institution that needs to change drastically. The schools are showing a number of symptoms related to these deep-rooted problems, for example in the form of high dropout rates and low grade averages. They argue that one of the best solutions to these problems would be to initiate large-scale reform with the help of computer technology.

One of the most well-known spokespersons for the optimistic “reformists” is Seymour Papert, whom holds the Lego Chair for Learning Research at MIT. He argues in his book “The Children’s Machine. Rethinking School in the Age of the Computer.” (1993) that a technological revolution has created an acute need for a better way of learning, but that this same revolution also offers the best means to take effective action. In other words, technologies cause changes, but are also the best tools to deal with these changes. The school system, however, has not changed in decades. It has not kept up with developments in the outside world, which means that it is not in “tune” with the world children live in when they are not at school. For example, video games teach children that some forms of learning are fast-paced, compelling and rewarding. By comparison, Papert holds, school strikes many young people as slow, boring and out of touch. The reason school has become so unappealing to children is that it only emphasizes one type of learning: literacy. Children, however, have increasingly different styles of acquiring knowledge, while the school continues to distance knowledge from the individuality of the student.

The computer, on the other hand, can convey knowledge in several ways, supporting a wide range of intellectual styles. Reforming schools in a way that accommodates extensive use of IT would therefore be hugely beneficial for many children. Papert warns that this will not be an easy task, as it is difficult to change a large, stable, well-rooted social structure. The reason is that these systems have a tendency to defend themselves against radical change. Time and time again such defenses have resulted in the “neutralization” of computers. Instead of using computers to cut across and challenge the idea of subject boundaries, information technology

is defined as a new separate subject: computer science. This isolation of the computer must be seen as a kind of immune response of schools to a foreign body (Ibid.).

Pessimist Neil Postman does not wish to reform the American school system, at least not in the sense that Papert suggests. He agrees that the school system is out of touch with the world, but argues that it is the world that needs to change, not schools. According to Postman's book "Technopoly. The Surrender of Culture to Technology." (1992), the problem lies in the fact that uncontrolled growth of technology has destroyed vital sources of our humanity, as it undermines certain mental processes and social relations that make human life worth living. American society is currently going through such changes, and has therefore become a "Technopoly", which is:

“(...) the submission of all forms of cultural life to the sovereignty of technique and technology²⁶.” “Technopoly (...) is what happens when a culture, overcome by information generated by technology, tries to employ the technology itself as a means of providing clear direction and humane purpose.” (Ibid.:52&72)

Postman continues by stating that American Technopoly must rely, to an obsessive extent, on technical methods to control the overload of information, but that it is only a question of time before these methods will fail. Computer technology is one of these methods, and it has served to strengthen the hold of Technopoly by leading people to believe that technical innovation is the same as human progress.

The conflict between the new world of Technopoly and the old world is, according to Postman, expressed in the American school system. Here, teachers are skilled in the written word, while children are skilled in the ways of the visual media. These technologies condition two different ways of thinking, which are at odds with each other. A further problem is that schools, like the rest of American society, are experiencing a lack of coherence, i.e. they have no moral, social or intellectual center. The solutions to these problems are not, however, to be found in computer induced reform. To the contrary, Postman argues that computers promote egocentrism, as they encourage private learning and individual problem solving. He concludes that the best way to counter these developments is to strengthen the existing school system, to return to its roots, so to speak:

²⁶ The similarities between these arguments and those of Jacques Ellul, as discussed in chapter three, are obvious.

“(...) an education that stresses history, the scientific mode of thinking, the disciplined use of language, a wide-range knowledge of the arts and religion, and the continuity of human enterprise. It is education as an excellent corrective to the antihistorical, information-saturated, technology-loving character of Technopoly.” (Ibid.:189)

How was this debate expressed at Columbus elementary school? The children, of course, did not mention such complex issues; I doubt that they were even aware that such a discussion was taking place within their country’s school system. The staff did not explicitly refer to this debate, but their actions and statements provided evidence of a compromise between the extreme arguments of Papert and Postman. It has been established that the school members were overwhelmingly positive in their relationship to information technology, sharing much of the same enthusiasm as Seymour Papert. This positive attitude was, after all, what brought computers into the school environment in the first place. However, these attitudes were not geared towards full-scale reform as recommended by Papert. As we shall see in the following section, the computers were cautiously integrated into the school’s previously existing structure, and were not intended to be tools of change. As such, the school was showing the type of restraint called upon by Postman.

6.2 The Integration of IT at the Elementary School

The effects computers have on an environment depend on how they are integrated into this environment. One must therefore ask with regards to the elementary school: How did the computers become integrated into the daily routine of the school, i.e. how did they become a part of the learning process? During my fieldwork, the computers were integrated physically through their placement in individual classrooms and the school library. They were also given “official” recognition in the sense that the use of the machines was allocated time in the library schedule. Each class had two hours a week at their disposal for library and computer activities. However, whether this time was actually used by each individual teacher for computing is another matter. Instruction in the use of computers was *not* institutionalized, as there was no official plan of what the kind of computer competence the children ought to acquire during their years at the elementary school. It was entirely up to each teacher what their students were taught about information technology, at least in the first, second and third grades. At these levels computer instruction was usually limited to the use of “edutainment” programs and readers tests, and the teacher would only step in if the children needed help.

There was, however, an attempt at systematizing computer instruction in the fourth and fifth grades. Here, the two most computer competent teachers at the school were responsible for IT instruction in all classes at this level. As discussed in the previous chapter, Mrs. Blair was responsible for fourth grade computer classes. She gave her students a broad introduction into the use of computers, as the machines were used for several subjects, in different ways. However, all the fourth graders did not receive the same amount and quality of computer instruction, as Mrs. Blair seemed more enthusiastic when teaching her own class. Mrs. Driscoll provided an overall more equal instruction to the fifth graders, but her computer classes were much more limited in scope. The fifth grader's main use of computers was in the library, and mostly revolved around the use of word processing programs or other educational software.

It is clear that even though computers had been brought into the school environment, the actual integration of these machines was somewhat limited, in terms of the amount of time spent using them and how they were used. As we shall see in the following section, extensive integration of computers was hampered by a number of barriers, both internal and external to the school environment. These barriers would limit the use, and therefore the effects, of information technology at the elementary school.

6.2.1 Barriers to Computer Use

Studies have shown that the most important influence on the incorporation of IT into a school environment is the individual teacher (Schofield 1995). Teachers very often play a major role in providing the impetus for a school's obtaining instructional computers, deciding which software should be purchased and providing informal instruction for other teachers (Ibid.). Such findings are highly consistent with my experiences at the elementary school. As discussed in the previous chapter, Mrs. Blair was an important figure in the fundraiser for buying computers, and was frequently asked for help by the other staff members. She would also often help to decide which programs the school bought for their students. As locating and trying out software takes time and energy, the school was entirely dependent on Mrs. Blair's willingness to perform such tasks.

However, individual teachers do not only provide impetus for the integration of computers, they are also a major obstacle to such integration. As active use and incorporation depends on a certain level of computer competence on behalf of the teacher, lack of such competence

results in little or no use of such technology. At Columbus elementary school, there were no computer training programs for the teachers, so they had to learn how to use it on their own time and initiative. Most of the computer incompetent teachers were, however, afraid to even approach a computer on their own. This computer anxiety was reinforced in their interactions with the pupils, as the children's computer skills would usually exceed that of their teachers. As mentioned, many teachers felt uncomfortable and embarrassed by this imbalance in teacher-pupil relations. As a result, the teachers would simply stay away from the computers altogether. Therefore, in general, there was a low level of computer competence amongst the elementary school teachers. Only a few felt comfortable and familiar with the hardware and software of the school computers. To add to the burden of the unskilled teachers, no person was officially responsible for helping them with hardware and/or software problems. They were completely dependent on the irregular availability of help from a computer competent person.

These obstacles alone are enough to discourage any person from utilizing computers. However, lack of computer skills was not the only hinder to a teacher's use of information technology. For example, the student – computer ratio, which is important for the type and amount of exposure children have to IT, was not optimal at the elementary school. There were eight computers in the library, and one in each classroom, meaning that an entire class could never simultaneously be on computers. Some teachers found this tiresome, as the students working on computers would miss the material covered in the rest of class during that period of time. Most teachers would try to overcome this problem, at least when they were in the library. Here, the children would be placed in pairs, or take turns at the computers at half-time. The downside to this solution was, of course, that each individual child would have less time to itself on the computer.

Related to such practical problems was the fact that many of the teachers did not view the computers as something that could contribute to the school's educational environment (Schofield 1995). They wholeheartedly supported the notion that the children should learn how to use the machines, but were not able to figure out others ways of utilizing this technology. Apart from the occasional gathering of information on the internet, and the use of word-processing programs, most teachers would not use the computers for school related tasks.

It would be a mistake to merely label individual teachers as “barriers” or “hindrances” to the further integration of computers at the elementary school. In many cases, they were merely reacting to circumstances beyond their control. Of particular importance was the conflict expressed within the school board and the school district the town was a part of. On the one hand, the school was under strong pressures to at least accommodate for the purchases of information technology, while at the same time keep general school expenses down. According to Janet W. Schofield (Ibid.), it is typical for schools to buy new technology such as computers, but to skimp on providing the training and support that teachers need to use it effectively. This was definitely the case for the elementary school, which experienced budget cuts every year²⁷.

Keeping these barriers in mind, what changes at the school could be traced to the use of information technology?

6.3 Changes Resulting from the Use of Computer Technology

To be able assess what impact IT had on the local school environment, one must ask the following question: What changes when computers enter a setting? Answering this question means exploring the actual empirical differences in classroom environments when computers were used and when they were not used, i.e. contrasting computer and non-computer situations at the school.

6.3.1 The Traditional Classroom Structure

Most US schools hold certain physical and organizational traits in common. For example, children arrive at specific buildings that are defined as their school, and spend most of their time in a room in these buildings - their classroom or “homeroom”. The children attend their schools almost every day of the week, from early morning till the afternoon. Their classes consist of groups of children, of approximately the same age, which are lead by a specific adult – a teacher. In addition, American classroom environments can be said to traditionally hold four elements in common (Schofield 1995):

²⁷ Many parents were increasingly concerned about the quality of the local schools due to these reductions in funds. As a result, those that could afford it would relocate their children to private schools in Canada or elsewhere in the US.

1. The primary focus for teaching and learning is the entire group, usually through lectures and problem solving on the blackboard. Therefore, students are expected to working on the same material at any given point of time.
2. Teachers control relatively firmly what, when, and how material is presented. Students might be given some choices with regards to what to focus on in class, but these choices are usually within clear limits set by the teachers.
3. Norms governing students' behavior are consistent with the teachers' maintaining control over the classroom. For example, students are expected to be quiet and listen when the teacher is talking, and obtain permission before addressing the class.
4. The emotional tone is relatively flat, neither noticeably hostile nor warm and upbeat.

These traits are to a large extent consistent with how I experienced the social organization of classes at the elementary school. The teachers would be in charge of how lessons were presented to the children, and the children were expected to do as told by their teacher. However, the children were often allowed to solve tasks in pairs or groups, rather than just listen to the teacher or work individually. As such, they seemed to have a more flexible environment than suggested by Schofield. I would also like to point out that the “emotional tone” was rarely flat at the school. Usually, the only time the children were completely quiet was when their teacher was addressing the class. Otherwise, they behaved in the manner that children usually do: playing, laughing, arguing, sharing stories etc. As any person familiar with children knows, such activities do not make up an emotionally flat environment.

In comparison, what happened with these classroom environments when the children used computers?

6.3.2 Changes in Peer Interaction

Some of the most noticeable changes were those that occurred in the relationships between the children. There was a marked increase in co-operation, as using the computers seemed to provide the opportunity for what one might term as “peer-learning”. Of sheer necessity, the children would exchange computer knowledge amongst themselves, especially if their teacher was a “computer illiterate”. Two patterns of interaction would emerge as a result of such peer

help: reciprocal help between friends, and help provided by knowledgeable students to a wide variety of others. The following is an example of the latter type of interaction:

“Mrs. Driscoll’s fifth grade class comes rushing in, and most of the children head straight for the computers. It turns out that the teacher is sick, so they have a substitute teacher, whom I have never seen before. He starts off class by saying: “Go work on your typewriters...or computers, or whatever you call them...” Some of the children that hear this start laughing hysterically, and the teacher, looking somewhat embarrassed quickly moves away from the end of the library where the computers are placed. Half of the class is told to go on the machines, and they are allowed to do what they want on them. Tom, the computer “whiz” of the class, is on a computer, and plays around with the machine in ways no other child would: looking through the computer’s file system, changing the appearance of the desktop and screen saver, and emptying the “trashcan”. However, his knowledge does not seem to alienate him from the other children; rather, it seems to have enhanced his status with his peers. Tom’s computer skills are in particular demand today, since the substitute teacher obviously knows little about IT. His classmates constantly come over for help, and Tom is more than happy to oblige. Therefore, the interaction between the children at the computers is intense and noisy.”

However, computer help was not the only reason why the children would co-operate closely when using these machines. The physical setup of the computers was an important factor in allowing the children to interact in the first place. In the library, the computers were placed next to each other at the same end of the room, and since there were fewer machines than children, they would often have to share. It is fair to assume that peer interaction would decrease if the computers had been spaced further apart, or if the children each had been given access to their own computer.

The software used on the computers would also provide opportunities for interaction, especially if it allowed the children to compare “scores”. As discussed in chapter three, “winning” was very important at the elementary school, as a result of the specific ideas of American individualism. However, such competitions were usually very friendly, as they were not the result of activities that were graded or evaluated by the teacher. Without such pressures, the children could just relax and have fun.

6.3.3 Changes in Teacher – Pupil Relations

The use of computers did not only have an effect on the relationships between the children. There were also noticeable changes in teacher – child relations. In classes where computers were used, the hierarchy of the class was to a certain degree “flattened”, i.e. the teacher became more of a tutor than an instructor. The reason was that the class would have multiple focal points – the computers – rather than the usual one focal point – the teacher. Instead of quietly listening to their teacher, the children would be solving problems on the machines, at their own pace. The teacher was therefore free to move around and help those that needed assistance. This led to a shift in the amount and type of attention given to different students, as it became much more individualized. The “flattening” of the classroom structure was strengthened by the fact that the children would often exceed their teachers with regards to computer skills. As such, the exchange of knowledge between a teacher and her students often went both ways, instead of the usual one-way flow from the teacher. An example of such interactions occurred in the third grade class of Mrs. Lyon. Mrs. Lyon did not know much about information technology, but was not as “computer-phobic” as some of the other teachers. She was often able to help her students with minor problems, but would not hesitate to admit that her computer skills were limited: “I know how to do the most basic stuff, like turn the computer on, open programs, send e-mail and the likes...but apart from that I don’t know much...I’d like to learn though!” It was not uncommon to see Mrs. Lyon paying close attention to what her students were doing on the computers, and to ask them for advice when she was having problems with a computer task. If the children were not able to help, Mrs. Lyon would often sit down with a few of them and they would try to come up with a solution together.

The mentioned changes would occur any time a class used the library computers, even if this use was rare and for a limited number of tasks. However, the effects of this technology were even greater when the computers were used extensively and for multiple purposes. The fourth grade class of Mrs. Blair exemplified this on a daily basis. Mrs. Blair wanted her students to learn that a computer could be used for different tasks, and encouraged the use of these machines in as many subjects as possible. The children therefore frequently used the computers for various school projects. Many of these computer-based projects involved combining a number of subjects, such as English, social studies, geography etc. As a result, such projects would weaken traditional subject boundaries. In addition, her students worked independently on these projects, instead of being told what to do by their teacher. The usually

rigid classroom structure would apparently crumble in Mrs. Blair's class, because of the way her students used information technology.

I would like to illustrate these processes through a description of a project that Mrs. Blair's class worked on for a period of several months. Every child was supposed to make his or her own presentation of Maine, within certain guidelines set by the teacher. The goal of this project was for the children to learn about the state they lived in, while at the same time polish their computer skills. The idea was to let this presentation take the form of a slide show on the computer, with the help of a program called "Power Point". They started working on the project during the spring months of 1999, when Mrs. Blair decided that her class was familiar enough with the program. Their first task was to go on the internet and find the pictures Mrs. Blair had made a list of: Maine's state seal, animal, flag, tree, bird and fish. After finding these, the children were told to save the images to disk. Most managed to do this with ease, and the class was very concentrated when performing such tasks.

In the following weeks Mrs. Blair's class continued their project at the local high school, and I was invited to come along. The purpose of this trip was to give the children an opportunity to all work on their presentations at the same time, instead of having to wait for a turn on a computer at the elementary school. We went to the high school with a school bus, and arrived there after a ten-minute drive. The school's computer lab contained twenty-four computers, placed in groups of four. None of the children seemed intimidated by using "new" computers; they started clicking the mouse as soon as they sat down. In addition to Mrs. Blair and myself, a high school teacher and two high school students were present to help the children. The class was instructed to open Power Point, and to load the various images they had on disk to the program. When this was done, they were told to add headings and text to the images, so as to explain the significance of the pictures. Most of the children did this with ease, but if they needed help an adult was always available. The only thing that seemed to cause some insecurity was the fact that the children could not see each other's screens, meaning that they could not check with a friend to see if they were doing things correctly.

We returned to the high school when it was time for the children to finish their projects. They were very excited when we arrived, and they rushed in to get a computer. The children would choose background colors of their slides, as well as the size and fonts of the headings etc. They were very focused on these tasks, despite the fact that they were at the high school for

Maine Sign



Seal



State Blueberry



Pictures 12, 13 & 14: Examples of Power Point slides made by Mrs. Blair's class.

several hours. By the end of the school year the presentations of Maine were finished, and the result were a number of colorful slideshows with pictures and facts about their state, as exemplified with pictures 12, 13 & 14.

In sum, traditional classroom structures were transformed in Mrs. Blair's classes, through the extensive use of information technology. The changes which took place in her classes were exactly the types of changes Seymour Papert would like to see in all American schools. However, these changes were highly dependent upon the actions of one teacher, and were therefore contained within a single class. As such, they did not apply to the entire elementary school. It is therefore clear that any extensive "computer reform" of the type recommended by Papert would have to involve the entire school with all its teachers.

6.3.4 Increased Motivation

The teachers at the elementary school seemed largely unaware of the changes resulting from the use of computers. Many of them, however, would note that their students seemed much more motivated than usual when working on computers. Such behavior was indeed noticeable. The children were active and intensely focused on the task at hand when using the computers. I argue that this motivation was related to the positive attitudes these children already had towards information technology. However, a number of factors relating to the use of computers also seemed to enhance their positive feeling towards this technology.

In a traditional classroom environment, a child's behavior is strictly regulated, and he or she is expected to be somewhat passive in the process of receiving knowledge. Children are also expected to be able to keep up with the rest of the class, and are graded by their teacher according to their ability to do so. As it turned out, all of these constraints were lifted when a class used computers, enabling the children to experience much more freedom than usual. As noted, the teachers did not enforce as many rules as usual during computer classes. The children were allowed to move about and talk to peers, which was not the case during other lessons. Further, the children could usually choose what they wanted to do on the computers, or at least how they wanted to do it. In other words, they were in control of the situation, as opposed to the traditional classroom setting. This sense of control was strengthened by the fact that using a computer allowed them to learn at their own pace, without having to keep up with the entire class. The children would also receive immediate feedback from the computer on their progress, instead of having to depend on teacher evaluation. Especially

“edutainment” and typing software would provide such feedback. These programs would instantly tell the children, either through text on the screen or vocal messages, how they were doing with the task at hand. If they succeeded with this task, the program would reward the children with loud and colorful onscreen praise. If the children were having problems, the program would gently encourage them to try again, and often provide hints to help them along. In a sense, one might argue that the computers became the children’s personal tutors. The computer’s popularity as tutors was ensured by the fact that they were always available, never in a bad mood, would not discipline, and would never tell others how one had performed on the assigned tasks.

In her book “Computers and Classroom Culture” (1995), Janet W. Schofield has also noted that the positive attitudes students have towards IT seem to be strengthened by their experience of freedom when using a computer. In particular,

“(…) the attraction of working with computers was not only that they were a change from other activities, but that they provided relief from certain aspects of the school situation that the students found aversive – most notably, listening to their teachers lecture.” (Ibid.:195)

She has also pointed to the fact that using computers can help decrease a student’s fear of embarrassment, as he or she can discuss problems with the teacher on an individual basis, rather than in front of the whole class. In addition, students are given the opportunity to express negative feelings when having problems, as they feel free to express frustration and anger towards the machines in ways they cannot with a teacher, without violating strong norms (Ibid.). Such factors were also highly noticeable at the elementary school. For example, the children were much less reluctant to ask for help when using the computers, than they were in other classes. As we have seen, such requests for assistance were aimed at teachers and peers alike. Further, the children would not hesitate to “tell off” a computer if something was difficult or not working properly, as illustrated below:

“Mrs. Macmillan’s third grade class enters the library. As usual, they are told to find a computer, and to sit in pairs. They are given a free choice of programs, and most choose “Living Books”, “Magic School Bus”, “Math Blaster” or “Dangerous Creatures”. The class is very noisy, as there is a lot of interaction on front of the computers (the teacher does not seem to mind). A couple of children are also wandering

between the various machines, watching and commenting on what the others are doing in the programs. Two boys, Tim and John, are using the “Math Blaster” program, and are trying out a game they have never been on before. In the game, they have to answer math problems correctly to be able to free a monster trapped within a huge block of ice. When they provide the right answers, the ice around the monster starts melting. However, the pace of the game is quite fast, and the math problems to be solved are not easy for a third grader. Tim and John try for a while, but are unable to free the monster. The program keeps urging them to try again, which makes Tim lose his temper, and yell out: “Try again? We already tried a zillion times! You’re going too fast!” John seems to agree with his partner: “You stupid machine! It’s your fault that we can’t do this!” Mrs. Macmillan tells them to keep the noise down, and the boys decide to change programs.”

It is worth noting that these findings support the mentioned ideas of Seymour Papert. Papert argues that American children find school uninteresting, and presents computers as a way of “curing” such boredom. This was also the case at the elementary school, as there seemed to be a number of aspects of the traditional classroom learning situation which these children would prefer to be without. The use of computers apparently dampened some of these aspects, creating an environment which was more to their liking. As a result of these changes, the positive attitudes they already had towards this technology were strengthened, ensuring the dominance of optimistic discourses at the school.

6.4 Summary

In this chapter I have discussed some of the possible effects computers had on the social environments of the elementary school. The goal of this discussion was to show that the effects of information technology are highly contingent on how it is integrated into such environments. At the school, a number of barriers would limit the use of IT in many classes, thereby minimizing the potential effects of this technology. However, extensive and broad utilization of computers in other classes would result in relatively noticeable changes, which the children would embrace. One must conclude from this discussion that it is unrealistic to expect that information technology will have the same effects everywhere, as the contexts they are a part of will shape how it is used.

7 Closing Remarks

The initial goal of my research was to explore how information technology was used and related to at an American elementary school. At first, this seemed as a relatively straightforward task. Through my fieldwork I was able to observe the school members use of computer technology in various school situations, as well as trace the many different ideas and understandings they had of this technology. However, I soon came to realize that many of the ideas the teachers and children had of IT were similar to discourses produced by non-local forces. In other words, their understandings of computer technology did not primarily originate from school interactions. Therefore, I had to look beyond the fieldsite to unravel the sources and messages of IT discourses. It became clear that these discourses were promoted and supported by specific global constellations, such as the media. I therefore felt it was not only important but necessary to explore the nature of such constellations, as well as how IT discourses became a part of everyday life at Columbus elementary school. As such, this thesis has been an attempt at making sense of certain macro-micro relations.

Exploring these relations, however, was not without its challenges, both in terms of theory and method. After all, the analytical and methodological tools of anthropology are mostly developed for studying “micro” relations. Our discipline will increasingly have to deal with the “macro”, as it is no longer possible to ignore the direct and indirect relations people have with others across the globe. Anthropology has already taken its first few steps in developing theoretical tools for exploring such issues. Throughout this thesis I have made use of such tools to shed light on my research problem. Of particular importance were the ideas of Ulf Hannerz (1992) and Arjun Appadurai (1990). With the help of their concepts “organizational frameworks” and “social landscapes” I was able to map the discursive order of IT discourses, as well as discuss how certain political frameworks/scapes constrain the flow of this discursive order.

However, no theory is flawless. Although Hannerz and Appadurai both set out to explore the global flow of meaning, they do not provide concrete suggestions as to how one might trace global meanings empirically, nor do they explicitly define “meaning”. Both of these weaknesses have been addressed in this thesis. With regards to the first issue, I have argued for extensive use of secondary sources for empirically tracing global meanings, such as IT

discourses. I will return to this point in a moment. Secondly, I have utilized the concept of “discourse” as a way of defining the specific characteristics of IT meanings. Again, however, I encountered some theoretical difficulties. “Discourse” was useful for exploring the nature of global IT discourses, but did not allow me to show how my informants would relate to them on a daily basis. To solve this problem I chose to focus on how the children and teachers would actively use IT discourses as a means to present themselves to others in a certain way. As such, telling the story of this thesis has involved the use of several theoretical perspectives, which compensate each other in terms of their weaknesses.

Even though anthropology is constantly developing theoretical tools for dealing with macro-micro relations, things seem to be at a standstill in terms of method. Some might argue that this is for the best. After all, one of the main strengths of anthropology is its fieldwork, as it allows us to gain a detailed and intimate picture of people’s lives. Through fieldwork it is possible to assess how macro forces are a part of local life, rather than assume that every person reacts and relates to large-scale constellations in the same manner. Even so, fieldwork has its problems. As mentioned, this method is inadequate for mapping global constellations. To explore macro forces, anthropologists need to supplement their fieldwork with other approaches, such as for example quantitative methods. However, due to limited time and resources, this might not be a viable solution. Secondary sources can therefore be a valuable supplement when studying macro-micro relations. Such sources might include other academic studies, as well as the media and the internet. In terms of my own research, secondary sources were very important. Without them, I would not have been able to make sense of the ideas and understandings my informants had of information technology. I therefore view my use of secondary sources as a complementary method to my fieldwork. This way of conducting research is not new, but is by no means common practice among anthropologists. This might change in the future as more and more anthropologists seek to understand the global aspects of local experiences.

This thesis was not only challenging in terms of theory and method, but also with regards to its focal point: information technology. Neither computer technology nor people’s relationship to this technology has been a frequent focus of anthropological research. As I have previously discussed, many studies of human-IT relations support either pessimistic or optimistic discourses. These studies often give the impression that computers can determine the quality of our lives, in positive or negative ways. This is especially the case for research

involving children. Psychological studies have also been prone to oversimplifying the relationship children have to computers, claiming that how a child relates to IT is to a large extent determined by his or her individual cognitive development. This cognitive development is seen as evolving through a number of stages steadily progressing as the child grows older (Santrock 1997). Accordingly, how a child perceives and utilizes IT will depend on which stage of cognitive growth it is going through. This view of children has been criticized by sociologists and anthropologists. They argue that one is not justified in identifying a certain cognitive behavior as universal for children everywhere, when “the child” is studied in isolation from the cultures and societies to which it belongs. This is due to the fact that children’s cognitive patterns are to a large degree influenced by their particular exposures to different cultural climates. How they think, reason and view the world is to a large part derived from their social environment (Goodman 1970). Therefore, a child’s cognitive and intellectual capabilities, whether in relation to a computer or anything else, cannot be accounted for without considering the culture(s) the child is a part of.

Fortunately, not all studies of information technology are this simplistic and shallow. In fact, many recent sociological studies seek to provide a nuanced picture, arguing that man’s relationship with computers is highly complex. As discussed in chapter four, these studies claim that we actively incorporate technology into our everyday lives. I agree with this perspective, and hope I have been able to show that many of the children and teachers had an active relationship to the school computers. I have also tried to show that these relationships were a result of many different social processes. As such, even though computers are often used individually, how we view, understand and relate to IT is best explained through the study of human interactions. In fact, I argue that it is simply not possible to understand how people relate to information technology without accounting for the social environments they are a part of. An anthropological approach is particularly well suited for exploring such issues. For example, participant observation allowed me to gain a basic understanding of how IT was a part of life at the elementary school. Any other method might easily have led me to misinterpret or overestimate the importance the computers had in different school situations. This method also effectively helped me dispel the myth that people, and children in particular, are passive subjects overrun by information technology.

In conclusion, I hope this thesis has made it clear that anthropology has much to offer in the area of IT studies, especially in terms of freeing us from uncritically accepting the many

“truths” about computer technology currently circulating the globe. Studying such issues will be increasingly important in the years to come, as the presence of IT will most likely increase in all areas of life. It is therefore crucial that we relate to computer technology in a critical and conscious manner. After all, IT, like all technology, exists as a result of human actions. We are therefore morally responsible for how this technology is developed, and how it is put to use.

8 References

- Adamsen, Billy** 1996: *TV og Computeren – gode babysittere*. Fredriksberg: Samfundslitteratur.
- Appadurai, Arjun** 1990: “Disjuncture and Difference in the Global Cultural Economy”, in *Global Culture. Nationalism, Globalization and Modernity.*, Mike Featherstone (ed.), 295-310. London: SAGE Publications.
- Aries, Phillip** 1962: *Centuries of Childhood*. London: Jonathan Cape.
- Barth, Fredrik** 1978: “Conclusions”, in *Scale and Social Organization*, Fredrik Barth (ed.), 253-273. Oslo: Universitetsforlaget.
- Barth, Fredrik** 1992: “Towards greater naturalism in conceptualizing societies”, in *Conceptualizing Societies*, Adam Kuper (ed.), 17-33. London: Routledge.
- Bellamy, Richard** 1993: “Liberalism”, in *Contemporary Political Ideologies*, Roger Eatwell; Anthony Wright (ed.), 23-49. London: Pinter.
- Bowles, Nigel** 1993: *The Government and Politics of the United States*. London: The Macmillan Press Ltd.
- Campbell-Kelly, Martin; Aspray, William** 1996: *Computer. A History of the Information Machine*. New York: Basic Books.
- Caputo, Virginia** 1995: “Anthropology’s silent “others”: a consideration of some conceptual and methodological issues for the study of youth and children’s cultures”, in *Youth Cultures. A Cross-Cultural Perspective*, Vered Amit-Talai; Helena Wulff (ed.), 19-42. London: Routledge.
- Castell, Manuel** 2000, as referred to by Thomas Hylland Eriksen: “Nettverksmakt: Manuel Castell’s Samtidsdiagnose”, in *Maktens Strateger – Makt og Globaliseringsutredningen*, Iver B. Neumann (ed.), 117-137. Oslo: Pax Forlag A/S.
- Clifford, James** 1990: “Notes on (Field)Notes”, in *Fieldnotes: The Makings of Anthropology*, Roger Sanjek (ed.), 47-68. Ithaca: Cornell University Press.
- Clifford, James** 1997: “Spatial Practices: fieldwork, travel, and the disciplining of anthropology”, in *Anthropological Locations*, Akhil Gupta; James Ferguson (ed.), 185-259. Berkeley: University of California Press.

- Cohen, Anthony P.** 1994: *Self Consciousness. An Alternative Anthropology of Identity.* London: Routledge.
- Corsaro, William A.** 1997: *The Sociology of Childhood.* California: Pine Forge Press.
- Cuff, E.C.; Sharrock, W.W.; Francis, D.W.** 1992: *Perspectives in Sociology.* London: Routledge.
- Dizard Jr., Wilson P.** 1989: *The Coming Information Age. An Overview of Technology, Economics, and Politics.* New York: Longman Inc.
- Ellul, Jacques** 1964 (1954): *The Technological Society.* New York: Vintage Books.
- Escobar, Arturo** 1994: “Welcome to Cyberia. Notes on the Anthropology of Cyberculture”, *Current Anthropology*, 35(3):211-231. Chicago: The University of Chicago Press.
- Frønes, Ivar** 1998: “Mot en Digital Barndom. En Skisse av Fremtidens Barndom.”, in *Digital Barndom*, Marit Haldar; Ivar Frønes (ed.), 12-22. Oslo: Ad Notam Gyldendal A/S.
- Goffman, Erving** 1996: As referred to by Richard Jenkins: *Social Identity.* London: Routledge.
- Goffman, Erving** 1959: *The Presentation of Self in Everyday Life.* New York: Penguin Books.
- Goodman, Mary Ellen** 1970: *The Culture of Childhood. Child's-Eye Views of Society and Culture.* U.S.A.: Teachers College, Columbia University.
- Grünbaum, Pia** 1998: *Barn og Data. En Veiledning for Voksne.* Oslo: Tano Aschehoug.
- Grønhaug, Reidar** 1978 (1972): “Scale as a Variable in Analysis: Fields in Social Organization in Herat, Northwest Afghanistan”, in *Scale and Social Organization*, Fredrik Barth (ed.), 78-121. Oslo: Universitetsforlaget.
- Gullestad, Marianne** 1992: *The Art of Social Relations: Essays on Culture, Social Action and Everyday Life in Modern Norway.* Oslo: Universitetsforlaget.
- Gupta, Akhil; Ferguson, James** 1997: “Discipline and Practice: “The Field” as Site, Method and Location in Anthropology”, in *Anthropological Locations*, Akhil Gupta; James Ferguson (ed.), 1-46. Berkeley: University of California Press.

- Hakken, David**; Andrews, Barbara 1993: *Computing Myths, Class Realities. An Ethnography of Technology and Working People in Sheffield, England.* Oxford: Westview Press.
- Hannerz, Ulf** 1992: *Cultural Complexity. Studies in the Social Organization of Meaning.* New York: Columbia University Press.
- Hanson, F. Allan** 1975: *Meaning in Culture.* London: Routledge & Kegan Paul.
- Holm, Espen** 1996: *Intelligente Idioter. Samfunn, Kreativitet og Informasjonsteknologi.* Oslo: Forum.
- Hylland Eriksen, Thomas** 1993: *Små Steder, Store Spørsmål. Innføring i Sosialantropologi.* Oslo: Universitetsforlaget A/S.
- Hylland Eriksen, Thomas** 2000: "Nettverksmakt: Manuel Castell's Samtidsdiagnose", in *Maktens Strateger – Makt og Globaliseringsutredningen*, Iver B. Neumann (ed.), 117-137. Oslo: Pax Forlag A/S.
- Illustrated Oxford Dictionary** 1998, Oslo: Teknologisk Forlag.
- Jenkins, Richard** 1996: *Social Identity.* London: Routledge.
- Jørgensen, Marianne Winther, Phillips, Louise** 1999: *Diskurs Analyse som Teori og Metode.* Frederiksberg: Roskilde Universitetsforlag.
- Knezek, Gerald A. ; Miyashita, Keiko T.** 1996: "Reflections on Selected Research Topics", in *Children and Computers in School*, Betty A. Collis, Gerald A. Knezek, Kwok-Wing Lai, Keiko T. Miyashita, Willem J. Pelgrum, Tjeerd Plomp, Takashi Sakamoto (ed.), 105-130. New Jersey: Lawrence Erlbaum Associates, Inc.
- Lederman, Rena** 1990: "Pretexts for Ethnography: on reading Fieldnotes", in *Fieldnotes: The Makings of Anthropology*, Roger Sanjek (ed.), 71-90. Ithaca: Cornell University Press.
- Lie, Merete; Sørensen, Knut H.** 1996: "Making Technology Our Own? Domesticating Technology into Everyday Life", in *Making Technology Our Own? Domesticating Technology into Everyday Life*, Merete Lie; Knut Sørensen (ed.), 1-30. Oslo: Scandinavian University Press.

- Lie, Merete** 1996: “Gender in the Image of Technology”, in *Making Technology Our Own? Domesticating Technology into Everyday Life*, Merete Lie; Knut Sørensen (ed.), 201-223. Oslo: Scandinavian University Press.
- MacQueen, Donald** 1991: *American Social Studies*. Sweden: Studentlitteratur.
- Murdock, Graham; Hartmann, Paul; Gray, Peggy** 1992: “Contextualizing Home Computing: Resources and Practices”, in *Consuming Technologies. Media and Information in Domestic Spaces*, Roger Silverstone; Eric Hirsch (ed.), 146-160. London: Routledge.
- Newman, Katherine S.** 1988: *Falling from Grace. The Experience of Downward Mobility in the American Middle Class*. New York: Vintage Books.
- Newman, Katherine S.** 1993: *Declining Fortunes. The Withering of the American Dream*. New York: Basic Books.
- Nixon, Helen** 1998: “Fun and Games are Serious Business”, in *Digital Diversions. Youth Culture in the Age of Multimedia*, Julian Sefton-Green (ed.), 21-42. London: UCL Press Ltd.
- Orr Vered, Karen** 1998: “Blue Group Boys Play *Incredible Machine*, Girls Play Hopscotch: Social Discourse and Gendered Play at the Computer”, in *Digital Diversions. Youth Culture in the Age of Multimedia*, Julian Sefton-Green (ed.), 43-61. London: UCL Press Ltd.
- Papert, Seymour** 1993: *The Children’s Machine. Rethinking School in the Age of the Computer*. New York: Basic Books.
- Postman, Niel** 1992: *Technopoly. The Surrender of Culture to Technology*. New York: Vintage Books.
- Rhum, Michael** 1997: “Fieldwork”, in *The Dictionary of Anthropology*, Thomas Barfield (ed.), 188-191. Oxford: Blackwell Publishers Ltd.
- Rogers, Everett M.** 1986: *Communication Technology. The New Media in Society*. New York: The Free Press.
- Santrock, John W.** 1997: *Life-Span Development*. U.S.A.: Times Mirror Higher Education Group, Inc.
- Schofield, Janet W.** 1995: *Computers and Classroom Culture*. Cambridge: Cambridge University Press.

- Sefton-Green, Julian** 1998: "Introduction: Being Young in the Digital Age", in *Digital Diversions. Youth Culture in the Age of Multimedia*, Julian Sefton-Green (ed.), 1-20. London: UCL Press Ltd.
- Seymour-Smith, Charlotte** 1986: *Macmillan Dictionary of Anthropology*. London: Macmillan Press Ltd.
- Tapscott, Don** 1996: *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*. New York: McGraw-Hill.
- Tapscott, Don** 1998: *Growing Up Digital. The Rise of the Net Generation*. New York: McGraw-Hill.
- Turkle, Sherry** 1995: *Life on the Screen. Identity in the Age of the Internet*. London: Phoenix.
- Veiden, Pål; Burkeland, Sollaug** 1999: *Samfunnsvitenskapelig Ordbok*. Oslo: Spartacus Forlag AS.
- Weber, Max** 1992 (1930): *The Protestant Ethic and the Spirit of Capitalism*. London: Routledge.
- Wilkinson, John** 1964 (1954): "Translator's Introduction", in *The Technological Society*, Jacques Ellul, x-xx. New York: Vintage Books.
- Winston, Brian** 1998: *Media Technology and Society. A History: From the Telegraph to the Internet*. London: Routledge.
- Wolf, Eric** 1994: "Facing Power: Old Insights, New Questions", in *Assessing Cultural Anthropology*, Robert Borofsky (ed.), 218-228. London: McGraw-Hill Inc.
- Write, Anthony** 1993: "Social Democracy and Democratic Socialism", in *Contemporary Political Ideologies*, Roger Eatwell; Anthony Wright (ed.), 78-99. London: Pinter.
- Zorkoczy, Peter; Heap, Nicholas** 1995: *Information Technology. An Introduction*. London: Pitman Publishing.

8.1 Internet Web Sites

Chapter one

- **www.wcsu.ctstateu.edu** – Western Connecticut State University, Department of Social Sciences – Anthropology Internet Resources
Full address: www.wcsu.ctstateu.edu/socialsci/antres.html

Chapter two

- **www.usatoday.com 19.02.01** – American newspaper USA Today
Full address: <http://www.usatoday.com/life/cyber/tech/2001-02-18-netpop.html>
- **www.aftenposten.no 23.05.01** – Norwegian newspaper Aftenposten
Full address: <http://rigg.aftenposten.no/nyheter/nett/article.jhtml?articleID=546>

Chapter three

- **www.odin.dep.no/kuf** - Norwegian Department of Education
- **www.state.me.us/education/** – Maine Department of Education
- **www.ed.gov/technology/goals.htm** - US Department of Education – Educational Technology Goals

Chapter four

- **www.cnn.com 12.04.00** – Cable News Network
Full address: <http://www.cnn.com/2...g/04/11/girls.computer/index.html>
- **www.sunworld.com 08.05.00** – Sun Mircosystems
Full address: http://www.sunworld.com/swol-11-1998/f_swol-11-bookshelf.html
- **www.un.org** – United Nations Homepage
- **www.usatoday.com 13.10.00** – American newspaper USA Today
Full address: <http://www.usatoday.com/life/cyber/tech/review/games/cgg244.html>
- **www.usatoday.com 14.07.00** – American newspaper USA Today
Full address: <http://www.usatoday.com/life/cyber/tech/review/games/cgg199.html>

Chapter five

- **www.dagbladet.no 24.08.01** – Norwegian newspaper Dagbladet
Full address: <http://www.dagbladet.no/dinside/2001/08/24/276901.html>

8.2 Pictures

Front page – Clipart from Microsoft Word, Office 2000.

Maps – Microsoft Encarta 95.

Picture 1 – Advertisement for Oracle software, from the magazine Newsweek, Special Edition “Issues 2000”, Dec. 1999 – Feb. 2000.

Picture 2 – Advertisement for Dell computers, from the magazine PCW – Personal Computer World, Sep. 2001.

Picture 3 – Advertisement for Hewlett Packard, from the magazine PCW – Personal Computer World, Sep. 2001.

Picture 4 – Advertisement for Sonic pc games, from the magazine PC Zone, #106, Sep. 2001.

Picture 5 & 6 – Bizarro comic strips, created by Dan Piraro (1999) – www.ucomics.com.

Picture 7 – Advertisement for Microsoft, from the magazine Smithsonian, Jan. 1999.

Picture 8 – Advertisement for the pc game “Diablo 2”, from the magazine PC Zone, #106, Sep. 2001.

Picture 9 – Movie poster for “The Matrix” – www.imdb.com (Internet Movie Database).

Picture 10 & 11 – Private photos.

Picture 12, 13 & 14 – Power Point slides made by Mrs. Blair’s class.