»EDUCATIVE MOMENTS«

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PETER EKDAHL

Educative Moments Rethorics and Realities

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1. Introduction

THIS LICENTIATE THESIS is an attempt to provide a theoretical frame of understanding for some of the concepts with which I have worked for the last 20 years. The main concepts in which I am interested are: learning processes, gestalting and digital technology—and the connections that arise between them. The reason for my interest in these fields is twofold. On the personal level, I hope to render visible my own learning processes, and on the professional level, my interest has been piqued through many years' involvement in a wide variety of educational and production projects that have created a dynamic and energy for both me and other people involved in them. But the most important question has remained unanswered—*how* have we gone about creating this dynamic to move forwards? How can we make projects of transformation communicable, interpretable and as open as possible?

I interpret *learning processes* thus:

In *Kunskap i handling*¹ (Knowledge in action) Bengt Molander describes knowledge as a form of attention. By this he means that there is the distinction between imitating someone or something and integrating knowledge into one's very person—gaining experience from knowledge—that is unique to the individual. Molander stresses three main elements in this process:

Practice or training—repetition and listening

Discussions about techniques, reflection about how something is done—to create a language that goes with the activities

Personal introduction into a tradition through a teacher or instructor—narratives and memories have an important function in creating a professional identity

»In all practical art, there is a dialectic similar to the one found in learning: a dialectic between trusting blindly in one's own ability and being forced to go beyond this and create a new way, with all that this entails of uncertainty«². In the learning process, the question of *how* rather than why is central³.

By gestalting, I mean:

Gestalting is the visible result of developing ideas; a form and a content that can be told through a medium⁴.

I interpret digital technology thus:

Communication using binary processes. I choose to use the concept >digital technology< as opposed to IT or information technology, as otherwise I would soon find myself in a complex interpretative situation that would render the focus of my research unclear⁵.

These three concepts are closely associated with most people's own experiences in life and thus constitute significant ideas (conscious or unconscious) about their hopes, dreams and life content. They are part of a larger context and ought therefore to be studied from several interdisciplinary perspectives.

To this end, and to limit the scope of my thesis, I have chosen to study the concepts from two perspectives—from the perspective of Blekinge and from a third-world perspective. The reason I have chosen these two angles is that studying these concepts on the local level provides the necessary closeness, while considering them in a third-world perspective provides the necessary distance.

In order to illustrate the complexity of the concepts, I have chosen to study both the rhetorical level—the narratives, the dreams and the hopes—and people's actual experiences, i.e. the realities, hence the dialectical title of the thesis.

The educative moment is the rare moment when rhetoric and realities coincide. When tradition and transformation together cause renewal on an individual or collective level, the conditions exist for people to be able to see themselves and their relations in a new light.

I want to let the complex remain complex⁶.

The structure of the thesis

My thesis consists of a presentation of some important milestones in my professional life that directly or indirectly have had an influence on the origins of the four papers I am presenting. The milestones that I want to tell about are:

My previous experiences of practical pedagogy The arrival of digital technology at Jämshögs Folk High School Adult education and democracy in Bangladesh The development project »Contemporary Acrobats« The development project »BIT houses in the villages of Blekinge« Blekinge Institute of Technology in a Triple Helix context

I will then discuss three different approaches to digital technologies as opportunities of transformations and will conclude this introductory paper with some epistemological considerations.

Finally, I will present four papers:

PAPER I-PETER EKDAHL , LENA TROJER:

Experiments where ICT, Science and Politics Implode Conference paper 4s/ EASST Conference 2000 »Worlds in Transition: Technoscience, Citizenship and Culture in the 21st Century«, 27–30 September 2000 at the University of Vienna, Austria.

PAPER 2-PETER EKDAHL, LENA TROJER:

Digital Divide: Catch Up for What? commissioned by the Gender and Development Studies Center, Asian Institute of Technology, Thailand. This article was published in the journal Gender, Technology and Development, January–April 2002, Vol. 6, number 1.

PAPER 3-PETER EKDAHL , LENA TROJER:

Accountability and ICT Development Discourses—Proceedings IFIP WG9.4 Conference »ICT and Development: New Opportunities, Perspectives & Challenges«. Bangalore, India, 29–31 May 2002

PAPER 4-PETER EKDAHL:

Learning Processes in Technical Interpretive Higher Education is a reworked version of the article »Knowledge Production, Digital Infrastructure and Space«, presented at the ITDG conference, »Information Technology, Transnational Democracy and Gender«. Ronneby 16–18 November 2001.

INTRODUCTION PT. I MILESTONES«

Previous experiences of practical pedagogy

When I first started working at Jämshögs Folk High School in 1980, I found myself drawn into a century-old tradition of non formal adult education and awareness raising whose main characteristics was to provide space for changes and a strong emphasis on non formal education with books and texts in the center.

In my search for a suitable pedagogical philosophy, I came across Mats Wahl's books on practical pedagogy⁷. Rereading his books some twenty years later, I now realise that he has had a decisive influence on my professional development with his way of following a rhetoric in its most positive meaning. Mats Wahl always starts from the standpoint of his work as a specialised teacher at various different secondary schools in the suburbs of Stockholm and he places his experiences in a theoretical frames of understandings so as to create a complex system. The schools' activities and the possibilities afforded to pupils to undergo a learning process rest on the ability to keep the whole system—politics, societal development, external decision-makers, school administrators, teachers, pupils, parents—working together like characters in a classical drama. In this drama, there are two main protagonists: the pupil and the teacher.

Not without reason, his first book, *På väg mot växandets punkt* (Towards the point of growing), deals with the conditions that shape young people and the possibilities afforded to them to work on their learning process.

His second book *Konsten att undervisa* (The art of teaching) focuses on the teacher's conditions and had the largest impact on me at the Folk High School. The rhetoric of this book taught me something fundamental about the possibilities a learning environment creates for practical-pedagogical work predisposed to change: »When I try to grasp who taught me what I think I know, I see many different faces and situations. Everything I wanted to teach others started gradually to deal with everything I myself wanted to learn. To the extent that I have a talent, I would have to say that it is my good sense to choose good friends and good teachers.

My art is what I do together with the people I raise and teach. My art is to spend time with growing people, to nurture people's occupations and to enjoy my work"⁸.

Reading this book taught me that the centuries-old hierarchy in the educational system has grown forth from a merit-fixated perspective, and that it also renders impossible the kind of communal work that is necessary in a learning environment. Everyone involved in a learning environment is a valuable pedagogical resource. The third wisdom I gleaned was that differences in personalities provide the necessary stimulation, closeness and distance required to carry out any pedagogical exercise worth its salt⁹.

The arrival of digital technology at Jämshögs Folk High School

The Folk High School got its first computer—a Commodore vic-20—in the mid-1980s. This computer was designed for programming in Basic. It could probably have functioned as a good platform for students interested in computer programming, but the machine was locked away for the most part and only brought out in a few special mathematics classes under the close supervision of the teacher. It disappeared quite quickly and was only found many years later in a cupboard that was being moved from the mathematics room to the cold store. One of the reasons for the sad fate that befell this computer may be that computing as a concept posed a threat to the non formal educational ideals at Jämshögs Folk High School at the time.

A second attempt to introduce digital technology was made at the beginning of the 1990s. There was vague talk that the school needed a >word processor< to function as a kind of advanced form of typewriter. One fine summer's day, a colleague and I went to Malmö and bought three PC:s and a licence for the desktop publishing software PageMaker. I can no longer recall why we bought this program, but I mention it here because this program represented a dramatic turning point for me. The computers we bought did not have an operating system installed, and we had to start from scratch with a blank screen. Installing the hardware, the operating system and the software was a venture that took several days and did not always result in progress. We kept having to start from the beginning again and again. Eventually, after about a month, we had managed to install PageMaker. One day I opened a tutorial and after much trial and error managed to create a page containing text and images. I remember my excitement as I ran round all my colleagues and with quivering hands showed them an incredibly bad typographical product printed on a nine-point matrix printer as if it was one of the seven wonders of the world.

Needless to say, it wasn't. However, I realised much later that my first contact with a computer had given me a new means of communicating with the world—I could reshape my own narratives about my realities again and again ad infinitum. The technology was my accomplice in the instantaneous change of the form and content of texts and images that it and I produced together. I also unintentionally and by necessity learned about the basics of computer technology and computer systems, although this knowledge was not particularly useful back then.

When those of us who worked at the Folk High School started to use computers in our education work we realised that for many of the course participants the digital technology represented a potential for a learning environment that was radically different from anything they had experienced previously. Digital technology gave them the opportunity to start from the beginning again without any of the burdens of their previous environments. And as computers became ever better at handling images and sound, their significance as important learning environments continued to increase.

Adult education and democracy in Bangladesh

For a variety of reasons, at the beginning of the 1990s I became involved in the Folk High School's international activities. Much of this consisted of an educational programme the aim of which was to raise awareness about and create contacts with the third world. For two months each year, the programme visited NGO:S¹⁰ in India. The selected NGO:S all had contact with or received financial support from SIDA.

During the 1991 trip, one of the course participants came into contact with the Swedish development aid organisation Diakonia that had been running non formal adult education programmes in Bangladesh for several years. That year I had the opportunity to join the trip and take part in the work for two months.

What I found particularly interesting about Diakonia's work was their way of relating. Instead of describing development aid from a bottom–up perspective, they were building up a democratic network on the basis of local organisations on the village level. The Swedish co-ordinator, Jan Åhlander, described the network as parallel decision-making bodies to the civil authorities. The focus of the work was on gathering together people who did odd jobs in villages, who were dependent on finding work each day to support their families.

In addition to basic literacy and health work, the organisation also conducted advanced democratisation work, where individuals were equipped to take part in their country's future. The work was based on a document that had evolved in collaboration with the local NGO:s involved in the project.

The document has a structure and methodology that inspired a pedagogical reform in Swedish adult education.

During the history of Diakonia in Bangladesh, we have learnt that there is a risk that instead of development, self-support and improved living conditions, the opposite with increased dependency can be the result. Therefore, the methodology is discussed from time to time and improved in order to meet the needs of the people. Moreover, experience shows that clear definitions regarding *who* are the people we want to reach, must be made [...]

How can our supported projects be an expression of the wishes of the >recipient< and directed to basic needs such as food, housing, work, training, medical care and conscientisation? We would like to discuss the last point first. What is conscientisation? [...]

That people are made aware of their own situation and see themselves as an important part of society.

That people know how society works.

That people know their rights and duties in society. They must know how to obtain their due benefits and how to perform their responsibilities in a democratic way.

That people are made aware of questions related to the environment [...] in order to make it possible for them to improve their immediate living conditions.

That people understand that improvement and development is not only for the individual but for society at large.

That the only way to achieve the goal is to work in an organised way and that all people are equal, men and women alike, and if all have a part in the decisionmaking then all will also share the responsibility.

[...]

The first step is therefore to provide training and opportunity for the partner organisations and their staff to understand their own position, to set realistic aims and to give them a module and a methodology in conscientisation work.

»MILESTONES«

The second step is to transfer the same knowledge to the people whom we want to serve. The *aim* of doing this is to create a climate of *hope*; the lot of people in less privileged situations *can* be changed; but it depends on themselves to have the will to change it and to realise that they have the *potentials* to do it¹¹.

What may seem self-evident in a Swedish context becomes apparent in Bangladesh, which does not have a democratic tradition and where a lot of the people in rural communities need to be made aware of their rights and responsibilities as citizens.

In the second half of the 1990s, the Diakonia document played an important part in the pedagogical reforms that I took part in at Jämshögs Folk High School. The structural unrest caused by the fast changes in society in Sweden necessitated new solutions in the educational system.

The development project »Contemporary Acrobats«

In the early 1990s, Swedish society underwent some very fast changes that had a huge impact on the employment market and the education sector. Major industrial rationalisation caused an unexpected leap in unemployment figures, and the number of applications to universities and colleges increased. This in turn led to very high entrance requirements.

At the same time, the public rhetorics focused on terms such as >the post-industrial society< and >the knowledge society<. The transformations were seen as a sign of a more widespread paradigm shift within public administration, industry and education. Whether this was in fact the case can be queried, but there were certainly some signs in favour of such an interpretation.

One such sign was the fact that previously sovereign nation states started to come loose at the seams. With the globalisation of trade and cash flow, power started to slip from the hands of the established political decision-makers (the municipal council, the county council, parliament) to special-interest lobbyists, where their effectiveness seemed to be related to how great an economic and political influence the various different interests could acquire.

The traditional concept of democracy that for 75 years had been defined on the basis of everyone's right and duty to be integrated into the social system was slowly breaking down. A new generation was starting to question whether the traditional concept of democracy was a right or in fact an obstacle to individual freedom.

Another possible sign was that some members of the generation that was under the age of 25 did not seem to want to conform to the social system. They saw their parents' mistakes in believing in a linear development in life both on the micro level (higher education will get you a good job that is well paid) and on the macro level (faith in the welfare state that always looks after everybody's needs regardless of political structures).

Broken dreams had created a generation that seemed to be more interested in self-trust rather than collective consumption.

Characteristics of self-trust include the desire to find alternative life styles that lead to greater personal freedom and a greater awareness of personal responsibility. Self-trust can also entail diminished needs for authoritarian structures and established social patterns, fewer materialistic requirements and attaching greater importance to one's own experiences.

In many cases, this generation also suffered from cultural inhibition, narcissism and stress. In all likelihood, this generation, which is able to treat digital technology with all the self-evidence it deserves, will also set different requirements for what the technology shall be used for than the generation that is now middle aged.

A third sign may have been that the educational system in Sweden started showing signs of cracking up. The goals that the curricula laid down for compulsory schooling and upper secondary school were increasingly at odds with the labour organisation that had developed over the centuries to create obedient, loyal, results-oriented, salaried citizens—qualities that these days are becoming ever more outmoded. Implementing a form of communication technology in this context that defends control over communication between individuals, regardless of where in the world they might be, is of course another sign of the times, as well as entailing more stress for the people that up until now have wielded the political and economic power. When politicians and economists are unable to control people's behaviour, habits or opinions, the indicated old structures start to crumble and fall¹².

Olofström municipality, home to Jämshögs Folk High School, has traditionally had plenty of work to offer inhabitants, as it is also home to Volvo's largest coachwork components factory. But the sudden changes in the 1990s struck even this normally stable industrial municipality, and many young people that had previously been able to find casual work at Volvo while waiting to continue their education suddenly found themselves without work or an education. Nor were they eligible for unemployment benefit. The Folk High School was given extra state funding to provide courses for unemployed people, and in autumn 1993, 24 young people that had been made redundant were offered courses. The two project leaders decided to employ two basic values as their objectives: to work with the course participants without problematising either their background or their current situation,

to try to find new forms of learning processes together with the course participants, in order not to reproduce the patterns that the students had acquired at secondary school.

After a two-year pilot project, the Folk High School was awarded resources for an R&D project called *Samtidsakrobaterna* (»contemporary acrobats«)¹³.

Contemporary Acrobats was set up as a two-year development project focusing on digital media, culture, communication and social change. The goal was to create meaning, connections and employment in an age when the old norms for work and support no longer hold true for everyone.

On the basis of a number of questions about how we could combine traditional adult education with modern communication technology, a couple of basic assumptions concerning the world and people, and a theory that everyone wants to be able to influence their own life, we built up a project management training course where the performance targets and learning processes were interdependent.

Over two years, a number of projects were carried out, sometimes in collaboration with other local actors. The 1997 project evaluation¹⁴ asked what people need to learn in order to be able to influence their own lives when the traditional paths of education and work are no longer adequate. The answers that the report suggested were that people need to be able to:

recognise opportunities, try out ideas and work in a more ad hoc manner

develop self-motivation, take initiative and assume responsibility

combine studies and work

learn to use all their skills

collaborate with other people

handle digital communication technology

practice and be allowed to fail

Since most of these answers were not high-priority issues in Swedish secondary education, a lot of time was spent trying to find new forms of learning processes where both the desire and the will to learn were given pride of place. Two of the most important experiences we gained were that each individual needs space and the opportunity for dialogue and that we should not try to mask our differences. At the end of the two project years, the Folk High School had gathered sufficient competence, experience and technology to be able to offer its services externally, and the resource centre *Socit* was founded¹⁵.

The development project »BIT houses in the villages of Blekinge«

From the middle of the 1980s, the Blekinge region of Sweden found itself undergoing a marked transformation from an area dominated by heavy industry to an area with more knowledge and innovation-focused businesses. A powerful centre of change was created when the University of Karlskrona/ Ronneby (HKR), now Blekinge Institute of Technology was founded. In collaboration with a variety of actors including the University of Karlskrona/ Ronneby, the county administration in Blekinge, the Blekinge Association of Local Authorities and Blekinge County Council, the Deputy Governor of Blekinge and visionary Svante Ingemarsson founded the non-profit association IT Blekinge. The purpose of IT Blekinge was to initiate a development programme and projects that would strengthen the collaboration between the university, the business community and the political sphere in the emerging IT sector.

There were several different projects within the overall framework of the IT Blekinge development programme, one of which was the telecottages project »BIT-Världshus i Blekinges tätorter« (BIT houses in the villages of Blekinge). IT Blekinge's overarching aim for the project was that the actors should work towards ensuring that the general public and small businesses in the area's small towns and rural communities were given the opportunity to form an opinion about what the new information technology could signify for the individual and small businesses. Through people's activities at the BIT houses, it was hoped that the new technology would be made tangible and accessible for as many people as possible.

In order to ensure that the project remained local, IT Blekinge appointed ten local legal entities to run ten telecottages for two years.

In 1997, Svante Ingemarsson asked Socit if it was willing to act as a common pedagogical and technical resource for the project »BIT houses in the villages of Blekinge«. Socit accepted the assignment, despite the fact that it did entail some complications for me in that I was now both a participant in the project and a member of a research group that had been commissioned to evaluate the project.

The evaluation process

IT Blekinge wanted to have the BIT house project evaluated by a group of researchers that followed the project from start to finish. The evaluation group formulated the assignment as an overall process evaluation of »BIT houses in the villages of Blekinge« and based its assessment on the following understanding:

The major structural transformations, the work mentality, the strong traditions of low self-esteem (>It'll never work...<) that are to be found in Blekinge make it extremely difficult for people to find the new life patterns that are needed to maintain their society and culture. The only solution is to expose their life conditions to previously untried ideas. For this reason, research group should try to circumvent the established structures to ensure that the process of change is not bound by previously defined goals. Of course, this is a demanding task—for the actors in the IT Blekinge project, since their role as experts will be queried, and for the people who live in Blekinge. If the latter are allowed to take part on their own terms, their skills can be employed and their wishes can be satisfied, but in a different way to what may have appeared possible at first glance. The goal for IT Blekinge—to develop democratic structures and give local people the opportunity to exert an influence—should be reconcilable with the idea of giving people the opportunity to shape their own lives in new and as yet unrealised ways.

One important goal for the evaluation project was to ensure the transfer of experience and knowledge and skills gained to the ongoing reform work for regional development. The attempts of each BIT house project to create activities and realities in the course of the short project period are summarised below in the discussion of rhetoric and realities, indicating some of the key factors for a development project.

Rhetoric and realities

The BIT house project had been initiated and was carried out on the basis of strong visions on everything from the EU level to the local level. In the project, the rhetoric inherent in these visions was tried out in different realities in order to be able to yield concrete results and at the same time help create new and alternative realities. It was a search for balancing points, which could not be fixed, but which were located somewhere between the rhetoric and the currently existing realities.

In order to clarify this meeting between rhetoric and realities, it might be fruitful to look for experiences that express key questions in the processes that were developed in the project.

Time and space

Like most EU projects, the BIT house project had a relatively short project cycle. In 18 months, the project was to be initiated, planned and carried out. This caused considerable problems, partly because the project depended on the implementation of a digital infrastructure, which took quite a long time and meant that the time left for execution of the project was halved.

In summary, we can find that time is a positive quality as long as you have it, but an enemy when you don't. This may sound a little banal, but projects of transformation using digital infrastructure as its backbone generally take twice as long as planned.

The space of the project, the visual arena in which the project existed, was to be based on openness, the ability to listen and with plenty of room for mistakes.

The role of the technology

As I suggested above, the implementation of the technology ended up taking more time and energy than the content of the project for a long time. This affected the ability of the various BIT houses to establish their local identity and find new forms of work.

The fact that most of the explicit goals for what the technology was supposed to render possible (for example, video conferencing) were not achieved during the project period caused much frustration. In one way, the digital infrastructure actually ended up being an obstacle rather than a support for the project.

The project managers were supposed to strive to make the project process as transparent as possible for the participants involved in the project. This ought to have entailed that all aspects of the project were accessible and maximum simplicity in terms of information, communication and technology.

The duration of the project

In the beginning in particular, it was clear that the BIT house project had been planned as a pan-regional project and implemented during the time span that had been made available for the project within the framework of RISI¹⁶. It is important to bear in mind that the RISI projects in other countries used the entire 18 months of the project period solely to plan the various IT-related projects.

It was unrealistic to believe that the period allotted to the project would suffice to initiate, establish and create enterprises that were to be commercially viable or supported by various authorities. To this end, a project would reasonably have needed at least three years.

Other aspects of time as a weak link in the project include the relationship between time and trust, and the relationship between time and the necessary scope for failure and mistakes—an absolute must in real-life transformation projects. The shorter the project period, the greater the need for tight project management and transparency in the project.

New arenas for IT development

One of the ideas behind the BIT house project was to create new arenas in which established actors would not have the opportunity to dominate and demand >more of the same<, but where innovation and creativity would be nurtured.

However, the BIT houses were generally run by conventional established actors, such as the Federation of Non Formal Educational Associations. This constituted an unavoidable paradox, as development rooted in local conditions must start with good local knowledge and be based on local organisations.

The decisive question of how a fundamental reform project can be undertaken locally, where traditions, continuity and change are to bring about new arenas is still unanswered and still poses as much of a challenge today as it did during the BIT house project.

Setting a good example

The goal of setting Blekinge up as a full-scale laboratory for IT-related experiments also contains a wish to set a good example. The experience gained in this case would suggest that trying to set a good example does not work in local realities. Each local transformation project works from the starting point of its own specific conditions and presuppositions. There are no short cuts. The task will be as arduous and time-consuming for each new undertaking.

The sum of knowledge and experience gained may lead to a short list being compiled of tested strategies that are thought to be relevant in the dynamic development systems. The tested strategies may provide inspiration for new projects, but they will never constitute a straightforward template.

The rhetoric of regional development

The experience gained from the RISI work, in which the BIT house project constituted a major part, suggests three priority aspects for regional development. If we regard these aspects as three parts of the dominant rhetoric, the issue then becomes: how has this rhetoric interacted with the realities in the region.

The >everyone perspective<

The first part of the rhetoric is an approach that has become known as the >everyone perspective<. Many of the preconceptions that dominated the BIT house project were also found in SITS¹⁷, on which the project was modelled. The reasoning can be summarised thus: the technology already exists; the challenge is to make it accessible to everyone. Who was to be included in this >everyone< was not analysed at all and appears to have been taken for grant-ed. The BIT houses' interpretation of the >everyone perspective< was clearly demonstrated through the predominant activity of the project: traditional educational activities, often in collaboration with established educational associations.

However, there were some other movements in the BIT houses that opened up the concept somewhat, namely the people: the local population, tourists, young people, parents, children, pensioners, immigrants, home-owners, farmers and many other categories of people who came to the telecottages to use the email, surf the net to find information (or just for fun), to play games via the Internet, try new things and learn, to taste the new technology and either swallow it or spit it out. The local ties seemed to motivate the BIT houses to experiment and work with the >everyone perspective< in order to give it meaning and develop variety.

One of the project managers thought that the >everyone perspective< was misconceived. He held that we cannot assume that IT is for everyone:

»[...] the goal is to help people find their place in the world of today and to be happy in it. This includes the right to ignore it completely, to find out that it is not their cup of tea, to decide that they do not need it or to determine their own profile.«

The >everyone perspective< also encompassed the explicit objectives of promoting the opportunities of women, disabled people and other disadvantaged groups of people in the information society.

Bottom-up perspective

The second part of the rhetoric is the bottom–up approach, which can only be understood in the light of its opposite—the top–down approach. If we assume that sustainable change requires reciprocalilty, then it is more logical to relate horizontally (as equals) than vertically (hierarchically). This also applies to our interaction with people in connection with IT-related developments. A transformatory project like the BIT house project ought to entail considerable work on understandings and development of concepts of democracy that have been adapted to a local reform project. In this context, the experiences reaped by Jan Åhlander in his work with Diakonia in Bangladesh could be of great value¹⁸.

A regional development laboratory for full-scale experiments within IT

The third aspect of rhetoric concerned regarding Blekinge as a regional development laboratory for full-scale experimentation within the field of IT. IT Blekinge considered the county as a suitable testing ground for the development of technology and new IT-based services. This kind of reasoning was used as the strongest argument in the various negotiations with external funders. It was a forceful argument, in that the region is complete, seen from the outside—it has a multi-faceted social infrastructure, a differentiated business sector, educational institutions at every level from pre-school to university, etc. However, what IT Blekinge did not take sufficiently into account was the fact that the region has a historically rooted fragmented culture. The tensions between the east and the west and between urban and rural areas made their presence felt in the project.

There was an explicit understanding at most of the BIT houses that >you have to know what you want<, i.e. develop a profile, before linking up with the other telecottages to constitute a functional network. It was crucial to build a firm foundation first by gathering knowledge and experience from local projects. Once the local bases had been set up and there was a certain degree of stability and the profile had been established, it was possible to start testing different types of collaboration.

Trust and regional development

During the evaluation of the project, we came across the book *Tillit*, *kultur och regional utveckling* (Trust, culture and regional development)"¹⁹. Here the authors present arguments that we found interesting for our evaluation, concerning the significance the BIT house project could have as part of a regional-political experiment for growth and support for vulnerable groups of people in a time when business is transforming social structures.

The parallels between the authors' presentation and our evaluation project consisted in the question of what a region's identity is based on—and which criteria political instrumental interventions ought to fulfil to ensure that they have the desired consequences for the life of a region.

What makes Blekinge special as a region?

Successful politics cannot ignore the time and space it acts on. »It is thus necessary to base every kind of politics at the place and take into account its deep historical roots«²⁰. The successful implementation of political measures must therefore be based on the ability to recognise what makes Blekinge special as a region.

According to the authors, recognising the unique nature of a place entails giving Blekinge an *adequate name*—a label that is relevant. Further, »the prerequisite for this naming and creative process is collective historical experiences, common ideas, images, opinions, special linguistic features and patterns of communication«. The authors call this the »mental infrastructure« consisting of »our taking-for-granted, our perception of reality or world-view, of our self-evident ideas, opinions and ideas about what Blekinge is and the state it is in«²¹. But how can we achieve this?

Since this is now a case of individual people's opportunity and tendency to perceive of Blekinge as their own, the naming process is based on the principle of free will. This entails that an identity cannot be forced upon a person—they must themselves choose where they feel they belong. The authors argue this point from a number of different principles of identity.

For example, the principle of ethnicity entails that people draw on a common history and a shared set of norms. We have seen this principle taken to its logical end in the war in the Balkans.

The principle of ideology is based on a common place of residence and common overarching ideas, but this also entails problems today. In the modern multicultural society in contemporary Sweden, there is no common place of residence or shared ideas, which poses a dilemma for popular movements and political parties alike, since the principle of ideology presupposes an absence of value conflicts—everything that is the same is common.

By contrast, the principle of associative identity, which entails that people doing things together, locally or regionally²², might possibly be applicable in a value-pluralistic environment, as long as doing things together is perceived as a common interest.

»The American political scientist Robert Putnam has [...] attracted [...] a good deal of attention [...] with his study of the democratic development in Italy. He compares northern Italy with the southern part of the country and wonders why the democratic institutions in the north are so much more developed and stable than those in the south. His conclusion is that in the north there are more bridge clubs, football clubs, choirs and generally more organisations of all types than there are in the south. Simply, people do more things together. According to Putnam, a key word in this perspective is trust. When people do things together, the trust between them increases. And when there is trust, there are also the conditions for democratic development. But not only this, it also appears that this element of trust is the very precondition necessary for economic growth. Economic growth is not a prerequisite for the development of democracy; on the contrary, developed and stable democratic institutions are a prerequisite for economic growth«23. »People dare to take a risk together with people they know and trust. And we know the people we do things with«²⁴. In addition, according to the authors, the foundation of the mental infrastructure is the inhabitants' self-confidence and trust in the institutions, which is the basis for the naming process. By having good knowledge about and working for, not against, this mental infrastructure, political processes can yield good results.

Of course it is possible to query Stevrin and Uhlin's arguments, since it is difficult to pinpoint the special characteristics of Blekinge. Although the region is small, both in terms of the number of inhabitants and geographically, it is possible to query whether Blekinge is a region at all, seen from the perspective of trust.

When the main industrial structures are being changed from heavy manufacturing industry to telecommunications and the computer industry in the east, while Karlshamn can still depend on the industrial giant Karlshamn AB, Sölvesborg remains a trading centre and Olofström still attaches great hopes to Volvo-related manufacturing, is it still possible to talk of a region that can be regarded as having a shared mental infrastructure as its basis? Further, how is the eastern part of the area affected by being more closely tied to the centre of the regional power structure, while the western part remains somewhat on the periphery?

Learning as a process

In this day and age of regional innovation systems and competence enhancement, there is surprisingly little talk about how knowledge arises, i.e. how learning actually occurs as a process—and not only learning on an individual level, but in society as a whole. »To learn how we collectively learn is probably the key to success in Blekinge«²⁵.

One of the challenges facing the BIT house project ought to have been creating a new long-term learning structure that differed from the one founded on the values promoted by the outmoded industrial sector, since the development of knowledge and skills that the BIT house project aimed to achieve was intended to make up for the deficiencies in the industrial sector's learning structure.

In the employment market there are ever more people who are having a hard time feeling part of the changes in society. In general, they have difficulties finding a new balancing point between security and freedom when changes are made to the welfare society. In order to find a context and sense in life, it is important to understand what is happening, to be prepared and to be able to influence one's own life situation. The structural changes that we see today, primarily within the industrial sector and the public-sector welfare and care services have a huge impact on the ability of the less-educated workforce to support themselves. At the same time, pride in one's profession and the feeling of democratic participation that are necessary to maintain identity and a sense of social community are disappearing.

One way of handling a constantly changing work situation is to introduce an adult education system based on the principle of life-long learning.

While the traditional Swedish educational and training philosophy is based on values that used to be dominant in the form of competition, linear learning (goal, method, results), group domination, the rule and authority of the teachers, performance, etc., life-long learning ought to be based on the idea that both performance and the learning processes are priority goals.

In learning processes, competition cannot be the dominant philosophy, rather conditions must be created to ensure that the individual's social and personal skills are nurtured, for example, responsibility, collaboration, a good sense of judgement, a critical sense, initiative, multi-tasking, self-motivation, empathy. Only then is it possible for the individual to recognise his or her own driving forces and his or her context and be able to take part in democratic learning processes, which in turn can lead to results that are meaningful for the individual and the organisation or company s/he is in.

Blekinge Institute of Technology in a triple helix context

When I joined the technoscience studies division at the Department of Work Science at Blekinge Institute of Technology, I soon realised that here I could get use for my experiences of and interest in the West's relation to the third world.

The division interpreted its research mandate of being an active partner in a transboundary transformation project not only within the framework of traditional Swedish research policy, but also to mean that it was to act as a force in a so-called triple helix context. Åke Uhlin writes:

As a model, the triple helix describes the dynamic and complex learning system that is being developed between >university-industry-government< and the multi-faceted relations and dependence that grows forth between these three actor systems. This can be likened to three spirals winding around one another in an evolutionary process of knowledge production and learning. The process is primarily about capitalisation of knowledge and is four dimensional:

- 1. Each of the three actor systems is undergoing fast change and development as a result of new technology, new economic conditions, new values, etc.
- 2. Each of the actor systems affects the other two in terms of ideas, economy, politics, etc. Diverse expectations are a strong driving force.
- 3. As the actor systems increasingly collaborate (voluntarily or under external force), trilateral networks arise as a spin-off.
- 4. All these expectations, changes and patterns of influence in turn lead to feed-back effects both in the collaborating actor systems and in society at large.

The triple helix model is thus focused on *knowledge production in society as a* $whole^{26}$.

In a triple helix context, a university becomes a powerful actor for local and national innovation systems, and the division for technoscience studies will be an active research and dialogue partner. It also entails that development and implementation of digital technology is a major challenge in economically rich and economically poor countries, since such complex relations of nonlinear processes of change need to be researched with both a technical focus and from the standpoint of technoscience. »One of the technological science fields most evidently provoking the borders between academic research and politics/society is information and communication technology«27.

In my work on the »Contemporary Acrobats« scheme, the operative and evaluation work in the BIT house project and at Blekinge Institute of Technology on the Media Technology Programme²⁸, I have tried to find theories and frames of understanding that make change communicable and interpretable and as open as possible. It has also been important that the transformations shall entail a *second-order change*—i.e. a system change where both the organisation and the actors shall be changed qualitatively²⁹.

In a first-order change, the organisational patterns of thought and the organising actors are not changed. Instead, new combinations are made out of existing patterns, ensuring that the organisation continues in the established tradition and the system remains intact and unchanged. By contrast, a second-order change involves changes in both the patterns of thought as providing descriptions of reality and the actors, entailing that the entire system has been changed³⁰.

My thesis is that the predisposition of local or national organisations to change determines how digital technology is regarded and used in reform work both within the organisations and in their communication with the outside world. In this context, the term »organisations« covers public organisations, industry and businesses, etc.

INTRODUCTION PT. 2

>>THREE APPROACHES TO DIGITAL TECHNOLOGIES AS POSSIBILITIES FOR CHANGE«

IN ORDER TO INTRODUCE a temporal perspective to the short history of digital technology, I will now discuss two central concepts.

The two concepts of infrastructure and implementation play an important role as soon as you start to try to tackle the problem of the development of digital technology. Both terms have been in use since the early 1970s in sociological, economic and technical disciplines to try to describe in different ways why a company, an organisation or a nation state works or does not work. The concepts are thus children of the age that brought a dawning afterthought as to why the material prosperity that was a product of the Second World War, the Corean War, the Suez crisis etc. was no longer so evident.

The context for these concepts was that as long as the company, organisation or nation state developed its infrastructure and did not commit any major implementation errors, then its future would be secure. However, there was no real reasoning regarding the original meaning of the words, and the concepts were not defined for the age, giving them a slight air of hocus-pocus.

As long as digital technology and social change were thought to go hand in hand, the fact that they had not been defined did not pose any major risk. As long as the economic conditions for a materially comfortable future were thought to be in place, the people involved thought surprisingly little about the present and the future. But as soon as friction started to appear in the areas of contact between technology and social change, a gradual displacement took place. The technology started to be regarded as dangerous, since it was no longer obvious, and then the question was asked that neither the companies, organisations nor the nation states had even touched upon: what should the technology be used for?

Within digital technology, the change was approximately thus: from control systems for defence and industrial machinery to computer support for the public administration and companies to networks, primarily intended for spreading information and communication.

Now it appears we have drawn to a halt and are beginning to wake up and ask ourselves: what do we want to be informed about and for what purpose? What do we want to communicate?

There is then pause to query whether this development is capable of entailing any good for the majority of people, or at least whether we can sort through the vast range and give priority to things that might be important to us, while the computer and telecom industry continues to churn out new communications systems, telephones, processors, graphics cards and applications³¹.

Approach no. I—the implementation slip

Bo Dablbom and *Jan-Erik Janlert* aim to demonstrate an alternative to the *implementation slip*—the blunder of mistaking a new technology with the application of technology. This slip only becomes visible when new models for change fail.

Since digital technology per se may entail important choices for the future of society, this is perhaps a good opportunity to take a moment and listen, especially when Dahlbom and Janlert define the possibilities afforded by digital technology thus: »Sweden will be a society where modern information technology helps maintain a high quality of life for everyone and developed prosperity«³². They claim that digital technology can provide a satisfactory alternative where political ideologies have failed to give people what they need to live a worthy life.

If the technology is treated primarily as a cause with effects, whether these are growth and strategic advantages or depletion of resources and global warming, as opposed to as a life form and world [...] we cannot take it seriously as a means of social change. And by the time people have truly had their eyes opened up to information technology, it will already have changed society, workplaces, the economy, institutions and all aspects of everyday life. And if by technological development we only mean new products that can be launched on the market or new tools that can rationalise production, then it is hardly surprising that technology is perceived as something on the periphery of society³³.

In order to reach a proper conclusion, Dahlbom and Janlert start out with a number of claims about communication that have already been established as truths, but which for this very reason complicate the claim that digital technology is a supporting infrastructure:

>COMMUNICATION IS WORTH STRIVING FOR<

Here, Dahlbom and Janlert choose to regard this claim from both a value perspective—that whatever is immediately available is what is usually least desirable—and also an ontological statement—that communication can have its own intrinsic value: >I communicate, therefore I am<³⁴.

>NETWORKS LINK PEOPLE<

Is it not the case that large amounts of digital communication also break down established social networks, when anybody can decide whom they wish to communicate with and whom they will refrain from communicating with?³⁵

>COMMUNICATION PROMOTES INNOVATION<

Dahlbom and Janlert wonder why, in this case, knowledge companies go to such great lengths to protect their innovations and why copying of patents is not allowed³⁶.

>THE FLOW OF INFORMATION PROMOTES ECONOMIC DEVELOPMENT<

If the economy is to steer the technological development which is assumed to be the source of prosperity and a healthy economy, we are justified in fearing that networks will pull the ground away from the entire market economy. Competition is impossible when your competitors are always stuck to your back. The incentive to change dies³⁷.

If these statements are more complex than they appear at first glance, what possibilities does a digital infrastructure afford?

Digital technology as social infrastructure—control or freedom?

Is digital infrastructure a system that provides support for a common production of goods and services or is it also a system to support ideas, knowledge and experience? Depending on which interpretation you follow, digital infrastructure is either perceived as a regulatory system that provides support for common life styles or as a liberating platform for new ideas.

In this case, instead of laying down constraints, digital infrastructures create more possible ways of resolving problems and seeing new possibilities.

If education gives us a regulatory structure that we habitually relate to and that defines limits for all knowledge activities, then this is something entirely different than if education gives us a platform for knowledge and skills—a platform that allows us the freedom to continually build and modify different ways of understanding, models of explanation and thought structures.

The problem with a liberating platform is that freedom can seem paralysing if you are not ready to master it. The problem with a tight corset is that the recognised structure and system of rules become ever more inadequate in a changing world³⁸.

Digital technology as communication

Dahlbom and Janlert distinguish between four different kinds of communication: exercising of power, service, dialogue, and influence³⁹. The shift from being a governing system to being a network yields a corresponding displacement in what and how we communicate and increases people's opportunities to be part of a non-hierarchy where theoretically everyone has the same value. If a governing system provides greater possibilities for exercising of power, networks ought to be able to promote dialogue.

Digital technology as an interface

By interface, Dahlbom and Janlert mean »the scenery, the front side of reality, the side that we want to see, the side that people want us to see. The shop window, the newspaper, the car, the home, the pub are all borderlands of reality [...] Americans are happiest in their cars, Swedes at home in front of the TV, Englishmen in the pub, the boss at his desk«⁴⁰.

Up until now, the network has mostly supported dialogue, since the technology did not allow much more, but as soon as the TV is turned into an interactive computer, or the telephone becomes an easily accessible trans-
mitter and receiver of sound and text, then a mass-medial influence will be possible, which will change people's usual borderlands—their ideas about themselves⁴¹.

Approach no. 2—Digital technology as a toy, totem, medium and tool

Svante Beckman describes how digital technology brings about an all-pervasive change in people's perception of the world:

In the current debate, IT incarnates and reaffirms the central myth of modern Western culture, progress, and at the same time also creates the impression of an irresistible developmental imperative that all responsible governments and heads of organisations must obey. Either we must quickly and decisively adapt to this new world order and be among the winners, or we can close our eyes, hesitate and be doomed to marginalisation and stagnation⁴².

Svante Beckman gives a complex understanding of how IT and the meaning of life are connected. And he does this by asking the seemingly banal question: what is digital technology? He claims that when we talk about what a technology *is*, we refer to it as a means to an end. But digital technology can be so much more than this; it is also a toy, a totem, a medium and, of course, a tool. These four categories correspond to the four spheres of value or ways of seeing and assessing: the beautiful, the right, the true and the appropriate. Svante Beckman places these categories into the activities of the consciousness—acting and experiencing and the ideas of the consciousness—sensation (cognition) and idea (emotion), and then he combines these entities⁴³.



However, digital technology is not only useful; in many ways it is also a toy.

How else can we explain the fact that so many companies and organisations are willing to spend considerable sums of money per user to update their operating system from Windows 2000 to Windows XP, despite the fact that to date XP has demonstrated only limited advantages in terms of enhancing performance and efficiency? Or that the computer games industry is doing so well.

Digital technology is also a totem—the >right thing< for companies, organisations and governments, since investments in technology are synonymous with progress, democratic development, etc.

As a medium, »the actual use to which it is put says something about a number of properties of the technology. This of course has an unintended effect on all material technology—that it imparts information about itself and its qualities. It is thus as if the technical objects themselves are the most important distributors and bearers of knowledge about technology. The special significance of IT as a medium lies in its ability to shape modernity«⁴⁴.

Approach no. **3**—Digital technology as transboundary

Sandy Stone discusses how the boundaries between human beings and technology are changing. Like Dahlbom and Janlert, she holds that digital technology has changed from being a control system to a network and she asks what is new about the idea of networks:

Answer 1: Nothing. The tools of networking are essentially the same as they have been since the telephone, which was the first electronic network prosthesis. Computers are engines of calculation, and their output is used for quantitative analysis.

Inside the little box is information.

Answer 2 : Everything. Computers are arenas for social experience and dramatic interaction, a type of media more like public theater, and their output is used for qualitative interaction, dialogue, and conversation.

Inside the little box are other people⁴⁵.

She borrows a concept from the Canadian media philosopher Marshall McLuhan—*extensions* or *prosthetics*⁴⁶: »Marshall McLuhan pointed out that communication media are extensions too, and that they interpenetrate us in ways we'd never anticipated and change us in ways we don't realize«⁴⁷. One of

the consequences of this is that people's perceptions of themselves as an undivided I start to fall apart and become fragmented.

In an interview in the magazine *Wired*⁴⁸, Sandy Stone was asked:

q: What do you mean when you say »boundaries and prosthetics«?

A: Subjective boundaries and bodily boundaries. Remember the '80s pop psychology expression »bad boundaries« that referred to someone who had trouble keeping his or her thoughts and emotions separate from someone else's? They'd be very suggestible and have trouble acting on their own. That's one sense of a subjective boundary. Boundaries move around all the time. For example, where's the boundary of an individual human body? Is it skin? Is it clothes? It's different in different circumstances. [...] I use Stephen Hawking as an example of how body-boundary issues interact with technology. Because Hawking can't speak, he lectures with a computer-generated voice. When I speak, I sound different if you're in the room with me or if you hear me over the phone. But Hawking sounds exactly the same. The boundary between his human voice and communication technology has broken down. That's another kind of boundary.

q: So when you talk about being interested in problems of »interface«, »interaction«, and »agency«, you're not using these terms in their narrow computer-industry sense.

A: Exactly. At the close of the mechanical age, our consciousness is deeply changed by the way we're immersed in communication technologies every waking, and perhaps sleeping, moment. We are already >transhuman<. The boundaries between >us< and our prostheses—contact lenses, implants, artificial organs, serotonin reuptake controls, genetic engineering, communication networks—have become vague, and they shift continually.

The three approaches

Bo Dahlbom and Lars-Erik Janlert, Sandy Stone and Svante Beckman appear to have very different starting points concerning the complex interaction between people and technology. By combining their different perspectives, distance and closeness, it is possible to ask the basic questions: what are human beings and what is technology? How do human beings perceive themselves and how do they regard their relationship to technology? What are the limitations and what are the possibilities?

Sandy Stone says: »The body is an instrument for involvement with others. It's a site for the play of language, a generator of symbolic exchange. The thing that generates the language of social interaction is first and foremost the human body. Body, language, consciousness—they are aspects of the same thing«⁴⁹.

Svante Beckman writes: »Through its undermining of the traditional geopolitical boundaries surrounding the concept of society, perhaps IT will bring us closer to a classless society of an unforeseen type: a society with dramatic differences in privileges, but without geopolitical conditions that allow us to identify, describe and handle them in a politically meaningful way in class terms. The prime objective of the welfare state of evening out the class differences loses its frame of reference. If the concept of democracy survives this kind of development, it will [...] move away from the ideal of the social integration of everybody with equal rights and towards the ideal of everybody's individual autonomy«⁵⁰.

What Stone and Beckman have in common is the ambition to indicate where the slow but sure change will happen, the change that happens on the periphery, not in the mainstream. It is on the beaches that new land is deposited and existing land is eroded away.

INTRODUCTION PT. 3 »EPISTEMOLOGICAL CONSIDERATIONS«

I WANT TO CONCLUDE the introduction to my thesis with a discussion of some epistemological questions for at least two reasons.

Firstly, I work in gender research within a technoscience context. Since this research is clearly aimed at bringing about transformations, it does *not* assume the traditional view of objectivity as its starting point—that there is only one truth to be found through research. On the contrary, each researcher has to work with his/her view of knowledge, in order to see both the possibilities available and the limitations.

Secondly, gender research in the field of technoscience requires that each individual researcher assumes a responsibility. The technology and the technological development are not innocent objects. Researchers help to create a new reality for themselves and for other people⁵¹.

Convictions

Before I make some epistemological considerations, I must first say a little about my background as a researcher.

After completing my Bachelor's degree in theology at Lund University at the end of the 1970s, I started research in the field of exegesis in the Old Testament. I did not stay in this field long, probably partly because of the surprise I felt at the inferiority complex displayed by my older colleagues visà-vis subjects studied in other faculties. This inferiority complex was fuelled by a sense that their own subject was not sufficiently scientific, at the same time as they also displayed a certain contempt for other academic areas.

So, I finished the start of my research project and gradually began to realise that theories of science and knowledge are minefields.

As far as theology is concerned, feelings of inferiority are natural since it had previously landed itself in an inequitable battle with the natural sciences and logic. As far as I can make out, this battle was about the answer to the question: what is true?

Up until the 1350s, the Church in Western countries had had sole ownership of the answer to this question, and mercy was not shown to anyone who queried the Church's authority. History is full of stories of oppression and atrocities committed against people who dared profess a knowledge that the Church did not condone.

But as the centuries passed, the natural sciences and logic won ground and started to challenge the authority of the Church, and somewhere along the way, the Church started to mistake scientific statements for the truth. This meant that the Church started to ask the same questions as other scientists and thus also tried to provide the same answers⁵².

At this time, the answer was given as to whether Jesus had actually walked on the water; the answer was no.

In Sweden, one of the main disputes about the question of truth started in 1949 and is still going on today, since Swedish theologists have still not found terra firma. The main character in this drama is the Uppsala philosopher Ingemar Hedenius. What was unique about Hedenius' break with theology was that he did not criticise the Swedish Church or query more peripheral circumstances, but rather he questioned the very fundament of Christianity—was Jesus the son of God who was made man to save the world from the wrath of God?⁵³

Hedenius' attempts to answer this question led to new questions:

Assuming God really does exist and that Jesus really was his son and that all people really have sinned against God, does not the entire Christian doctrine of reconciliation then become unreasonable? Doesn't this make God bizarre and capricious and the conditions for redemption artificial, and, yes, unreasonable? And assuming God really does exist, then surely Jesus, who was a man, after all, cannot really have been his son? Can we really assume that God (who is a super-natural being) would intervene in such a material way in the events of our world? Don't things here on earth follow the laws of nature? In addition, is even it true that there is a God? And if this is not the case—if the idea of God's existence is an illusion and for this reason alone Jesus cannot have been his son and mankind can therefore not have sinned against God—can there then be any reason in the idea that we still should feel bound by Jesus' teachings? Oughtn't we to stop believing in the saviour quite simply because the basic idea of the gospel is wrong?⁵⁴.

Hedenius' answer to the last question is a resounding >yes<, reached through arguments taken from the logical empirical tradition. And never the twain shall meet.

I have used this example from theology/philosophy, since it was in these traditions that I received most of my epistemological schooling, but I have noticed that the same non-meeting is also found in technical disciplines. There is usually only one way of teaching students, developing ideas, doing research and determining facts and truths—even in an institute of technology.

Feminist theories of knowledge

Since there is no room in traditional scientific dichotomies for the concepts I am interested in, it was with great hesitation that I accepted the challenge of doing a PHD in technoscientific studies. However, I soon found that the working environment and the people at the research division and in their networks encouraged frank questioning and thought and were open to dialogue, and that scientific traditions that I did not know even existed were within my grasp.

In addition to having taken part in many, long conversations and seminars with my supervisor Lena Trojer, who with her vast experience in feminist theories of knowledge has provided me with many useful insights, I also came across Elisabeth Gulbrandsen's licentiate thesis *The Reality of our Fictions*⁵⁵. Here she united two perspectives that are very important to me—I found starting points for theoretical foundations that did not diminish or simplify the concepts on which I am focusing, and I found her emphasis on transformations central to my work.

One of the prominent characters discussed in the book is Sandra Harding, and Elisabeth Gulbrandsen's explanation of her work has given me a better understanding of my own position and how I can go about finding forms in my attempts to understand the complex relations my concepts find themselves in:

Thus, we cannot see that any form of feminist science has been realised by any of our contemporary knowledge producers. In one way, we could say that it does not exist in reality. It is *unfinished* [...] And the work we need to do to move on probably does not resemble at all what we are used to do as researchers. We cannot go out and study how it was or is >in reality<. Sandra Harding tries herself to take on the challenge, and *Science Question*⁵⁶ can be read as an example of a strategy applied in this situation. [...] The strategy is to look for problems, the loose threads, the contradictions, everything that suggests that we have not come as far as we would like. [...] And if we are to be able to develop a *collective competence* in >the unfinished<, we will also have to create forms of publicity that do not re-

quire positioning and opposition so much as provide space for experimentation with development of new and alternative relations—or bases for production and mediation of knowledge⁵⁷.

Donna Haraway is another important influence on my work. She is a biologist and historian of ideas, and like Lena Trojer, Sandra Harding and Elisabeth Gulbrandsen she is trying to find a platform for accountable research and knowledge production—working with new knowledge that entails change. Her alternative to traditional objective knowledge is *situated knowledge*. In this way, she aims to counteract the god-trick of objectification—the trick of being able to see, study and judge objects of research and knowledge without having to take responsibility for or needing to reflect on the consequences of research and knowledge production. »I am arguing for politics and epistemologies of location, positioning and situating, where partiality and not universality is the condition of being heard to make rational knowledge claims. These are claims of people's lives; the view from a body, always a complex, contradictionary, structuring and structured body, versus the view from above, from nowhere, from simplicity«⁵⁸.

INTRODUCTION PT. 4 ≫ENDNOTES≪

IN THIS INTRODUCTION, I have tried to depict important elements of my own personal learning processes over the last 20 years. At the same time, I have also tried to make the concept of digital technology more complex. The reason for this is that the four papers that now follow are interconnected, although they tell different stories to different audiences.

Paper one presents experiments in the regional project »BIT houses« and a tentative analysis. The idea behind a BIT house was to »increase availability and develop information technology services to a broad public and small enterprises in villages outside larger urban areas in the region«. Ten telecottages across the region were thus supposed to try out ICT and develop local needs and possibilities in perspectives from below in a short period of time—eighteen months. The cornerstones in the project were the very local initiatives contributing to valuable knowledge of situated ICT as well as the kinds of potentials that can be promoted. The contexts of driving forces and rhetoric including regional political ones are complex. Developing a broad understanding of this complexity is identified as necessary and as a starting point to find out how ICT, science and politics are imploding.

Papers two and three address questions concerning dominant discourses and signs of subordinate ones in ICT policies and strategies in the areas of encounter between economically rich and poor countries. How is it possible in this context to make space in nationally situated ICT implementations for the lives lived by women and men?

These two papers partially overlap, because the relationship between digital technology and the post-colonial structures that are visible in the third world is still largely unexplored. A reason for this may be the numbing, shortterm rhetoric used by the West proposing a traditional transfer of technology, the principle of catching up: >If you don't get aboard the IT train, your future is lost<. The short-term solutions that IMF, the World Bank and others are proposing leave no space for more complex, non-linear processes of participation and situated understandings of knowledge.

It is these kinds of connections that we are interested in exploring, but the roads have not yet been built.

Paper four presents a number of different possible theories and an introduction to a study of a technical interpretive undergraduate education programme at Blekinge Institute of Technology—the Media Technology Programme. The fundamental question is how learning processes are made possible in an academic environment that rests on a technical foundation and at the same time wants to be a transformatory environment for pedagogical and interrelational processes.

My future thesis work is aimed at researching the relations between learning processes, digital technology and infrastructure, and gestalting in the contexts of institutions of higher education and the third world.

The goal is to juxtapose reality studies with theories that provide sufficient complexity and openness in a transformatory project.

The frame of understanding of my further research is technoscience gender theory. Digital technology is recognised as a sibling in the family of technoscience. One important characteristic of technoscience is its realityproducing activities, which challenge participants within technoscience to be accountable for knowledge and technology production. The borders between research, techno- and research politics are vanishing and can no longer be kept distinct in this era of late modernity or post-modernity.

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FOOTNOTES (INTRODUCTION PT. I-4)

- 1. Molander, 2000 p. 11 f.
- 2. Ibid. p. 14.
- 3. Wahl 1979, p. 133 ff.
- 4. The Swedish National Agency for Higher Education (HSV) 1998, p. 39 f.
- 5. See, for example, Elovaara 2001, pp. 39-60.
- 6. I try to use Marshall McLuhan's methods »his professed preference for exploration over explanation, for demonstration via metaphor rather than logical argument« Levinson, 1999 p. 4.

Paul Cilliers claims that »it is not possible to tell a single and exclusive story about something that is really complex«. Cilliers 1998, preface p. VIII.

Åke Uhlin distinguishes between simple and complex systems: »A simple system can thus be designed, planned, constructed, organised, taken apart, put together, explained, changed or reorganised for new purposes, etc. In brief, it can be controlled. A jumbo jet is an example of a simple system. [...] In a complex system, by contrast, each individual element in the system [...] contains incomplete information about how the system behaves as a whole. A complex system cannot be reduced to a simple system since it is dynamic and non-linear. This means that complex systems can only be approached using complex resources. Complex system must be regarded as a totality. [...] A complex system also has the ability to >store information< about its surroundings for future use, and it can adapt its structure as necessary, i.e. it is self-organising. But it cannot be controlled in the accepted sense.« Uhlin 2000, p. 8.

- 7. Wahl, 1978, 1979, 1982.
- 8. Wahl 1979, p. 9.
- 9. Ibid. p. 235 ff.
- 10. NGO (non-governmental organisation)—voluntary, local aid and educational organisations.
- 11. Guidelines 1989.
- 12. Ekdahl 1999, pp. 15–18.
- 13. A contemporary acrobat is a person who is balancing on the outer edge of a cliff face in order to be able to orient themselves towards the unknown and chaotic future.
- 14. Nilsson 1997.
- 15. Socit—a resource centre at the Folk High School for social reform, personal development and digital technology. Like for the Contemporary Acrobats project, the project leaders were Lisbeth Nilsson and Peter Ekdahl.
- 16. As a result of the Sweden's joining the EU, Blekinge became one of the 22 regions in 11 EU countries that took part in a special development programme

called RISI (Regional Information Society Initiative) in 1997 and 1998, the aim of which was to study how the regions could make continued and increased use of the unique possibilities afforded by the emerging information and communication society and at the same time avoid the problems that frequently follow from this development.

- 17. »Svängsta IT society«. When IT Blekinge was commissioned by the EU to »formulate visions, plans of action and project proposals for a future information society on the basis of a regional perspective«, (the RISI project), the model used in Svängsta proved to be a useful starting point. A feasibility study »IT Houses in Svängsta« was started in 1996 and completed the following year.
- 18. See p. 4 f.
- 19. Uhlin 1996.
- 20. Ibid. p. 57.
- 21. Ibid. p. 15 ff.
- 22. Ibid. p. 19 f.
- 23. Ibid. p. 21.
- 24. Ibid. p. 22.
- 25. Ibid. p. 57.
- 26. Uhlin 2000, p. 4 f.
- 27. Gulbrandsen 2000.
- 28. The media technology programme is a undergraduate education programme that has been developed at the Karlshamn Campus of Blekinge Institute of Technology. See also paper 4.
- 29. See Ahrenfeldt 2001, pp. 21–29.
- 30. Ibid. p. 23.
- 31. Menser 1996, p. 7 ff.
- 32. Dahlbom 1995, p. 146.
- 33. Ibid. p. 165.
- 34. Ibid. p. 147.
- 35. Ibid. p. 148.
- 36. Ibid. p. 148.
- 37. Ibid. p. 150 f.
- 38. Ibid. p. 154.
- 39. Ibid. p. 157 f.
- 40. Ibid. p. 159.
- 41. Marshall McLuhan argued in this way (see for example McLuhan 1964, pp. 16-33).
- 42. Beckman 1995, p. 186.
- 43. Ibid. pp. 194-197.

- 44. Ibid. p. 197.
- 45. http://www.wired.com/wired/4.05/stone (interviewed by Susan Stryker).
- 46. See for example McLuhan 1964, p. 41 ff, p. 234 ff.
- 47. http://www.wired.com/wired/4.05/stone.
- 48. Ibid.
- 49. Ibid.
- 50. Beckman 1995, p. 213 f.
- 51. Trojer 2002, p. 55 ff.
- 52. See for example Russell 1961.
- 53. Hedenius 1949, pp. 55-57.
- 54. Ibid. p. 57.
- 55. Gulbrandsen 1995.
- 56. Harding Sandra, 1986: The Science Question in Feminism, New York.
- 57. Gulbrandsen 1995, »Från kollektiv glömska till kollektiv kompetens« (From collective forgetfulness to collective competence), p. 30 f.
- 58. Haraway 1991, p. 195.

2. Four papers

FIRST PAPER

»EXPERIMENTS WHERE I.C.T., SCIENCE & POLITICS IMPLODE«

Introduction

The frame of understanding of this paper is feminist theory inspired by post-structuralism. Within this framework, information and communication technology (ICT) and science are recognised as siblings in the family of technoscience. One important characteristic of technoscience is its reality-producing activities, which challenge participants within technoscience to be accountable for knowledge and technology production. The borders between research, techno- and research politics are vanishing and can no longer be kept distinct in this era of late modernity or post-modernity.

This paper presents experiments undertaken as part of a regional project called BIT houses in the county of Blekinge and a tentative analysis. The idea behind a BIT house was to »increase availability and develop information technology services to the general public and small enterprises in villages outside larger urban areas in the region«. Ten BIT houses in the whole region were supposed to try out ICT and develop local needs and possibilities in bottom-up perspectives in a relatively short period of time—eighteen months. The cornerstones in the project were local initiatives contributing to valuable knowledge of situated ICT as well as discovering what kind of potentials can be promoted. The contexts of the driving forces and rhetoric at play, including regional political ones, are extremely complex, and we identified a need to develop a broad understanding of this complexity, which could then function as a starting point to find out how ICT, science and politics are imploding.

The siblings of technoscience

Gro Hanne Aas argues¹ that the concept of technoscience can be used to draw attention to the understanding that it is no longer useful in our societal systems to preserve notions of clear borderlines and strict divisions between basic and applied science, between (natural) science and technology.

This situation stresses the reality-producing as well as the accountability dimensions of the activities within technoscience. Some Nordic feminist research environments have interpreted the situation thus²: »as researchers we not only observe, unveil, analyse and solve problems >out there<. Our knowledge-producing activities are a (re)productive force whose effect is not contained by the walls of the ivory towers—if they ever were. As researchers we do not have a standpoint outside a civilisation in crisis. We are implicated in it. Our knowledge-constructions are efficient. They produce >reality<. They produce chances of life and death and distribute the chances unequally. The fundamental tenets of all research are—as Evelyn Keller puts it: >nowhere more dramatically in evidence than in the successes of nuclear physics and molecular biology, that is, in the production of technologies of life and death<..«

Technoscience is a concept frequently used by Donna Haraway. She holds that despite all the hype, technoscience as an overarching theme is not the greatest story ever told, but »it is playing powerfully to large, widely distributed audiences.«³ She stresses that »the world-building alliances of humans and nonhumans in technoscience shape subjects and objects, subjectivity and objectivity; action and passion, inside and outside in ways that enfeeble other modes of speaking about science and technology: In short, technoscience is about worldly, materialized, signifying and significant power.«⁴

Donna Haraway identifies other perspectives of >siblings of technoscience< that are introducing important transgressions, connections, examples of reality-producing (techno)science. We believe that her understandings are becoming increasingly relevant—especially within the context of information technology. In a passage⁵ where she intertwines information technology and biotechnology, the relations of technoscientific siblings occur as complex interdisciplinary negotiations. We do not want to violate Haraway's multilevel text and will thus quote the passage in full.

Predictably as genetically engineered mice diversify to fit research protocols and biomedical production, the ubiquitous technoscientific object called a database accompanies the fleshy rodents in a kind of higher-order mimesis of their biochemical genomes. Oak Ridge National Laboratories is creating a >computer database for mutated mice< so that researchers can find the animals they need (Cone 1993:A17). More fundamentally, the entire mouse genome is a central research object in the context of the Human Genome Project. Recursively miming each other at every level, mice and humans are siblings in these projects, [...]. A biochemical genome is already a kind of second-order object, a structure of a structure, a conceptual structure of a chemical entity; and the electronic genome databases represent still another order of structure, another structuring of information. The genome is a historically specific collective construct, built by and from humans and nonhumans. To be >made< is not to be >made up<. In my view, constructivism is about contingency and specificity but not epistemological relativism. The reality and materiality of the genome is simultaneously semiotic, institutional, machinic, organic, and biochemical. The development of computer databases for handling data from the various genome sequencing projects, with their Niagara Falls of sequence information and physical and genetic maps at finer and finer degrees of resolution, requires advanced informatics research and complex interdisciplinary negotiations. In a material sense, like the human genome, the mouse genome is part of that technical-semiotic zone called cyberspace.

Implosion

We have identified interesting potentials in the way some people use the term >implosion<. We do not understand >implosion< as a collapse inwards, where nothing is left. On the contrary, we regard collapses of systems, organisations, phenomena, entities etc.—caused by overwhelming internal tensions—as part of a transformative process into something hardly imagined but sorely needed. The collapse of different categories of macro or micro entities seems also to be possible in the form of mutual implosions into something internative process into something internative seems also to be possible in the form of mutual implosions into something intimately intertwined.

Bruno Latour points out the imploding tendency of a system, in which we have tried and still try to keep science and politics discrete and separate. He emphasises that »All of us have become members of collective experiments on global warming, the influence of genetic engineering, conservation of species, demography, pollution, etc. Thus we have to practice something that, until recently, was the calling of very few specialists, namely science policy. Now everyone is led to practice science policy over a vast range of scientific and technical controversies. This has entirely modified the relations of the public with the producers of science and technology.«⁶

In this macropolitical context, Donna Haraway explicitly uses the con-

cept of implosion. In the imploded time–space anomalies of transnational capitalism and technoscience in contemporary discourses, she challenges the undeniable violence of the transformations lived in daily life throughout the world. She wants to turn our attention to the implosion of subjects and objects, culture and nature, in the fields of current communications and computer sciences as well as in other leading domains of technoscience. »The chip, gene, bomb, fetus, seed, brain, ecosystem and database are the wormholes that dump contemporary travellers out into contemporary worlds.« >Implosion< for Haraway is a claim for heterogeneous and continual construction through historically located practices where the actors are not all human.

In an ICT context, we cannot help but bring up Marshall McLuhan's thinking. He used the term >electrical age<, which we can now substitute with ICT age. As early as in 1964 he stated⁷ that:

The stepping-up of speed from the mechanical to the instant electrical form reverses explosion into implosion. In our present electrical age the imploding or contracting energies of our world now clash with the old expansionist and traditional patterns of organization.

McLuhan's understanding of imploding phenomena is discussed together and in contrast with Jean Baudrillard's thinking in the book *McLuhan and Baudrillard—the masters of implosion*⁸. Here Genosko finds that the global dimension of implosion created for McLuhan a total field of inclusive awareness. With increased speeds, specialisation disappears, as do the old dichotomies of work and leisure, teachers and students, etc. For McLuhan disciplinary boundaries fall; fragmentation is replaced by organic unity, and specific awareness gives way to Gestalt⁹ awareness.

Baudrillard uses McLuhan's dictum >the medium is the message< to show that the mass (of people) is a form of implosion refusing socialisation. Implosion indicates the collapse of new media toward the mass form. The mass form does not radiate, instead it absorbs. Baudrillard holds that while the social is destroyed by the media and information that produce it, it is reabsorbed by what it has produced, namely, the masses.

Situated ICT—a regional project

As Birgitta Rydhagen (1999) states, »situated knowledge cannot get away with generalised and unproved statements or neglect of its consequences in the lived lives.«

Our appreciation of understanding knowledge processes as situated also comes from Haraway's thinking. She emphasises that »the world neither speaks itself nor disappears in favour of a master decoder. The codes of the world are not still, waiting only to be read.«¹⁰ Haraway argues for politics and epistemologies of location, positioning and situating, where partiality and not universality is the condition of being heard to make rational knowledge claims. Rational knowledge is a process of ongoing critical interpretations among interpreters and decoders. It is a power-sensitive negotiation and conversation. The only thing not allowed is the god-trick, i.e. seeing everything from nowhere.

The study presented in this paper carries a doubly situated condition:

our analysis rests on an epistemological base of situated knowledge claims and partial interpretation

realising the regional project itself (the BIT houses) demanded extensive sensitivity for local and situated initiatives to be transformed into living practices.

One of the aims of the regional project »BIT houses in the county of Blekinge« was to promote local initiatives for implementing IT for whatever purpose. We interpret this aim as an experiment in developing situated ICT on the micro-political level with connections to the macro-political level in the form of explicit IT strategies.

There are currently some major development projects underway in the county of Blekinge in southern Sweden, the aim of which is to create jobs and enhance dynamism in the region on a platform of information and communication technology. When Sweden joined the EU, four of the five municipalities in Blekinge were classified as objective 2 regions and were thus eligible for support from the EU structural fund for regional development.

IT Blekinge is a non-profit organisation consisting of representatives from the county administration in Blekinge, the Blekinge Association of Local Authorities, Blekinge County Council, the University of Karlskrona Ronneby, the southern Sweden chamber of commerce and various representatives of the local business community. IT Blekinge is responsible for the running of the development programme IT Blekinge, within the framework of which, there are several different projects. One of these was the telecottages project »BIT-Världshus i Blekinges tätorter« (BIT houses in the villages of Blekinge).

The BIT house project can be understood in the following context: the major structural transformations, the work mentality, the strong traditions of low self-esteem (>It'll never work...<) that are to be found in Blekinge make it extremely difficult for people to find the new life patterns that are needed to maintain their society and culture. The only solution is to expose their life conditions to previously untried ideas. For this reason, we should try to circumvent the established structures to ensure that the process of change is not bound by previously defined goals. Of course, this is a demanding task-for the actors in the IT Blekinge project, since their role as experts will be queried, and for the people who live in Blekinge. If the latter are allowed to take part on their own terms, their skills can be employed and their wishes can be satisfied, but in a different way to what may have appeared possible at first glance. The goal for IT Blekinge-to develop democratic structures and give local people an opportunity to exert an influence-should be reconcilable with the idea of giving people the opportunity to shape their own lives in new and as yet unrealised ways.

It was decided to set up ten BIT houses, spread geographically across the county. IT Blekinge entered into agreements with ten independent legal entities, each of which was made responsible for one telecottage for the duration of the project (I November 1997 to 30 May 1999).

One of the BIT houses—Olofström—will be presented in more detail below. In summary, the BIT houses project has shown that it is possible to:

mobilise great force, energy and patience for a far-reaching and complex project

find new arenas that provide people with the opportunity to try new things

unite people from the whole region and overcome the old conflicts and differences between eastern and western Blekinge

create expectations outside Blekinge regarding the development of exciting new IT-related activities

test the limitations and possibilities provided by 1T in a number of different situated conditions.

The example of Olofström

As discussed above, the regional project »BIT houses in the county of Blekinge« was initiated to promote local initiatives for implementing ICT for any range of purposes.

In order to understand as many aspects as possible of these initiatives and the forces and resistances involved, we performed two interviews at separate intervals with the project leaders at three BIT houses. We tried to ensure that the three BIT houses we chose were different in several aspects. The first was situated deep in the forested northern part of Blekinge, at the border between four village authorities. The second BIT house was in the most densely populated residential area in a town dominated by immigrants and associated with the housing firm. The third BIT house was located in a small city dominated by a large car component industry.

We found the last BIT house to be of greatest interest for our study. This project was initiated without help from the local authorities or industry. In fact, they were opposed to the BIT house project as such.

The first interview with the project leader took place in late summer 1998, when the project was in progress. Let us call the project leader Tom. We focused on questions about the organization: what kind of support the project received from the local authorities, Tom's relation to IT Blekinge, funding, how many employees the project had and what kind of interests the project revealed.

Tom told us that the project had started out in a very non-formal way. He gathered a group of people from the local school, the community and industry. They hired some rooms in an industrial building, furnished them and bought some computers—just to see what would happen when curious people gathered. »It was not an organisation, it was only interested people from schools and unemployed people, and they worked idealistically«¹¹.

The most important thing, Tom found, was to establish the BIT house project firmly among as many people as possible. He met a lot of enthusiasm in schools, industry and local clubs and associations. The hardest work was to establish the BIT house among the local authorities. Tom thought that this was due to the fact that they could not recognise the old industrial framework in a project like this that focused on processes. »I invited the local authority board to the BIT house one afternoon. One of the members fell asleep, the chairman left the building after a short while, and the reactions from the other members varied from >Oh shit< to >How will you fund it?<«

The next step was to employ people as guides and tutors. Tom found that

it was important to focus not on the computers but on the visitors' needs. »I don't want computer nerds but open-hearted, empathetic people, people who can grow in this environment.« He therefore employed two young, secondgeneration immigrants (one man and one woman) and one elderly man. All three joined the project with unemployment allowances. The project leader himself worked half-time idealistically and received no salary from the project.

Concerning the interests that came out strongly in the project Tom commented that »we have a lot of young people here. Many bicycles have moved from the centre of the city to outside our building this summer. This place has been a free zone in the city. I have told the Rotary club to take off their ties and come to this place. You know, it's like a sauna here—everybody is equal. We share the same vision. People are left alone. We trust people here«.

We asked about Tom's relationship to the association IT Blekinge and he said: »I thought they were supposed to stand beside us and help us establish the project in this place. You know, sometimes I felt like Agent Mulder in the *X*-*Files*, like I came from another planet. Most people, among them IT Blekinge, think this is a computer-based project, but I'm interested in changing peoples' lives.«

Tom expressed the following ideas about the future: »I have great expectations, huge visions—even on the political plan. I want the BIT house to belong to everybody in this city. And if we join other clubs and associations, who are already here, I see no limits. I see ICT as one way of many means to communicate, and together with theatre, music, film and so on, people can meet ICT in a more natural way.

The greater vision is to make the BIT house the essence in a huge intranet in the city. Our Cable-TV company has started to build the infrastructure, so we can start any time.

And of course, I know how much young people can do and how much experience they have but there is no outlet for them in school. Here, they can develop what they are good at and they help us. No one chases them here. We try to break down the hierarchies.«

The second time we met Tom was in late summer 1999, after the BIT house project had ended. The first question we asked him was what had happened since we met him last. We have chosen to include a longer quotation here that illustrates a problematic encounter between future-oriented visions and more-of-the-same-rhetoric. »The winter and spring have been a tough time for the staff. Our commitment has waned. It was possible to work idealistically for a while, but our involvement took too much time and we had money only for computers and so on.

The BIT house works fine for the people who are here. But we need more time to develop our concept, and it is impossible without a dialogue. I had a meeting with a representative from IT Blekinge and a local politician. But they only talked about projects that can generate money. It was as if they had forgotten the ideology and I felt only rush and tear.

I tried to invent projects based on our anti-hierarchical ideology. Neither IT Blekinge nor the local authority could understand me. They simply couldn't see the point.

I know we can get money if we start running computer-based courses, but I do not think it is the right way. If we start giving courses, we are going to be like all other course-providing institutions, and a bad, >school< mentality will come to this place too. As soon as people think they are in a school context, they lose a lot of their creativity and imagination. The process becomes poor, and they start to think only about the goal—getting a diploma. We will lose our identity. I believe in this concept, but right now we do not have the time or strength to realise our visions«.

These narratives illustrate some circumstances explicitly—the old industrial framework is incapable of providing answers; it has no language to interpret the late-modernist situation. A region like the county of Blekinge needs new driving forces.

Driving forces

No successful politics can ignore the time and space in which it is supposed to intervene. »It is thus necessary to base every kind of politics at the place and take into account its deep historical roots.«¹² In this context, Robert Putman¹³ emphasises the concept of trust. When people do things together, trust increases. When trust is there, the preconditions for development of democracy are there. »You dare to take a risk together with the ones you know and trust«. The fundamental feature in the mental infrastructure needed is the inhabitants' trust in themselves and in the institutions. By having adequate knowledge about this mental infrastructure, political processes can yield satisfying results.

A major challenge facing the BIT house project was to create a long-term structure of learning. This challenge differs from the challenges entailed by structures based on the values that characterise the modern industry sector. In the passage towards a post-modern/post-industrialised society, the competence building that the BIT houses have the potential to be a part of can compensate for the deficiencies in the learning structure in the industrial sector. One way to face the constantly transforming work situation is to promote the idea of life-long learning. While the traditional Swedish education system adheres to dominant values like

competition

linear learning; goal–method–result from reduced components to the whole system group dominance teacher authority known answers to known questions result dominance

Life-long learning ought to ensure that there is enough space for processes of learning and results. Competition cannot dominate in a learning process. Preconditions for learning must be created in order for the social and personal competencies of the individual to grow, i.e. responsibility, co-operation, judgement, critical attitude, initiative, simultaneous capacity, self-motivation, empathy.

The BIT house project was intended to be an experiment in growth and providing support for vulnerable groups of people in the county of Blekinge. In cases where there are requirements for satisfactory political intervention, we find it important for the decision-making process to take into account:

what kind of linguistic, social, economic, political and cultural identity an inhabitant of Blekinge has

that Blekinge is not a region by definition

efforts to sustain and support trust towards institutions and politicians

efforts to radically renew learning processes.

The encounter between rhetoric and realities

The BIT house project was initiated and carried out on the basis of a number of strong visions that were expressed on several different levels—ranging from the level of the European Union to the local level. The rhetoric in these visions seeks to find a way into various different realities in order to be able to manifest itself in concrete practices and at the same time to help create new and different realities. It is a quest to balance points that can never be fixed, but which place themselves somewhere between rhetoric and the currently existing realities.

Three priority aspects for regional development are often mentioned in the Swedish as well as the EU context. If we regard these aspects as three parts of the dominant rhetoric, the issue then becomes: how has this rhetoric interacted with the realities in the region?

The >everyone< perspective

The first part of the rhetoric is an approach that has become known as the >everyone perspective<. Many of the preconceptions that dominated the BIT house project were also found in SITS¹⁴, on which the project was modelled. The reasoning behind this decision can be summarised thus: the technology already exists; the challenge is to make it accessible to everyone. IT as something to be discovered, to discover the usefulness of and to use is one of the basic ideas in the broad implementation philosophy that continues to persist and manifest itself. However, what this >everyone< is supposed to mean was not analysed at all and appears to include only the traditional preconceptions. The BIT houses' interpretation of the >everyone perspective< is clearly demonstrated through the predominant activity of the project: traditional educational activities, often in collaboration with established educational associations. This makes it far too easy to drag out the old, familiar structures and thereby limit the >everyone perspective<.

However, there were some other movements in the BIT houses that opened up the concept somewhat, namely the people: the local population, tourists, young people, parents, children, pensioners, immigrants, home-owners, farmers and many other categories of people who came to the telecottages to use the email system, surf the net to find information (or just for fun), to play games (via the Internet), try new things and learn, to taste the new technology and either swallow it whole or spit it out. The local roots seemed to motivate the BIT houses to experiment and work with the >everyone perspective< in order to give it meaning and develop plurality.

One of the project managers believes the >everyone perspective< is misconceived, on the grounds that it is wrong to assume that IT is for everyone. There must be some freedom of choice: »[...] the goal is to help people find their place in the world of today and to be happy in it. This includes the right to ignore it completely, to find out that it is not their cup of tea, to decide that they do not need it or to determine their own profile.«

The >everyone perspective< also encompasses the explicit objectives of promoting the opportunities of women, disabled people and other disadvantaged groups of people in the information society. We are aware of the fact that these kinds of classifications are a little dubious. Some of the BIT houses devoted special attention to fulfilling this objective. For example, there were special measures to reach the target group >women< at five of the BIT houses. Three of the BIT houses implemented special measures to make the technology more accessible to people with diminished functions in respect of mobility, hearing and the ability to read and write.

The bottom-up approach

The second part of the rhetoric or priority aspects is the bottom-up approach. This perspective can only be understood in the light of its opposite: the top-down approach. If we assume that change, and in particular, sustainable change, requires reciprocality, it is more logical to relate horizontally (as equals) than vertically (hierarchically). This also applies to our interaction with people in connection with IT-related development. Two of the BIT houses struggled to maintain a minimum of equality in their interactions. In respect of services provided by the authorities, we are all too prone to slip back into a top-down approach. This will continue to happen for as long as we are unable to recognise clearly the motives why the average citizen should seek out information, forms and the like so ardently that s/he can be bothered to attempt to overcome all the obstacles posed by complicated and trying technical systems—and is willing to leave the comfort of their home to go to a telecottage.

For reasons both beyond and within their control, it was impossible for all the BIT houses to attend a sufficient number of meetings together to make much progress in the more fundamental discussions regarding the motives for implementing the IT project. If this had been achieved, it seems likely that more of the people involved would have started to consider other ways of developing activities than those proposed by traditional computer education and to define the possibilities afforded by and the consequences of the information society. This in turn would have yielded new ideas regarding what IT can mean and what it can be used for—absolute prerequisites for the generation of innovative activities and new areas of employment.

A regional development laboratory for full-scale experiments with IT

The third priority aspect concerns regarding Blekinge as a regional development laboratory for full-scale experiments within the field of IT. The county of Blekinge was considered suitable as a testing ground for the development of technology and new IT-based services. This kind of reasoning has been offered as the strongest argument in the various talks regarding allocation of resources. The work at the BIT houses demonstrates that this kind of rhetoric has not been subject to any kind of noticeable reflection, nor has it been the motive behind any special undertakings. Each telecottage was simply concerned with starting up activities in its own location.

There was an explicit understanding at some of the BIT houses that >you have to know what you want<, i.e. develop a profile, before linking up with the other telecottages to constitute a functional and unified network (a laboratory). The regional coverage in Blekinge for BIT house activities was satisfactory. We have found that for co-ordinated regional networks it is crucial to build a firm foundation first by gathering a wide variety of knowledge and experience from situated and local projects. Only once the local bases have been established, there is a certain degree of stability and the profile can be recognised (i.e. the foundation has been laid) is it possible to start testing different types of IT-based applications.

The rhetoric we have discussed here has not really had much of an opportunity to encounter and interact with a reality. For the BIT houses project, this encounter still lies a long way off in the future. We would like to reiterate that this study is merely a snapshot along a path of development and changes that will continue beyond May 1999. The focus of the study has been on the potential significance of IT in specific situated circumstances.

Technopolitics

The dominant ICT discourses at the EU, national and regional levels are firmly rooted in the modern paradigm. The main ICT strategy on all levels is to stimulate the use of ICT to foster growth and employment. ICT needs to have a broad impact on society and among individuals in order to have a smooth adaptation to fast expanding development towards the so-called information society.

ICT is considered more as a tool and an autonomous force than as something forming and being formed in a complex process of structure transformations. The linear process thinking is constantly reproduced at the same time as realities vie for our attention—realities demanding understanding of complex systems in the contemporary late (post)modern era. Cilliers (1998) claims that the interaction among constituents in a complex system and the interaction between the system and its environment are of such a nature that the system as a whole cannot be fully understood merely by analysing its components. These relationships are never fixed, but are constantly shifting and transforming. »A complex system, such as a growing economy, has to develop its structure and be able to adapt that structure in order to cope with changes in the environment.«¹⁵

If we adhere strictly to the dominant ICT strategies, the view of the BIT house project as a technical implementation illustrates a situation where:

political intentions will not be realised without continuing dialogues, negotiations and reconsiderations

an instrumental understanding of technology will result in serious obstacles or even the collapse of the project¹⁶.

We have drawn a parallel between the BIT house project encountering situated realities and Haraway's understanding of technoscientific development as heterogeneous and continual construction through historically located practices. We want to accentuate technopolitics as a future-oriented way of thinking where processes of implosion of ICT and politics mean nondemarcated embedment in complex and powerful webs of reality-creating alliances.

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FOOTNOTES

- 1. In her thesis on experiments of gender research policy, p 79.
- 2. As formulated by Elisabeth Gulbrandsen in Trojer and Gulbrandsen 1996.
- 3. Haraway 1997, p. 4.
- 4. Ibid. p. 51.
- 5. Ibid. p. 99.
- 6. Latour 1995.
- 7. McLuhan 1964, p. 47.
- 8. Genosko, 1999.

- 9. The term >Gestalt< or *figure* is borrowed from gestalt psychology together with the term >ground<. McLuhan's partner Bruce R. Powers (1989, p. 5) writes »We used them to discuss the parameters of visual perception. [...] For example, at a lecture attention will shift from the speaker's words to his gestures, to the hum of the lighting or street sounds, or to the feel of the chair [...] each new figure (or Gestalt) alternately displacing the others into ground.«</p>
- 10. Haraway 1991, p. 198.
- 11. The quotations in this chapter all come from the interviews with Tom.
- 12. Stevrin and Uhlin, 1996, p. 57.
- 13. Putman is referred to in ibid. p. 21.
- 14. »Svängsta IT society«. When IT Blekinge was commissioned by the EU to »formulate visions, plans of action and project proposals for a future information society on the basis of a regional perspective«, (the RISI project), the model used in Svängsta proved to be a useful starting point. A feasibility study »IT Houses in Svängsta« was started in 1996 and completed the following year.
- 15. Cilliers 1998, p. 12.
- 16. See chapter 6: Digital infrastructure at the BIT houses, in Ekdahl et al 2000.

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»ACCOUNTABILITY AND I.C.T. DEVELOPMENT DISCOURSES«

Introduction

The rhetoric used in strategy and policy documents for information and communication technology (ICT) is overwhelmingly monolithic—regardless of whether it is formulated in economically rich or poor countries or in international organisations.

ICT has become a mantra for economic development—on the global as well as the local level. A major motivation for this mantra practice is the circumstance that the information and communication sector is expanding globally at twice the rate of the rest of the world's economy (d'Orville, 1996¹). The fundamental arguments for investing in ICT are situated in the view of ICT as a necessity for successful integration into the world economy. ICT is regarded as having great potential to promote development in key social and economic areas where a shortage of capital, knowledge and local capacity obstructs progress; it is even seen as capable of promoting democracy.

Bringing out this rhetoric in full relief, we know that the situation for a vast majority of women and men in low-income countries is that they have no access whatsoever to telecommunication services, and about two billion individuals lack access to electricity. Loader (1998, p. 15) states that it is not unreasonable to suppose that the digital (cyberspace) divide will be a significant feature of the political dialogue in the near future, where the present benefits of ICTS are unevenly spread and the disadvantages are particularly concentrated in the >black holes of human misery<.

The emphasis on global ICT development has changed over the years and moved from infrastructure through regulatory issues, application areas, content and knowledge creation to empowerment (Conhaim 2001). However, in the wake of the Genoa G8² Summit in July 2001, voices³ are beginning to stress the need to focus on implementation. This enables us to go beyond the rhetoric and phase realities of the post-colonial situations of women and men in low-income countries. Implementation of ICT, which secures cultural and economic sustainability, is not possible without relating to accountability for the reality-producing aspects of ICT (either reinforcing the resource gaps or starting to close them).

This paper deals with questions concerning dominant discourses and signs of subordinate ones in ICT policies and strategies in the areas of encounter between economically rich and poor countries. The aim of the paper is to contribute to critical self-reflection within European (Western) thinking on ICT implementation. The reason behind this is the urgency regarding how to be accountable⁴ in the global ICT development. Our overarching question concerns how it is possible in this context to make space in nationally situated ICT implementations for the everyday lives lived by women and men.

The Bangalore syndrome

Let us look at some of the chains of thought for approaching understandings of ICT implementation processes in a very complex national context. As outsiders we are fascinated by India as a huge country, where concepts including >both/and< are more relevant than >either/or< , as a formerly colonised nation, and as a culture with cognitive traditions more important for European culture than vice versa.

India is a major actor in global software development and is increasingly being seen as an ICT superpower, with Bangalore as one of the more important centres. The rise of India's ICT industry was marked initially by the success of Indian nationals abroad, especially in Silicon Valley, California. The seeds of this image were sown by Sabeer Bhati, who created Hotmail, the Internet email service. Bhati sold Hotmail to Microsoft in 1996. Other success stories of Indian companies in the ICT field include Exodus, eCode, Infosys, Wipro.

Four reasons are given for the development of ICT as a national strength in India:

- a good education system
- a huge middle class
- a long cognitive tradition

English language skills

Indians do not need to go abroad to attain an excellent higher education. Two of Asia's top-ten MBA schools are Indian, namely the business schools in Ahmadabad and Bangalore, and five out of the ten best science and technology schools in Asia are Indian—in Bombay, Delhi, Madras, Kanpur and Kharagpur⁵. Each year about 200.000 students graduate as engineers from Indian universities⁶.

India is reckoned to have the largest middle class in the world, currently estimated to number over 200 million persons—a middle class that can afford to give their children higher education and also to support the economic system necessary for ICT development, as both investors and consumers.

The Indian education system is traditionally grounded in natural science and mathematics. The Indian cognitive mind is said to have an analytical and mathematical bent that is perfect for the ICT field⁷. The long tradition of logical thinking and mathematically skilled inhabitants—a tradition that stretches back to long before the time of the British colonisation—engender computer-programming skills. It was Indians who created the ten-based counting system and the number zero. Azim Premij, the head of WIPRO, the second largest ICT company in India, claims that »the biggest opportunity is the change in the nature of critical resources needed by an organization or the nation. Material and capital resources characterized the manufacturing economy. The power of the mind is the critical resource in the information age. This is where we as a nation have a major competitive advantage.«⁸

The strength of India as a nation, as compared with China, for instance, is that more Indians know English, which is indisputably the international and dominant language of technology and the Internet. Almost 80% of all websites are in English, yet less than 10% of people worldwide speak English⁹.

The factors presented above, combined with improved international telecommunications, allow the Indian ICT industry to communicate with and send products to customers worldwide. The provision of back-office functions to far-away clients is another application area that takes advantage of global time zones and lower salary levels in India. The cost arbitrage can be more than one in ten for low-end services. WIPRO is planning to introduce technology so that mass-market helplines for customers of us Internet services can be run from India. This will mean that India will be the back office of the world, which brings us round to the definition of *the Bangalore syndrome*, whereby India is a developer of software for companies abroad (Mehta 2001a).

The Indian scenario also includes poverty, especially in rural areas. According to UNDP, more than 50% of India's population (of more than one billion inhabitants) live on less than a dollar a day. In China, this figure is 37% of a population of 1.3 billion. Congress legislator Mani Shankar Aiyar seems to share some of the views voiced by Bill Gates¹⁰, and says in a special issue of Asiaweek in August 2000 focusing on India as an up-and-coming superpower, »try telling the poor that the answer to their problem is the Internet, that it lies in Microsoft. You'll see the absurdity of the position. We need the old economy¹¹, as well as the new.« Others try not to nurture a polarized, either-or position, like projects in Andhra Pradesh (Ranawana 2000) to put farmers online for access to services such as checking prices, weather forecasts, credit information, etc. by means of programs that use easily understandable, intuitive symbols and local-language phrases. The aim is to give rural farmers the chance to make informed choices and to have more control over their work and lives. Another example (Mehta 2001b) is the establishment of 76 Internet Dhabas (Cyber Cafes) by rural women at the Taluka¹² level by educated unemployed young women in Gujarat. The Internet Dhabas function initially as a business centre for women in rural areas by establishing websites for the products made by these women and serve to establish direct links with the customers. The idea is to expand the activities to constitute a multi-service centre that also provides information and facilities for distance education.

Andhra Pradesh has between 60 and 70 million inhabitants. The capital of the federal state is Hyderabad, a.k.a. Cyberabad. Hyderabad has eight universities, which provide the various ICT enterprises with a highly qualified working force. The federal state has approved an ICT strategy called Vision 2020¹³. This vision includes Andhra Pradesh becoming a knowledge (information) based state by 2020. A number of questions demand answers:

If and when, the Vision 2020 strategy is implemented, what will happen in Andhra Pradesh in terms of:

the transition from illiteracy directly to the information society

democratic influences

caste and class divisions

cultural sustainability

impact on resource allocation in general

impact on gender norms

interpretation of Western-defined ICT in a South Asian context

the dominating ICT discourses

marginalised ICT discourses?

We want to explore the contexts for some of these points, mainly the last four, in the discussion below, which is also an attempt at self-criticism.
ICT development in post-colonial situations

The theories of post-colonial identities and situations are research areas of great importance and volume. We want to address some chains of thought in order to come closer to understanding the process of combining post-colonialism and ICT. Referring to Sandra Harding (1998), we can say that post-colonialism is not monolithic; the term has many referents and meanings. Temporally, it indicates the period beginning in the 1960s, marking the end of formal European colonialism.

Harding (1998) mentions a number of post-colonial positions. One is that it is imagined still to lie in the future, as the contemporary development policies of the international agencies and northern nations merely constitute >colonialism by other means<. Sello Mashao Rasethaba, head of South Africa's state-owned IT agency, claims that »the information society of the 21st century is leading to cyber-colonialism. What do people need more urgently—clean water or the possibility of ordering underwear online?« (Finkenzeller 2001).

Secondly, post-colonialism can mean a return to or revival of precolonised cultures, institutions and practices by the formerly colonised peoples. Thirdly, post-colonialism can constitute a critical counter-discourse either »by those who say and actively work to overthrow the rule of the colonizer, or as a more ambivalent, complicitous discourse by those who criticize the evils of colonialism even as they also extol its virtues and its necessity«¹⁴. We find post-colonial critique rife among people in hybrid conditions at the borders between the former colonisers and the colonised. Today, there are many students, scholars and others in the us and in Europe presenting post-colonial critique situated in these borderlands.

The anthropologist David Hess (1995)¹⁵ suggests that we think of post-colonialism as »a kind of discursive space opened up both within and after the end of formal colonialism, where diverse positionings, discussions and other practices can occur«. In Manuel Castells' book (1998) End of Millennium Volume III, he discusses the power battles of the >information age<, claiming that these battles are in fact cultural battles. »Power, as the capacity to impose behaviour, lies in the networks of information exchange and symbolic manipulation, which relate social actors, institutions and cultural movements, through icons, spokespersons and intellectual amplifiers. [...] Culture as the source of power, and power as the source of capital, underlie the new social hierarchy of the Information Age« (p. 348). Is it possible to develop multicultural battles/negotiations in the contemporary >Information Age<— negotiations that include autonomous, formerly colonised countries? And what form would these negotiations have to assume in order to make space for the lives lived by women and men in economically poor countries?

These questions indicate an alternative approach to the current dominant one, which can be called the catching-up approach. Maria Mies provides a very critical analysis of what she calls >the myth of catching-up development< in Mies and Shiva (1993). There are a number of researchers, including Shiva and Mies, who argue »that the poverty of the underdeveloped nations is not a result of >natural< lagging behind but the direct consequence of the overdevelopment of the rich industrial countries, who exploit the so-called periphery in Africa, South America and Asia«. It is easy to recognise the processes of accepting the lifestyle of those at the top as the only model for a good life, not only for the colonisers but also for the colonised. But one of the most difficult problems for the colonised (countries, women, peasants), Mies claims, is to develop their own identity after a process of formal decolonisation. This means that they must re-evaluate what they are and what they do and at the same time also overcome their fascination with the coloniser. According to Mies, the catching-up policy of colonies is impossible, undesirable and always a lost cause, as the very progress of the colonisers (the rich northern countries) is based on the existence and exploitation of the colonies. In addition, the industrial centres themselves have already progressed to yet more sophisticated stages of technical development, when an economically poor country after much effort attains what was once considered to be the ultimate development.

A global and general catching-up approach to achieve the kind of development seen in industrialised countries on a planet with limited resources is ecologically unrealistic. Furthermore, since ICT is not a separate technical and economic sector, like motorcars or refrigerators, but rather intersects with almost every sector, we must ask ourselves if this situation accommodates a potential for sustainable development, when regarded from the perspective of a catching-up approach. What does seem clear is that there are no immediate links between equal-level¹⁶ participation and ICT development/ICT policy development. Rather, the links are created by means of hard work and tedious dialogues, multidimensional partnership negotiations with developed and working sensitivity and awareness of diverse interests, gender dimensions and cultural–ethnic pluralism, among other components in an increasingly complex world.

What we have indicated above, which is also confirmed in the reading of the rhetoric employed by the different actors concerning attitudes to the ICT

strategies of economically poor countries, is permeated with faith in development linearity and ICT as a panacea. In order to create a broader and more complex understanding of how ICT is intertwined in cultural, social and economic structures, it is necessary to expand the notions of other lines of interpretation.

Is it possible to work out »national ICT strategies, which also permit bottom–up approaches«¹⁷ in economically poor and in addition formerly colonised countries? Is it possible to create prerequisites for post-colonial identities to make their mark on a nationally situated ICT implementation?

ICT discourses

Technical transfer in a global perspective and the modern age is predominantly unidirectional. However, when you introduce ICT development, the situation quickly becomes complex. The direction is not obvious, as the border between developer and receiver does not necessarily coincide with a national border. Still keeping a nation state context, we are eager to find ICT strategy formulations relating to post-colonial situations. Why this is so is related to the willingness (if any) of the rich countries to add their own participation to the existing prerequisites for low-income countries to implement ICT on their own terms.

In this section, we will start our investigation by looking at some ICT policy documents and initiatives at different international and national levels. We are looking for different ICT discourses, dominant as well as subordinate.

The United Nations

We would like to refer to four UN initiatives promoting ICT development for poor people.

ıст Task Force

The session of the Economic and Social Council in July 2000 resulted in a ministerial declaration, which established a task force on ICT for development. The aim of the task force is to provide an interface between the information technology community and the development community, bringing together the private sector, foundations and the donor community in order to develop innovative ways to bring ICT capacity to low-income countries. On a more general level, the aim is »to harness ICT to bridge the social and economic

gaps that divide the world—not as a substitute for broad development efforts, but to complement them as a leveraging factor that can empower the poor with the knowledge and skills they need in order to grow out of poverty [...] to devise technological solutions that can help poor countries and people to leapfrog traditional technologies and stages of development«¹⁸. The conclusion in the same report states that »although ICT do not provide the magic wand in overcoming poverty and addressing development problems, they can make a major contribution in tackling many long-standing development challenges. The establishment of the ICT Task Force can be an important catalyst in this endeavour.«¹⁹

UNITeS

In November 2000 UN Secretary-General Kofi Annan launched a project, which he described thus in a press release²⁰: »This is what I had in mind when I asked United Nations Volunteers to lead an Information Technology corps of volunteers—UNITeS—which is helping people in developing countries learn how to use the resources of the Internet and of information technology for human development [...] Bridging the digital divide is not going to be easy. UNITeS is just one example of the exciting new areas that volunteerism can venture into.« The project has been criticised by Anriette Esterhuyse, head of African Progressive Communication, saying it is dangerous to identify ICT as a miraculous medicine for poverty.

The purpose of UNITES is to support the efforts of people in developing countries to expand their capacity in the use of ICT for human development. UNITES works through a coalition of institutions from the North and the South, comprising volunteer agencies, institutions from civil society, governments, the private sector and development organisations, including those of the UN.

Health InterNetwork

The Millenium report of the UN announced the launch of the Health InterNetwork with the aim to enable healthcare workers, researchers and policymakers in low-income countries to gain access to updated health information using ICT including the Internet. The Health InterNetwork is administered by WHO and is creating a global public health portal on the Internet and establishing health access sites. These sites, both telephonic and wireless, are going to be set up in the poorest nations across the world. The content and application must be designed to address the specific professional, social and cultural needs of these countries.

Disaster Relief Programme

A first-on-the-ground programme has been established to provide and maintain mobile communication equipment and expertise for humanitarian relief operations. A partnership has been created between UN and Ericsson drawing on support from Ericsson's offices in more than 140 countries. The programme is being headed by the Office for the Co-ordination of Humanitarian Affairs and includes all the UN agencies involved in emergency response as well as the international Federation of Red Cross and Red Crescent Societies.

The first two initiatives demonstrate dominant ICT discourses, though somewhat hedged, characterised by ICT as a powerful, general tool for poverty alleviation and by step-by-step-progress understanding (using terms like leapfrogging). Great expectations for ICT are expressed. However, there are discussions at the UN level, constituting explicit cracks or ambivalences in the dominant ICT discourses and turning the questions towards problems of injustice and global resource gaps that cannot be resolved merely by a technical fix. This turn is supported by the last two initiatives, which constitute practices of ICT development starting in concrete, situated problems.

G8

ICT, the digital divide and the situation facing low-income countries were the main themes on the agenda for the G8 meeting in Okinawa²¹ in 2000 between the Heads of State of the participating countries. A policy document was approved—the Okinawa Charter on the Global Information Society and a Digital Opportunities Task Force (DOT Force) was initiated by G8.

The Charter²² states that »Countries that succeed in harnessing the potential (of ICT) can look forward to leapfrogging conventional obstacles of infrastructural development, to meeting more effectively their vital development goals, such as poverty reduction, health, sanitation and education, and to benefiting from the rapid growth of global e-commerce. [...] Indeed, those developing countries which fail to keep up with the accelerating pace of ICT innovation may not have the opportunity to participate fully in the information society and economy.«

The dominant ICT discourse we can identify here is firstly the view of ICT evolvement as a more or less linear process. Leapfrogging indicates the possibility of leaving out some progress steps, thus speeding up the process. This understanding of development practices leaves little room for complex and often necessary feedback processes, which are anything but linear and include

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a wide variety of actors. The second dominant discourse addresses ICT as a panacea. A major new technological breakthrough like ICT is expected to carry the solutions for a wide range of social problems and challenges. The third discourse, which must be considered more as a rhetorical strategy, is to add an element of >threat< to the development process for the presumptive participants in the information society. If you don't get on the ICT train and adapt, you'll run into serious trouble.

The DOT Force presented a plan for action at the G8 meeting in Genoa, Italy, in July 2001. The action plan is included in the DOT Force report *Digital Opportunities for All: Meeting the Challenge*²³.

The background text in the Genoa report includes no explicit leapfrogging discussion as in the Okinawa Charter. A more multi-dimensional picture is painted of partnership. The title of the Genoa report—*Digital Opportunities for All*—indicates the dominant rhetoric in the discussion and connects it to the theme of >helping the poor<. The ICT development and its potential for poverty reduction, increased social inclusion and the creation of a better life for all is constantly emphasised. Although it has been rejected, the panacea discourse forms a strong undercurrent throughout the report. It tries to balance the requirements for good applications and the threats of misapplied or non-applied ICT.

The G8 meetings concern global economic issues, and the role of ICT in the world economy is prevailing. The discussions in the Genoa DOT Force report are focused on poverty reduction in economically poor countries without explicitly stating the importance for the G8 countries of ICT development in the poor world. However, cracks are visible; for example, just before the list of action points, where extending markets and sharing innovations in the international community are mentioned but not analysed. Another crack is the eagerness to secure pro-competitive policies in the communications sector and a regulatory framework that will support such competition in economically poor countries. We understand these G8 suggested policies to refer more to the international than the national market and the need for deregulation, when mentioning a regulatory framework in the particular country.

The present position of ICT policy in the European Union can be found in the proposal for decision of the multi-annual framework programme 2002–2006 for research, technological development and demonstration activities aimed at contributing towards the creation of the European Research Area²⁴.

In the selected thematic area *Information Society technologies*, the various actions suggested all address a number of technological priorities. One is *integrating research into technological areas of priority interest for citizens and businesses*. Elements of discourses can also be read between the lines of the description of envisaged activities²⁵:

Completing and building on progress expected in the development of basic technologies, research aimed at finding solutions for major societal and economic challenges and, accordingly, focusing on:

ambient intelligence systems offering access to the information society for all, whatever their age and situation, as well as interactive and intelligent systems for health, mobility, security, leisure, preservation of the cultural heritage and environmental monitoring;

electronic and mobile commerce, as well as technologies for secure transactions and infrastructures, new tools and new methods of work, technologies for learning and systems for corporate knowledge management, for integrated business management and for e-government;

large-scale distributed systems and platforms, including GRID-based systems that provide effective solutions to complex problems in areas such as the environment, energy, health, transport and industrial design.

The ICT discourse of linear process thinking is not very strong with the emphasis on, for instance, co-operation practices not only between member states and other nations but also between different actors, such as universities, institutes, enterprises etc. However, the panacea syndrome as a dominant ICT discourse is as strong in Europe as it is in the G8 collaboration. In this part of the document, the understanding of ICT as an exclusively technical discourse is explicit, but if we take account of the proposal as a whole, it is not exclusively technical, also including social and cultural context impacts.

Sida

The Swedish International Development Cooperation Agency (SIDA) launched its own ICT policy when it established the Strategy for IT in Development Cooperation²⁶ in December 1999. The vision for Sida's ICT co-operation support is summarised in the strategy document²⁷:

SIDA supports the rapid integration of ICT in the partner countries in order to improve communications and the exchange of knowledge, both within the countries and globally.

SIDA is a partner in cooperation with high quality experts whose services in the subject area are in demand.

The arguments for the involvement of SIDA in the development of ICT in economically weak countries are stated on SIDA's website²⁸ as follows:

IT is gaining foot in the developing world and it may take some time before it will benefit the poor people in these countries. Telecommunication networks and other IT infrastructure are lacking as well as the technical and economic base for achieving a widespread connectivity. The situation is worsened by the lack of technical personnel and computer literacy. The digital divide threatens to impede the economic welfare of the developing countries.

IT is the instrument that can help developing countries to be a part of the global economy. It is also a question of everybody's right to get information. While IT provides tremendous opportunities for the poor people of the developing world, there also exists a risk that the IT revolution can enhance the gap not only between the rich and the poor countries but also between the rich and the poor people in the same country.

Developing Cooperation Agencies can play an important role at this embryonic stage by providing the necessary tools for utilising IT. The task at hand is to quickly integrate IT in the support programmes of these agencies so that the developing countries can benefit from increased knowledge transfer both globally and within the countries. But how should this be done?

The report *IT in Swedish Development Cooperation—Suggestions for ways of including the low-income countries* (Ekenberg & Asker 1999) was written on behalf of the Swedish Ministry for Foreign Affairs and Sida and formed the background for SIDA's strategy document discussed above. In the report, it is not obvious that important development potentials and the necessary fresh ideas are situated in the economically rich, Western world. This may imply a breakaway from technically dominated ICT discourses in favour of appropriate, context-dependent, situated and sustainable system changes.

If we consider the two Sida documents together, we can identify the follow-

ing prevalent ICT discourses:

Economically poor countries have to invest (with foreign help) in ICT in order not to be excluded as a nation or—on the level of the individuals—as marginalised groups. The issue of who shall adapt to conform to whom has low priority.

There is no time to lose in joining the ICT development. High initial costs must be accepted, as delaying will be more expensive in the long run.

ICT is a necessary condition for contemporary social progress (evolution).

A linear perception of development dominates and there are high expectations of leapfrogging.

ICT is a universal tool²⁹.

Women's voices and gender research

Vandana Shiva once said »New technologies travel on old social relations«. Experience reveals that new technologies simply reinforce old social structures rather than transforming them. This means that the discourse of ICT as a universal tool, which must also include the possibility to change deeply ingrained structures like gender structures, is highly questionable. The concern to understand the underlying cognitive structures, which are reality producing in the evolving information society, has been and still is comprehensive in gender research.

Participatory ICT design is emphasised in gender research as well as in human work science, computer science and elsewhere. Birgitta Rydhagen (1999, p. 75) regards the feminist understanding of power relations and their impact on the production of knowledge and technology as highly relevant in participatory research and technology design. Combining participatory ICT design and feminist research promotes:

diversity potentials as strategies to handle non-consensus situations

enforcement of situated knowledge and technology development (Haraway 1991)

emphasis on the importance of power relations and their impacts, including complex understanding of gender structures

process-oriented development through a broader understanding of transformation processes. Christina Mörtberg (2000) holds that equal access to ICT ought to be a basic principle, when the slogan is no longer »technology in a democratic society« but »democracy in an information society«. She problematises the discourse of equal access by showing that the limitations of equal access are rendered visible by a multiplicity of variables such as gender, class, race, region, etc. »There are no automatic links between the political goal of equal access and the opportunities that are opened up by information technology.«

Notes for the Near Future

In the complex web of material, cultural, social and economic actors³⁰ within cyberspace³¹ and ICT development, one of the current key issues is accessibility for economically weak countries and poor women and men. To open up for and increase access to cyberspace is a non-linear process and not only a technical problem. The contemporary accessibility debate pivots on telecommunications.

We have seen how the 68 countries focus on the telecommunications sector and more or less explicitly demand deregulation of that market. In contrast with that view, we agree with Holderness (1998) that the telecom market, left to itself, will not address the inequality of women's and men's access to communications. Positive political intervention will be required and—as suggested by Ekenberg and Asker (1999)—national telecom sectors must be reformed and restructured. Nick Moore (1998) claims that open, unfettered competition will never ensure that telecommunications are provided globally, other than perhaps in a compact city-state like Singapore. However, it may be possible to achieve the goal of global service through regulation and by placing conditions on the companies licensed to provide telecommunication services.

The conditions of ICT have changed dramatically since spring 2001. The telecommunication and ICT industry has seen the value of their shares fall to a historic low. This situation may imply the traditional Western ICT infrastructure solutions are not as useful in the panacea rhetoric as before, which also stands for the ICT discourse of linear process thinking.

The second event is the terrorist attack on New York and Washington. The usA is more vulnerable, even at its very core, than it had thought. An international dependence for usA seems more urgent now.

The result of these two circumstances is a vacuum for the traditional rhetoric. Maybe we are beginning to see a more humble Western world, which is actually interested in other solutions, other questions and most of all—other answers to how to implement ICT in low-income countries.

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FOOTNOTES

- 1. Referred to in Ekenberg & Asker 1999, p. 9.
- 2. G7 consists of the seven richest industrialised countries—the USA, Japan, Germany, France, Great Britain, Italy and Canada. The leaders of these seven nations have met since 1975 to discuss the world economy. In 1998, Russia became a full member and G8 was established. The meetings of G8 are held each year in different countries.
- 3. www.hsw.fhso.ch/ruddy/Workshop_2.htm.
- 4. Gulbrandsen 1995, chapter IX.
- 5. Ranking year 2000, Asiaweek research.
- 6. The business section of the Swedish newspaper *Svenska dagbladet*, 30 January 2001, p. 16.
- From an interview with V. Rama Subramaniam, Managing director of ThinkGen Ltd. on 2 December 1999, published in a report from the Swedish Office of Science and Technology, *India as IT nation*, December 1999.
- 8. Asiaweek, August 11, 2000, p. 40.
- 9. 2000: Women's Learning Partnership. www.learningpartnership.org/stats.html.
- 10. Bill Gates at Microsoft has problematised the discourse of ICT as a universal tool, proclaiming that computers can do little to solve the planet's gravest social ills and avert the most immediate catastrophes facing the world's poorest people (McKie 2000).

- 11. Agriculture and the manufacturing industry.
- 12. A small city.
- 13. For a discussion of national ICT strategies, see Ekdahl et al. 2000.
- 14. Harding 1998, p.15.
- 15. As referred to in Harding 1998.
- 16. We have borrowed Jan Åhlander's concept of the equal-level perspective in order to overcome the dichotomy of the top-down/bottom-up perspective.
- 17. Suggested in the DOT Force report, Genoa July 2001, see above.
- 18. ICT Task Force, Report of the Secretary-General, E/2001/7, 20 February 2001, paragraph 11.
- 19. Ibid. paragraph 39.
- 20. sg/sm 7642 November 28 2000.
- 21. www.g8kyushu-okinawa.go.jp.
- 22. www.g8kyushu-okinawa.go.jp/e/documents/it1.html under Promoting Global Participation, 12.
- 23. 11 May 2001, www.dotforce.org/reports.
- 24. Brussels, 21.2.2001, сом (2001) 94 final, 2001/0053 (СОD), 2001/0054 (CNS).
- 25. Ibid. p. 19.
- 26. www.sida.se/Sida/articles/5400-5499/5459/STRAT_SV.PDF.
- 27. Strategy for 1T in Development Cooperation, 1999, p. 7.
- 28. Homepage updated 000914 and read for this citation 010704.
- 29. Sida's Strategy Document states on page 14: »Since IT is a *universal tool*, the natural starting points are the needs which are experienced as the most urgent from the developing country perspective....«.
- 30. For a discussion of the diverse actors in ICT contexts, see Elovaara 2001.
- 31. Cyberspace is understood as the space created by worldwide computer networks.

THIRD PAPER

»DIGITAL DIVIDE: CATCH UP FOR WHAT?«

Introduction

Information and communication technology (ICT) has become a mantra for economic development—on the global as well as the local level. One major motivation for this mantra practice is the circumstance that the information and communication sector is expanding globally at twice the rate of the rest of the world's economy (d'Orville, 1996¹). ICT and its impact on society are currently subject to huge expectations. The hopes concern the potentials of the ICT revolution to provide solutions to economic and social problems such as a lack of resources, unemployment, democracy deficiency and the problems of marginalized groups like disabled people, women and immigrants.

The rhetoric used in ICT strategy documents is clear and explicit at the national as well as international level. We find occasional examples of national ICT strategies from countries in the economically poor world along with strategies from cooperation and development agencies between economically rich and poor countries like SIDA (the Swedish International Development Cooperation Agency). The fundamental arguments for investing in ICT are generally fairly uniform and are situated in the view of ICT as a necessity for successful integration into the world economy. ICT is regarded as having great potential to promote development in key social and economic areas where a shortage of capital, knowledge and local capacity obstructs progress; it is even seen as capable of promoting democracy.

However, the situation for women and men in economically poor countries is that a vast majority of them have no access whatsoever to telecommunication services, and about two billion individuals lack access to electricity. The obvious challenge then is actually how to avoid widening the resource gap, before we can even begin to address the issue of trying to close it. Loader (1998, p. 15) states that it is not unreasonable to suppose that the digital (cyberspace) divide will be a significant feature of the political dialogue in the near future, where the present benefits of ICT:s are unevenly spread and the disadvantages are particularly concentrated in the >black holes of human misery<.

This paper deals with questions concerning ICT discourses² and practices in the areas of encounter between economically rich and poor countries. The fact that men and women fear the digital divide, which may consist of divides between individuals, groups of women and/or men and between nations and which is now frequently cited as a pivotal factor in the ongoing, growing economic divide³, leads us to wonder who is catching up and for what?

Dominating ICT discourses

In this section, we are going to look at some ICT policy documents and initiatives at different international and national levels, in order to grasp some of the main elements of the dominating discourses of ICT and develop a more complex understanding of the actual driving forces and their directions in the digital gap processes.

$G8^4$

ICT, the digital divide and the situation facing developing countries were the main themes on the agenda for the G8 meeting in Okinawa⁵ in the 2000 between the Heads of State of the participating countries. A policy document was approved—the Okinawa Charter on the Global Information Society and a Digital Opportunities Task Force (DOT Force) was initiated by G8.

The Charter states⁶ »Countries that succeed in harnessing the potential (of ICT) can look forward to leapfrogging conventional obstacles of infrastructural development, to meeting more effectively their vital development goals, such as poverty reduction, health, sanitation and education, and to benefiting from the rapid growth of global e-commerce. [...] Indeed, those developing countries which fail to keep up with the accelerating pace of ict innovation may not have the opportunity to participate fully in the information society and economy.«

The dominant ICT discourse we identify here is firstly the view of ICT evolvement as a more or less linear process. Leapfrogging indicates the possibility of leaving out some progress steps, thus speeding up the process. This understanding of development practices leaves little room for complex and often necessary feedback processes, which are anything but linear and include a wide variety of actors. The second dominant discourse addresses ICT as a panacea. A new major technological breakthrough like ICT is expected to carry the solutions for a wide range of social problems and challenges. The third discourse, which must be considered more as a rhetorical strategy, is to add an element of >threat< in the development process for the presumptive participants in the information society. If you don't get on the ICT train and adapt, you'll run into serious troubles.

The DOT Force presented a plan for action at the G8 meeting in Genoa, Italy, in July 2001. The action plan is included in the DOT Force report *Digital Opportunities for All: Meeting the Challenge*⁷. The action plan was approved by G8 at the meeting and includes nine action points:

- 1. Help establish and support developing countries' and emerging economies' national *eStrategies*
- 2. Improve connectivity, increase access and lower costs
- 3. Enhance human capacity development, knowledge creation and sharing
- 4. Foster enterprise and entrepreneurship for sustainable economic development
- 5. Establish and support universal participation in addressing new international policy and technical issues raised by the Internet and ICT
- 6. Establish and support dedicated initiatives for the ICT inclusion of the least developed countries
- 7. Promote ICT for health care and in support against HIV/AIDS and other infectious and communicable diseases
- 8. National and international efforts to support local content and application creation
- 9. Prioritize ICT in G8 and other development assistance policies and programmes and enhance coordination of multilateral initiatives.

The background text in the Genoa report includes no explicit leapfrogging discussion as in the Okinawa Charter. A more multidimensional picture is painted of partnership. The title of the Genoa report—*Digital opportunities for all*—indicates the dominating rhetoric in the discussion and connects it to the theme >helping the poor<. The ICT development is referred to as the digital revolution, and its potential for poverty reduction, increased social inclusion and the creation of a better life for all is constantly emphasized. Although it has been rejected, the panacea discourse is a strong undercurrent throughout

the report. It tries to balance the requirements for good applications and the threats of misapplied or non-applied ICT. G8 suggests fresh thinking and attitudes from all sides, including:

holistic approaches with multi-stakeholder involvement leveraging linkages and partnerships into the global economy national ICT strategies which also permit bottom-up approaches taking advantage of new and emerging technologies new approaches to development assistance

A detail at the end of the same subchapter, *Thinking differently, act-ing cohesively*, states: »The power of ICT to address gender issues cannot be underestimated and should be used to its full extent«. As policy statements—including the list above—these issues are important, but they need to be filled with substance and practices before we can understand the meaning of the statements and suggestions.

The G8 meetings concern world economy issues. The role of ICT in the world economy is prevailing. The discussions in the Genoa DOT Force report are focused on poverty reduction in economically poor countries without explicitly stating the importance for the G8 countries of ICT development in the poor world. Cracks occur though, for example, just before the list of action points, where extending markets and sharing innovations in the international community are mentioned but not analyzed. Another crack is the eagerness to secure pro-competitive policies in the communications sector and a regulatory framework that will support such competition in economically poor countries. We understand these G8 suggested policies to refer more to the international than the national market and the need for deregulation, when mentioning a regulatory framework in the particular country.

EU

The present position of ICT policy in the European Community can be found in the proposal for decision of the multi-annual framework programme 2002–2006 of the European Community for research, technological development and demonstration activities aimed at contributing towards the creation of the European Research Area⁸.

In the selected thematic area *Information Society technologies*, the following situation is presented⁹:

At the dawn of the 21st century, information and communication technologies are revolutionising the functioning of the economy and society, and are generating new ways of producing, trading and communicating. The effort devoted to these technologies in Europe is still insufficient, particularly when compared with the United States. In that country, public and private sector funding combined is three times as much for this sector as the corresponding spending in Europe. This has become the EU's second most important sector of the economy, with an annual market of EUR 2000 billion and employing more than 2 million persons in Europe, a number that is steadily rising.

The various actions suggested all address a number of technological priorities. One is *integrating research into technological areas of priority interest for citizens and businesses*. Elements of discourses can also be read between the lines of the description of envisaged activities¹⁰:

Completing and building on progress expected in the development of basic technologies, research aimed at finding solutions for major societal and economic challenges and, accordingly, focusing on:

ambient intelligence systems offering access to the information society for all, whatever their age and situation, as well as interactive and intelligent systems for health, mobility, security, leisure, preservation of the cultural heritage and environmental monitoring;

electronic and mobile commerce, as well as technologies for secure transactions and infrastructures, new tools and new methods of work, technologies for learning and systems for corporate knowledge management, for integrated business management and for e-government;

large-scale distributed systems and platforms, including GRID-based systems that provide effective solutions to complex problems in areas such as the environment, energy, health, transport and industrial design.

Specific international cooperation activities are mentioned in the proposal pointing towards specific activities, carried out in support of the EU's foreign policy and development aid policy, in particular:

Mediterranean third countries;

Russia and the States of the cis;

Developing countries.

The ICT discourse of linear process thinking is not very strong with the emphasis on, for instance, cooperation practices not only between member states and other nations but also between different actors, such as universities, institutes, enterprises etc. However, the panacea syndrome as a dominating

ICT discourse is as strong in Europe as it is in the G8 collaboration. In this part of the document, the understanding of ICT as an exclusively technical discourse is explicit, but if we take account of the proposal as a whole, it is not exclusively technical, including also social and cultural context impacts.

Sida

The Swedish International Development Cooperation Agency (SIDA) launched its own ICT policy when it established the *Strategy for IT in Development Cooperation*¹¹ in December 1999. The strategy document presents the ICT activities of the agency so far, including financing operations in international organizations (infoDev, Bellanet), investments in ICT infrastructure for the cooperation partners of SAREC (the Department for Research Cooperation) and international training programmes, cultural support and a number of other one-off contributions. The major part of the financial support was granted to research cooperation projects. These activities signal a rather technical ICT discourse.

The vision for SIDA'S ICT cooperation support is summarized in the strategy document¹²:

Sida supports the rapid integration of ICT in the partner countries in order to improve communications and the exchange of knowledge, both within the countries and globally.

Sida is a partner in cooperation with high quality experts whose services in the subject area are in demand.

The arguments for the involvement of SIDA in the development of ICT in economically weak countries are stated on SIDA's website¹³ as follows:

IT is gaining foot in the developing world and it may take some time before it will benefit the poor people in these countries. Telecommunication networks and other IT infrastructure are lacking as well as the technical and economic base for achieving a widespread connectivity. The situation is worsened by the lack of technical personnel and computer literacy. The digital divide threatens to impede the economic welfare of the developing countries.

IT is the instrument that can help developing countries to be a part of the global economy. It is also a question of everybody's right to get information. While IT provides tremendous opportunities for the poor people of the developing world, there also exists a risk that the IT revolution can enhance the gap not only between the rich and the poor countries but also between the rich and the poor people in the same country. Developing Cooperation Agencies can play an important role at this embryonic stage by providing the necessary tools for utilising IT. The task at hand is to quickly integrate IT in the support programmes of these agencies so that the developing countries can benefit from increased knowledge transfer both globally and within the countries. But how should this be done?

The report *IT in Swedish Development Cooperation—Suggestions for Ways of including the Low-income Countries* (Ekenberg & Asker 1999) was written on behalf of the Swedish Ministry for Foreign Affairs and sIDA and formed the background for Sida's strategy document discussed above. The report provides a wide and comprehensive contemporary account and analysis with a number of interesting recommendations, which will be followed up below. The document gives examples of dominating ICT discourses already touched upon above, as well as revealing traces of some less dominant discourses, which may serve to pave the way for other development conceptions. In this latter case, it is not obvious that important development potentials and the necessary fresh ideas are situated in the economically rich, Western world. These traces may imply a breakaway from technically dominated ICT discourses in favour of appropriate, context-dependent, situated and sustainable system changes.

If we consider the two SIDA documents together, we can identify the following prevalent ICT discourses:

Economically poor countries have to invest (with foreign help) in ICT in order not to be excluded as a nation or—on the level of the individuals—as marginalized groups. The issue of who shall adapt to conform to whom has low priority.

There is no time to lose in joining the ICT development. High initial costs must be accepted, as delaying will be more expensive in the long run.

ICT is a condition for contemporary social progress (evolution).

A linear perception of development dominates and there are high expectations of leapfrogging.

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ICT is a universal tool<sup>14</sup>.
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Subordinate Discourses

Sida

In the report (Ekenberg & Asker 1999), we can catch a glimpse of alternative (counter)discourses, such as in discussions of infrastructure development, where cooperation between governments, private enterprises and development agencies is emphasized. These suggestions represent a shift in the ICT development discourse away from strict linearity—a change that is further supported by mentioning the necessity of developing countries to become proactive in the processes. The questions of how, where and when to be proactive are fundamental.

UN

In March 2001, the news agency IPS reported UN General Secretary Kofi Annan's opinions regarding ICT, stating that he believes that ICT has great potential for reducing poverty in the world. In November 2000, Annan launched a project, which he described thus in a press release¹⁵: »This is what I had in mind when I asked United Nations Volunteers to lead an Information Technology corps of volunteers—UNITeS—which is helping people in developing countries learn how to use the resources of the Internet and of information technology for human development [...] Bridging the digital divide is not going to be easy. UNITeS is just one example of the exciting new areas that volunteerism can venture into.« The project was criticized by Anriette Esterhuyse, head of African Progressive Communication, saying it is dangerous to identify ICT as a miraculous medicine for poverty.

In documents reporting from general debates at the United Nations concerning ICT during 2000, there are clear tendencies to focus on the digital divide. One example is a general debate on questions relating to information¹⁶ in the Fourth Committee (Special Political and Decolonization). The Nigerian representative, speaking on behalf of the >Group of 77< developing countries and China, described the digital divide as perhaps the most critical problem worsening the existing gap in information and communication technologies between developed and developing countries. United Nations public information activities should be sustained in areas of concern to developing countries and countries in economic transition, including economic and social development, poverty reduction, debt relief, health, education and elimination of illiteracy.

Thus, it seems that there are discussions that constitute explicit cracks or ambivalences in the dominant ICT discourses at the UN level.

Gates

In a modest way, Bill Gates at Microsoft has problematized the discourse of ICT as a universal tool, proclaiming that computers can do little to solve the planet's gravest social ills and avert the most immediate catastrophes facing the world's poorest people (McKie 2000). At the same time, he has donated huge amounts of money to improving healthcare in developing countries.

Feminism

Vandana Shiva once said »New technologies travel on old social relations«. Experiences reveal that new technologies simply reinforce old social structures rather than transforming them. This means that the discourse of ICT as a universal tool, which also must include the possibility to change deeply ingrained structures like gender structures, is highly questionable. The concern to understand the underlying cognitive structures, which are reality producing in the evolving information society, has been and still is comprehensive in gender research. It is not without reason that this paper discusses the digital divide from the perspective of the discourse concept (Mörtberg 1997). This method of developing insights is rooted in our being situated as gender researchers.

Participatory ICT design is emphasized in gender research as well as in human work science, computer science and elsewhere. Birgitta Rydhagen (1999, p. 75) regards the feminist understanding of power relations and their impact on the production of knowledge and technology as highly relevant in participatory research and technology design. Combining participatory ICT design and feminist research promotes:

diversity potentials as strategies to handle non-consensus situations

enforcement of situated knowledge and technology development (Haraway 1991)

emphasis on the importance of power relations and their impacts, including complex understanding of gender structures

process-oriented development through a broader understanding of transformation processes.

Christina Mörtberg (2000) holds that equal access to ICT ought to be a basic principle, when the slogans are no longer »technology in a democratic society« but »democracy in an information society«. She problematizes the discourse of equal access by showing that the limitations of equal access are

rendered visible by a multiplicity of variables such as gender, class, race, region, etc. »There are no automatic links between the political goal of equal access and the opportunities that are opened up by information technology.«

Postcolonial ICT?

What we have indicated above, which is also confirmed in the reading of the rhetoric employed by the different actors concerning attitudes to the ICT strategies of economically poor countries, is permeated with faith in development linearity and ICT as a panacea. In order to create a broader and more complex understanding of how ICT is intertwined in cultural, social and economic structures, we wish now to expand the notions by indicating some other lines of interpretation towards insights into who is catching up for what.

Is it possible to work out »national ICT strategies, which also permit bottom-up approaches«¹⁷ in economically poor and in addition formerly colonized countries? Is it possible to create prerequisites for postcolonial identities to make their mark on a nationally situated ICT policy?

The theories of post-colonial identities and situations are research areas of great importance and volume. We want to address some threads of thoughts in order to come closer to the ideal combination of post-colonialism and ICT. Referring to Sandra Harding (1998), we can say that post-colonialism is not monolithic; the term has many referents and meanings. Temporally, it indicates the period beginning in the 1960s, marking the end of formal European colonialism. Harding (1998) mentions a number of postcolonial positions. One is that it is imagined still to lie in the future, as the contemporary development policies of the international agencies and northern nations merely constitute »colonialism by other means«. Secondly, post-colonialism can mean a return to or revival of precolonized cultures, institutions and practices by the formerly colonized peoples. Thirdly, post-colonialism can constitute a critical counter-discourse either »by those who say and actively work to overthrow the rule of the colonizer, or as a more ambivalent, complicitous discourse by those who criticize the evils of colonialism even as they also extol its virtues and its necessity«¹⁸. We find postcolonial critique rife among those in hybrid conditions at the borders between the former colonizers and the colonized. Today, there are many students, scholars and others in the us and in Europe presenting postcolonial critique situated in these borderlands.

The anthropologist David Hess $(1995)^{19}$ suggests that we think of post-colonialism as »a kind of discursive space opened up both within and after the end of formal colonialism, where diverse positionings, discussions and other practices can occur«. In Manuel Castells' book (1998) *End of Millennium Volume III*, he discusses the power battles of the >information age<, claiming that these battles are in fact cultural battles. »Power, as the capacity to impose behaviour, lies in the networks of information exchange and symbolic manipulation, which relate social actors, institutions and cultural movements, through icons, spokespersons and intellectual amplifiers. [...] Culture as the source of power, and power as the source of capital, underlie the new social hierarchy of the Information Age« (p. 348). Is it possible to develop multicultural battles/negotiations in the contemporary >Information Age«— negotiations that include autonomous, formerly colonized countries? And what form would these negotiations have to assume in order to make space for the lives lived by women and men in economically poor countries?

These questions indicate an alternative approach to the current dominant one, of which we have seen examples in the various policy documents presented above. The dominant approach can be called the *catching-up approach*. Maria Mies provides a very critical analysis of what she calls »the myth of catching-up development« in Mies and Shiva (1993). There are a number of researchers, including Shiva and Mies, who argue »that the poverty of the underdeveloped nations is not a result of >natural< lagging behind but the direct consequence of the overdevelopment of the rich industrial countries, who exploit the so-called periphery in Africa, South America and Asia«. It is easy to recognize the processes of accepting the lifestyle of those at the top as the only model for a good life, not only for the colonizers but also for the colonized. But one of the most difficult problems for the colonized (countries, women, peasants), Mies claims, is to develop their own identity after a process of formal decolonization. This means that they must re-evaluate what they are and what they do and at the same time also overcome their fascination with the colonizer. According to Mies, the catching-up policy of colonies is impossible, undesirable and always a lost cause, as the very progress of the colonizers (the rich northern countries) is based on the existence and exploitation of the colonies. In addition, the industrial centres themselves have already progressed to yet more sophisticated stages of technical development, when an economically poor country after much effort attains what was once considered to be the ultimate development.

A global and general catching-up approach to achieve the kind of development seen in industrialized countries on a planet with limited resources is ecologically unrealistic. Furthermore, since ICT is not a separate technical and economical sector, like motorcars or refrigerators, but instead crosses almost every sector, we must ask ourselves if this situation accommodates a potential for sustainable development, when regarded from the perspective of a catching-up approach. What does seem clear is that there are no immediate links between equal-level²⁰ participation and ICT development/ICT policy development. Rather, the links are created by means of hard work and tedious dialogues, multidimensional partnership negotiations with developed and working sensitivity and awareness of diverse interests, gender dimensions and cultural–ethnic pluralism, among other components in an increasingly complex world.

The Bangalore syndrome

India is big in global software development and is increasingly seen as an ICT superpower with Bangalore as one of the more important centres. The rise of India's ICT industry was marked initially by the success of Indian nationals abroad, especially in Silicon Valley, California. This seeds of this image were sown by Sabeer Bhati, who created Hotmail, the Internet email service. Bhati sold Hotmail to Microsoft in 1996. Other success stories of Indian companies in the ICT field include Exodus, eCode, Infosys, Wipro.

Four reasons are given for the development of ICT as a national strength in India;

a good education system

a huge middle class

a cognitive tradition

English language skills

Indians do not need to go abroad to attain an excellent higher education. Two of Asia's top-ten MBA schools are Indian, namely in the business schools in Ahmadabad and Bangalore, and five out of the ten best science and technology schools in Asia are Indian—in Bombay, Delhi, Madras, Kanpur and Kharagpur²¹. Each year about 200.000 students graduate as engineers from Indian universities²².

India has probably the largest middle class in the world, currently estimated to number over 200 million persons—a middle class that can afford to give their children higher education and also to support the economic system for ICT development, as both investors and consumers.

The Indian education system is traditionally grounded in natural science

and mathematics. The Indian cognitive mind is said to have an analytical and mathematical bent that is perfect for the ICT field²³. The long tradition of logical thinking and mathematically skilled inhabitants—a tradition that stretches back to long before the time of the British colonization—engender computer-programming skills. It was Indians, who created the ten-based counting system and the number zero. Azim Premij, the head of WIPRO, the second largest ICT company in India, claims that »the biggest opportunity is the change in the nature of critical resources needed by an organization or the nation. Material and capital resources characterized the manufacturing economy. The power of the mind is the critical resource in the information age. This is where we as a nation have a major competitive advantage.«²⁴

The strength of India as a nation, as compared with China, for instance, is that more Indians know English, which is indisputably the international and dominant language of technology and the Internet. The Indian middle class all speak English. Almost 80% of all websites are in English, yet less than 10% of people worldwide speak English²⁵.

The factors presented above, combined with improved international telecommunications, allow the Indian ICT industry to communicate with and send products to customers worldwide. The provision of back-office functions to far-away clients is another application area that takes advantage of the global time zones and lower salary levels in India. The cost arbitrage can be more than one in ten for low-end services. WIPRO is planning to introduce technology so that mass-market helplines for customers of us Internet services can be run from India. This will mean that India will be the back office of the world, which brings us round to the definition of *the Bangalore syndrome*, whereby India is a developer of software for companies abroad (Mehta 2001a).

The Indian scenario also includes poverty, especially in rural areas. According to UNDP, more than 50% of India's population (of more than one billion inhabitants) live on less than a dollar a day. In China, this figure is 37% of a population of 1.3 billion. Congress legislator Mani Shankar Aiyar seems to share some of the views voiced by Bill Gates (see above), and says in a special issue of Asiaweek in August 2000 focusing on India as an up-andcoming superpower, »try telling the poor that the answer to their problem is the Internet, that it lies in Microsoft. You'll see the absurdity on the position. We need the old economy²⁶, as well as the new.« Others try not to nurture a polarized, either-or position, like projects in Andhra Pradesh (Ranawana 2000) to put farmers online for access to services such as checking prices, weather forecasts, credit information, etc. by means of programs that use easily understandable, intuitive symbols and local-language phrases. The aim is to give rural farmers the chance to make informed choices and to have more control over their work and lives. Another example (Mehta 2001b) is the establishment of 76 Internet Dhabas (Cyber Cafes) by rural women at the Taluka²⁷ level, by educated unemployed young women in Gujarat. The Internet Dhabas function initially as a business centre for women in rural areas by establishing websites for the products made by women in rural areas and serve to establish direct links with the customers. The idea is to expand the activities to constitute a multi-service centre that also provides information and facilities for distance education.

Andhra Pradesh has between 60 and 70 million inhabitants. The capital of the federal state is Hyderabad, a.k.a. Cyberabad. Hyderabad has eight universities, which provide the various ICT enterprises with a highly qualified working force. The federal state has approved an ICT strategy called Vision 2020²⁸. The vision includes Andhra Pradesh becoming a knowledge (information) based state by 2020. A number of questions demand answers:

If and when, the Vision 2020 strategy is implemented, what will happen in Andhra Pradesh in terms of:

the transition from illiteracy directly into the information society

democratic influences

caste and class divisions

impact on gender norms

cultural sustainability

impact on resource allocation in general

interpretation of Western-defined ICT in a South Asian context

the dominating ICT discourses

marginalized ICT discourses?

Cyberspace and cyberfeminism

When dealing with ICT, we enter into cyberspace—a concept still open enough for many participants to define. Tom Jordan (1999) has written a book about the culture and politics of cyberspace and the Internet, which provides interesting interpretations and discussions. In the following, we are using much of his understanding.

How to understand cyberspace? Jordan refers to the Gibsonian and Barlovian cyberspace. William Gibson (1984) coined the phrase »cyberspace« in his novel *Neuromancer*, and his fictional conception of cyberspace was a place that collated all the information in the world and could be entered by disembodied consciousnesses. Disembodiment took place through a computer. Gibsonian cyberspace offers power to those who can manipulate information in cyberspace, either individual hackers relying on expertise or large institutions relying on corporate force. Zoe Sofia (1999, p. 65) sees the Gibsonian cyberspace as a visual–spatial representation of transglobal networks of computers and databases, mentally entered by futuristic computer hackers via >trodes< attached to their heads or via other body implants.

When cyberspace is identified with the space computer networks create, it can be called Barlovian²⁹ cyberspace (as opposed to Gibsonian cyberspace (which is recognized as a fictional and visionary conception of cyberspace). This space can be understood as a much more complex version of the space people enter when talking on the phone. The emergence of global networks serving millions of people has seen the materialization of a complicated and seemingly infinite Barlovian cyberspace.

Jordan (1999, p. 55) concludes that, »a world-wide computer network that allows people to communicate with each other exists. It has been created not in fiction but in fact through the efforts of governments, individuals and corporations. Its users have a clear and now largely stable demographic profile, with the sole exception of some uncertainty over whether gender equality lies in the future. This is a world not of disembodied consciousnesses having access to the sum total of human information, but of myriad acronyms, corporate rivalries and gradually growing sources of information and opportunities to communicate with other humans.«

Cyberspace as a consequence of a new technology (i.e. ICT) is deeply intertwined with material and (old) social relations (see Shiva above). We cannot expect cyberspace to constitute a place where gender, ethnic and cultural relations will differ in any substantial way from what we experience elsewhere, unless we put our accountability for transformation of the relations into practice. What we are talking about is not a cosmetic change for gender equality, but rather a transgression of relations for justice for the entire population, not only for elites, the impact of which may provide gender as well as other equalities. These are big words, but nevertheless they are necessary to address the on more fundamental levels—also from the angle of technoscience. We base our claims on an understanding of ICT as reality producing. This is most intensely felt in circumstances characterized by very scarce resources, read: Third World countries.

Rosi Bradotti (1998) implies that »one of the great contradictions of virtual reality (cyberspace) images is that they titillate our imagination, promising the marvels and wonders of a gender-free world while it simultaneously reproduces some of the most banal, flat images of gender identity, but also class and race relations that you can think of. [...] The central point remains: there is a credibility gap between virtual reality and cyberspace and the quality of what it delivers.« We agree with Bradotti that ICT seems to widen the gender gap and increase polarizations. It takes more than computers to alter patterns of norms and mental habits. Unless our cultures can challenge and create suitable new forms of understandings and expressions, ICT appears to be impotent in terms of shrinking gender and other gaps.

(En)counter strategies and situated solutions

In the complex web of material, cultural, social and economic actors³⁰ within cyberspace and ICT development, one of the current key issues is accessibility for economically weak countries and poor women and men. To open up for and increase access to cyberspace is a non-linear process and not only a technical problem. The contemporary accessibility debate pivots on telecommunications³¹, which is an economically very hot market. Nevertheless, telecommunications should disappear as a separate issue and become an integral part of human capacity-building activity. This is emphasized by Mike Holderness in the book Cyberspace Divide—equality, agency and policy in the information society (1998).

We have seen how the G8 gathers around the telecommunications sector and more or less explicitly demands deregulation of that market. In contrast with that view, we agree with Holderness that the telecom market, left to itself, will not address the inequality of women's and men's access to communications. Positive political intervention will be required and—as suggested by Ekenberg and Asker (1999)—national telecom sectors must be reformed and restructured. Nick Moore (1998) claims that open, unfettered competition will never ensure that telecommunications are provided globally, other than perhaps in a compact city-state like Singapore. However, it may be possible to achieve the goal of global service through regulation and by placing conditions on the companies licensed to provide telecommunication services.

Whatever type of argumentation we use in the debate on the digital divide, inequality of access to the communication infrastructure will probably yield an increase in absolute poverty. In the development we face, it is all too often unclear what any kind of infrastructural development has to do with poor women and men. To use Holderness' words »The consequences go beyond the economic sphere. Political power in these days rests to a significant extent on access to information and the means to disseminate information. This, too, is being concentrated in the hands of urban elites.«

We have noticed that several of the ICT strategy documents commented upon above suggest enhancing connectivity including rural areas through official access nodes like telecottages, often with multipurpose ICT services, or in already existing official places. This kind of strategy is receiving increasing support from cooperation and development agencies. It also assists the process of giving substance to the rhetorical *digital opportunities for all*. Multipurpose ICT centres that are open to everyone and with conditions that are acceptable for women and men with scarce resources have the potential to contribute to our understanding of a good life formulated in ICT strategies.

Intertwined with the question of accessibility to cyberspace is the issue of content building within cyberspace. What kind of services and software are relevant for women and men in their specific contexts, whether it be in connection with services like communication, health information, tele-medicine, distance education, bank services, business transactions or anything else or an interface built on culturally relevant graphic symbols on pressure-sensitive screens, voice-directed computers etc.? Operating systems that are available free of charge like Linux and other free software are further reducing the cost of implementing the necessary systems in conditions with limited resources.

In this attempt to contribute to the complex processes of closing the digital divide, we are not recommending a panacea perspective on ICT. This kind of perspective is a merely fraudulent rhetoric that keeps us all disciplined in our existing situations and reproduces the status quo. The question of who is catching up for what is therefore situated somewhere else than where the dominating discourses suggest—that is, it is placed in the spiral of transformation and transgression trials until the condition of survival is satisfied. »I prefer a network ideological image, suggesting the profusion of spaces and identities and the permeability of boundaries in the personal body and in the body politic. >Networking< is both a feminist practice and a multinational corporate strategy—weaving is for oppositional cyborgs«

»Race, gender and capital require a cyborg theory of wholes and parts. There is no drive in cyborgs to produce total theory, but there is an intimate experience of boundaries, their construction and deconstruction. There is a myth system waiting to become a political language to ground one way of looking at science and technology and challenging the informatics of domination—in order to act potently.« Donna Haraway 1991, p.170, 181

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FOOTNOTES

- 1. Referred to in Ekenberg & Asker 1999, p. 9.
- 2. We prefer to use the concept discourse. Discourse is a concept that refers to certain understandings or patterns of thinking, which manifest themselves in official documents, media and discussions.
- 3. www.thepublicvoice.org March 2001, The Public Voice and the Digital Divide
- 4. G7 consists of the seven richest industrialized countries—the USA, Japan, Germany, France, Great Britain, Italy and Canada. The leaders of these seven nations have met since 1975 to discuss the world economy. In 1998, Russia became a full member and G8 was established. The meetings of G8 are held each year in different countries.
- 5. www.g8kyushu-okinawa.go.jp
- 6. www.g8kyushu-okinawa.go.jp/e/documents/it1.html under Promoting Global Participation, 12
- 7. 11 May 2001, www.dotforce.org/reports
- 8. Brussels, 21.2.2001, COM (2001) 94 final, 2001/0053 (COD), 2001/0054 (CNS)
- 9. Ibid. p. 18 f.
- 10. Ibid. p. 19
- 11. www.sida.se/Sida/articles/5400-5499/5459/STRAT_SV.PDF
- 12. Strategy for 1T in Development Cooperation, 1999, p. 7
- 13. Homepage updated 000914 and read for this citation 010704
- 14. SIDA'S Strategy Document states on page 14: »Since IT is a *universal tool*, the natural starting points are the needs which are experienced as the most urgent from the developing country perspective [...].«
- 15. sg/sм 7642 November 28 2000
- 16. GA/SPD/205 26th Meeting (РМ) 13 November 2000
- 17. Suggested in the DOT Force report Genoa July 2001, see above
- 18. Harding 1998, p. 15
- 19. As referred to in Harding 1998
- 20. We have borrowed Jan Åhlander's concept of the equal-level perspective in order to overcome the dichotomy of the top-down/bottom-up perspective.
- 21. Ranking year 2000, Asiaweek research
- 22. The business section of the Swedish newspaper *Svenska dagbladet*, 30 January 2001, p. 16
- 23. From an interview with V. Rama Subramaniam, Managing director of ThinkGen Ltd. On 2 December 1999, published in a report from the Swedish Office of Science and Technology, *India as IT nation*, December 1999

- 24. Asiaweek, August 11, 2000, p. 40
- 25. 2000: Women's Learning Partnership. www.learningpartnership.org/stats.html
- 26. Agriculture and manufacturing industry
- 27. A small city
- 28. For a discussion of national ICT strategies, see Ekdahl et al. 2000
- 29. www.eff.org/~barlow/library.html
- 30. For a discussion of diverse actors in ICT contexts, see Elovaara 2001
- 31. Holderness (1998) shows how easy it has been and still is to think mostly in technical terms, citing the following facts and figures. Until spring 1997, the whole of India's education and research network (Ernet) relied on a link to the outside world with a capacity of 64 Kbits per second—which is to say that the author and two friends (in 1997, living in England) had between them greater Internet communication capacity than all the students and researchers in India put together. In spring 1995, Ghana's total network connectivity was ten 14 Kbit-per-second leased lines to Cambridge, England, costing 7.500 us dollars a month each. However, the developments have been rapid. In Uganda in 1999 (Ekenberg and Asker 1999), it was possible to send and receive email at post offices in most major cities and urban areas. This system of international correspondence was less expensive and was generally regarded as more reliable than traditional >snail mail<.</p>

An image

A man is renovating his kitchen. In the place where the new oven will stand there is an old, burnt-out, wood-burning stove. It weighs some 150 kilos. He drags the monstrosity across the kitchen floor, out through the door, and with the help of a good friend and a wheelbarrow, he gets the stove down the stairs and another two metres out on to the lawn.

The stove remains there for five years, where the man sees it but doesn't do anything about the situation. After a while, his family suggest digging a hole for the stove and converting it into a barbeque.

One fine summer's day, while he is digging up a dead bush just next to where the stove stands, he decides to start digging a hole for the stove. However, one metre down he comes across a huge rock that is impossible to move.

As he stands there in his hole, the stove is now at eye level and he starts to notice how it was made—it is held together by four long poles that look like screws, with a head at one end and a nut at the other. He gets his drill and drills away the heads on the long poles and suddenly the stove falls apart.

The man then places the parts of the stove in the hole, fills it in and plants grass on top.
FOURTH PAPER

»LEARNING PROCESSES IN AN INTERPRETIVE COURSE OF STUDY AT A TECHNICAL UNIVERSITY«

Introduction

This paper is a presentation of various possible theories concerning learning and higher education and an introduction to an analysis of a new interpretive technical course of study at the Karlshamn Campus of Blekinge Institute of Technology. The fundamental question in this paper is how learning processes are enabled and promoted in an educational environment that is part of a technical tradition and at the same time also wants to function as a transformatory environment for pedagogical and interrelational processes.

What possibilities and limitations are there at a technical university? What traditions and elements of renewal can together initiate locally situated understandings of knowledge and render possible a wide range of different actors' different goals?¹

The basic prerequisite for even being able to ask these questions was working in a context that allowed the education not to be compared with or assessed in the light of other courses of study at the university, thus ensuring it would have the space it required to be able to make changes on its own conditions.

This study was undertaken as action research, in the sense that I am both involved in the programme and want to reflect on it.

The advantages of this are that I have the necessary closeness to and knowledge of the context of the programme and that I am part of the process.

Potential disadvantages of this position are that it might at times be difficult for me to assume the required distance and find theoretical models of understanding I need to be able to observe and interpret the phenomenon.

The models I have chosen to use are for obvious reasons rather obtuse and general; but then again, they do not pretend to be true, in the sense of objective; rather they aim to be useful for creating outlines for a complex interpretive project. Action research also entails a need to go beyond the strict borders of scientific disciplines, since the project and the theories exert a mutual influence on one another².

The theoretical models that I have used have mostly been developed within technoscientific gender research, media research, the history of ideas and educational philosophy.

In my interpretation of the responses the students submitted in their evaluation of the process³, I have chosen to focus on the differences in learning processes in an interpretive course of study within the technical faculty. The understandings of these processes are complex, since they break away from the usual patterns found in established educational contexts and are therefore difficult to communicate and legitimise. These difficulties comprise one of the challenges of this study.

Background

In early spring 2000, the Department of Human Work Science⁴ was commissioned to plan and carry out a new educational programme at Blekinge Institute of Technology, namely Media Technology focusing on interactive systems⁵. This programme was due to start in August 2000. I was charged with designing and developing the operational aspects of the programme.

In spring 2001, when the first year of the programme was almost over, I asked the students to complete a questionnaire as part of a process evaluation⁶. The evaluation was not so much aimed at ascertaining whether the tuition had been of a sufficient quality or whether the teachers had been satisfactory; rather it aimed to find out *how* we had gone about our work, whether there was any link between the ideas we had had while we were planning the programme and how the students had experienced the first year. We were also looking to see if there were any patterns in the way the students interpreted their situation. The evaluation was based on a welcoming letter we had sent to the students in summer 2000^7 .

What was most striking about the students' responses was how widely they differed. For example, one student wrote:

»I have many years' experience of both work and studying, I have learnt how to go about finding out about something I need to learn. I cannot claim that I have contributed to any development other than my own [...] I have thoughts and ideas, but it feels as if they disappear when I try to talk about them, as nothing happens!« Another student stated:

»I have studied both at Lund University and the University of Ronneby before, but this course was not at all as I had expected. This is not a criticism, but a positive thing. I have never felt so >important< on a course of study before—that it is the student that is the most important element. We felt part of what is happening at the college, the development and the future of the college.«

As I read more and more responses, I realised that it was impossible to determine whether it had been a >good/successful< first year or a >bad/ unsuccessful< one on the basis of the students' statements alone. These categories did not accommodate the richness and the complexity of the students' responses. But how is it possible that a single course of study could encompass such a broad spectrum of experiences and thoughts?

In order to gain a better understanding of the situation, I compared my work on the study programme with my own training as a researcher at the technoscience studies division and my previous experiences in pedagogical developmental work. During 20 years of working in folk high schools⁸, I had had the opportunity to test previously untried organisational and pedagogical methods in the established educational system. One such project was the »Contemporary Acrobats« scheme, which ran at Jämshögs Folk High School for five years as part of an R&D project⁹. Using digital technology and interpretive production projects, the goal was to give people an alternative means of studying and finding work. In addition, the project was process-centred with a focus on personal development and social change.

These practical experiences played an important role for me when we were planning the media technology programme, but I could also get some distance to these experiences by applying the kinds of theoretical and analytical frames of understanding I had acquired through my technoscience studies.

Traditional and modern contexts of education and knowledge

In his book *I skuggan av framtiden*¹⁰ (In the shadow of the future), Sven-Erik Liedman interprets the intellectual history of the educational system and knowledge from the Middle Ages up until the present day, rendering visible the struggle between a traditionalistic and a modernistic context of education and knowledge. Since I am part of these educational traditions and am also one of the people that have been involved in the transformation project that became the media technology programme, it might be pertinent to spend a moment or two looking at some of the characteristics of these two traditions.

According to Liedman, there is an inherent conflict in the current university system that is based on two different ways of organising knowledge.

In the traditionalistic context of education and knowledge, the *canon* is centre stage—the idea of passing on knowledge and traditions that generation after generation have sifted out as the best. We cannot know anything about the future. What can be known is what is, and thus the view of knowledge is instrumental—anyone who passes the exam has acquired the knowledge and can transfer it. Liedman calls schools a fixed body with an institutional inertia¹¹.

It is appropriate to talk about [...] a frozen ideology [...] [that] affects people that work at universities without it necessarily being present in their consciousness, but through the very way that decisions must be made according to the regulations, judgements are made, classes are taught and research is organised. Since the frozen ideology is laid on top of the other, they often come into conflict with one another; the requirements of the collegium do not coincide with those of the bureaucrats, which in turn collide with those of student democracy, which scarcely harmonise with the ideology of the new administration¹².

Parallel to the traditionalistic view, there are also attempts at reforms and development schemes. These may be based on individuals' or groups' efforts to develop education so that it agrees with other ideals, but may also be a sign of dominant social, cultural and political paradigm shifts.

One of the most important paradigm shifts in this context must have been the advent of modernism, which is based on what Liedman calls the *project of enlightenment*. In contrast to the traditional view of education, modernism brought a greater dynamic to education where the surrounding society and the future were also included as important actors¹³.

Two educational theorists who have had a major influence on the modernistic educational context are Wilhelm von Humboldt and John Dewey.

Humboldt

In 1809, Wilhelm von Humboldt started to build a new university system that, in contrast to the established European universities, was to be based on *Bildung* (the cultivation of the individual's full personality through a broad general education), as opposed to mindless memorisation of facts. In this way, both a subjective and an objective ideal of knowledge were to be fulfilled the subjective in that Humboldt regarded the learning process as a search for knowledge that could satisfy different people's worlds of experience, and also an objective ideal where the goal of knowledge was defined in advance, a knowledge for all people. In this way, Humboldt united education as both an institution and a motor of change—as a body and a process.

By partaking of this double knowledge, the people that studied at his university were supposed to be able to meet the present and influence the future.

Humboldt regarded the learning processes from an idealistic view of knowledge. By emphasising *Bildung*¹⁴ as one of the fundamental values, man follows his original path and through good teachers that have a broad general knowledge becomes filled with knowledge. In this way, each individual is able to interpret his surroundings, his history and his future.

Humboldt wanted the new educational system to create generalists that through language, history and mathematics would learn the principles that control all development. At the university level, studying philosophy would give the students insight into the unity of the sciences and they would thus be able to orient themselves within their own favourite areas. The school system was to be a universal ideal model that steered society¹⁵.

Dewey

John Dewey published his book *Democracy and Education* in 1916. He was an education theorist with strong ties to pragmatism, which claims that knowledge is only possible through action. He thus goes one step further than the empirical tradition in its purest form, which claims that only what can be experienced is real. For Dewey, school should be a model of society. School should correspond to the intellectual and democratic activities of society and at the same time constitute an educative environment that in its basic values emphasises that knowledge arises in the communication between people.

Not only is social life identical with communication, but all communication (and hence all genuine social life) is educative. To be a recipient of a communication is to have an enlarged and changed experience¹⁶.

However, for education to become an important part of a social process, a social system is also called for that encourages participation, communication and experience—a democratic form of government. A good education depends on the existence of a society that is concerned with ensuring that its members share its assets and encourages exchange of experience and ideas¹⁷.

Dewey's statements on the philosophy of education had a huge influence on the people who wanted to reform educational structures in the twentieth century. Not least, his view of the necessity of democratic frames of understanding for knowledge production and communication are cornerstones in our development work. But they were not sufficient.

Late modern understandings of education and knowledge

Emancipatory and life politics

Whereas we needed unfinished, open structures for our project of transformations, our students needed known landmarks by means of which they could orient themselves. They also needed to be visible and accepted independently of the categories >successful< and >unsuccessful<.

We found there was a great need for students to be able to recognise and express as many experiences as possible in their learning process, but at the same time they had to be responsible for themselves and accountable to us.

Anthony Giddens calls this way of relating life politics¹⁸.

In our current late modern age, social institutions, including the system of education and research, have started to lose their contours, as they can no longer maintain their self-referential system, i.e. they can no longer refer to themselves as answers to the questions they pose. They have lost their former privilege of formulating problems, as the cracks in the system become more obvious.

The reason for this is that the basis of modernity, which builds on an increasingly accelerated dynamic, has lost its momentum. Modernity is a post-traditional movement that got its energy from its reaction to the premodern individual, social, cultural, political and economic systems.

One of the counter-systems that has borne the idea of modernity, but which has also contributed to illuminating the cracks is the *emancipatory politics* that came about as a reaction to the fixed traditions and hierarchical dominance of the pre-modern system. It wanted to reduce or eliminate exploitation, inequality and oppression by setting requirements regarding fairness, equality and participation. However, emancipatory politics was also based on a hierarchical view of power—it is the ability of an individual or group of people to force their will upon others. Thus, it is aimed at reactions *against* something, as opposed to for something. In addition, it only allows individuals the space that the group permits, and since it is hierarchical, the people that are involved can relinquish their responsibility for the situation that has arisen by opposing something they perceive as unfair—they can become spectators.

Within the modernistic educational system, emancipatory politics has functioned as a way for students to reflect on their situation, even in the media technology programme.

However, the students have not given themselves or others the opportunity to reflect on their own responsibility for their education, since they have focused the brunt of their criticism on what they perceive as unfair or oppressive. In the best case, they have become consumers of knowledge; in the worst case, mere spectators.

The second characteristic of emancipatory politics in the educational system is that the group or >class< is a central concept. By virtue of its being a collective, class is a legitimate means of power for use when injustices or oppression arises.

The third characteristic is that processes of learning are related to the group. The individual's own learning process is made invisible, thus rendering impossible work in groups where each individual can maintain his/her identity and uniqueness.

The fourth characteristic is that justice requires monitoring. A lot of energy in educational projects goes to monitoring measurable results, since it is only then that perceptible fairness is achieved. Then it is possible to render visible a consensus for what fairness is. The dichotomy >good-bad< is fundamental. At the same time, there is a hint of democracy in the monitoring—it is important that the students experience that their rights are protected and promoted.

When students use a emancipatory politics basis of reflection, not only is the teacher–student hierarchy maintained, it is strengthened and leaves no room for the individual student to reflect over his/her situation, identity and learning process.

As the conditions for one of modernity's basic systems, industrialism, are being changed, emancipatory politics starts to lose its role as a counter-system.

Ulrich Beck calls today's social system *the risk society*¹⁹, where we are seeing more and more of the backside of industrialism. A consensus about development and progress through cumulative knowledge generation, research and industrialism has not had the expected positive effect, at the same time as we have seen widespread globalisation, an increase in the flow of information and the production of knowledge has become more complex. This has led to emancipatory politics losing its role as a counter-system, since it can only articulate what it is *against*, but cannot suggest possible futures.

In the late modern era, a new movement appeared roughly parallel to emancipatory politics—life politics. Like emancipatory politics, life politics is a counter-movement, but life politics distinguishes itself from emancipatory politics thus far in that it constitutes a criticism of the way in which the system of modernity is built up. Life politics is above all a criticism of the institutions that have been established and the self-referential system that the institutions of modernity constructed in order to maintain their legitimacy, at the same time as it points to something else.

Life politics draws attention to a fundamental deficiency within the institutions of modernity—the lack of opportunity for people to make real life choices that entail answers to basic existential questions about the individual's place in the world and the role that s/he plays, about what makes up the good life, and about the consequences that these life choices will have, depending on the choice the person makes²⁰.

Life politics are politics of decision; it is a question of identifying central dilemmas and difficult choices, making choices, imagining or >figuring< new games and working to realise them²¹.

Our task of reflecting and working with life politics as a means of relating lays down major requirements to members of staff—them, their work and their ability to communicate this way of relating and to the students alike.

Let us now look at two attempts to find ways forward in an educational context.

Elisabeth Gulbrandsen and Gro Hanne Aas

Elisabeth Gulbrandsen and Gro Hanne Aas describe their work on processes of transformations within a modernistic educational and research environment²².

One of their fundamental questions is whether it is possible to query and actively work against what they perceive as the double message within the humanities departments at the University of Oslo—the fact that the researchers and teachers in the departments on the one hand position themselves as interpretive practitioners of science and on the other hand do not allow anyone to question their authority. In other words, is it possible to get away from the norms of position and opposition and instead work from the starting point of relation and process—to create space for critique, self-reflection and change regarding the fundamental issues of education and research?

They make two attempts. The first project was called *participatory provocation*. They wanted to create an arena for criticism, self-reflection and transformation regarding the fundamental issues of research. This attempt to create a new arena provoked reactions on many levels, since the system did not expect that the people who took part in the provocations would consider themselves as equals with the system—but everything happened publicly. Instead of finding a free space, the provocations created a position as oppositional, i.e. a position opposed to acceptance and thus destroying the possibilities of their project—to be able to reflect freely on things that are not yet finished.

The second attempt was based on a reading of Sandra Harding's *Science Question*, which

attaches importance to discussions about the different epistemological strategies that are used to criticise established claims and defend one's own point of view. Sandra Harding divides them into three groups: feminist empiricism, feminist viewpoint and feminist postmodernism. [...] I read feminist postmodernism as a warning about what might happen if gender researchers succumb to battles of knowledge policy. We will be drawn into the fight for power and status. [...] We run the risk of losing the unfinished. [...] We might even legitimise to pieces the potential for opposition and change in our own projects.

We have to create forms of publicity that do not require positioning and opposition so much as provide space for experimentation with development of new and alternative relations, or simply for production [...] of knowledge²³.

It is these forms of publicity that the media technology programme is seeking. We hope to be able to find development potentials for change and at the same time produce knowledge.

The programme needs to make use of the students' differences, in terms of students that need challenges and students that need reassurance, in order to satisfy the expectations of the education and the students' hopes at the same time. In other words, the study programme needs to seek better questions, not better answers.

Polyphonic conversations

Annika Forsmark interprets relation-based forms of publicity as *polyphonic conversations*²⁴. In a course of study that is primarily based on *ideas*, her argumentation provides an important understanding for the significance of the relations between the people that work and study on the course. Forsmark believes that reality is created through language. Thus, it is not the individual that carries meaning, but rather what happens between people—in conversations. This entails that ideas are not the property of individual human beings, but rather they are born in an encounter between two or more individuals. She calls this encounter the polyphonic conversation—a conversation where contradictory arguments and opinions are allowed to coexist and where articulation of questions is as important as the answers. She has borrowed the term »polyphonic« from Gregorian chanting, where all the voices are independent

and yet intertwined with one another.

I will now attempt to interpret this understanding in the light of the media technology programme. The media technology programme is an arena full of people with a range of knowledge, experience and interpretations of life and knowledge who in their dialogues work, study, research, analyse, narrate and interpret through any number of angles of approach.

In the arena, there is general agreement that knowledge and the person that has knowledge depend on one another—nobody can own direct knowledge about the world; the only thing you can do is to become acquainted with it through shared and personal experiences. There is no requirement for consensus; on the contrary, the greater the number of differences in the dialogue, the farther the field of knowledge is extended.

Since each individual in the arena has a relationship to the knowledge, both the shared knowledge and their personal knowledge, a private and a shared responsibility arise for how the knowledge is generated and applied. In the same way, the Gregorian polyphonic chant starts and ends at the same time on the basis of a common agreement.

The programme has two distinct goals:

Results

The course of study shall yield results—work, research, products made through acquired craftsmanship. These goals can be defined more precisely in connection with a review of the course once it is underway. It is important to define useful goals: *what* is the purpose of the course, *what* has to be done to fulfil them?

Processes

The people that are involved in the course of study must constantly relate to learning processes, ways of relating (what I think about myself, other people and the world), joint and individual responsibilities, judgement, collaboration, etc. The educative process entails development of a social and personal competence. The process can only be interpreted afterwards—*how* were the goals fulfilled, *what* did we do to fulfil them/fail to fulfil them?

These goals shall be applied to the common project—the media technology programme, where it shall be possible to discuss each individual's goals. This public dialogue is by necessity a polyphonic conversation that generates knowledge.

This is an arena »between the no longer and the not yet«²⁵, where both our

expectations and our hopes are a shared concern without dichotomies and hierarchies²⁶.

The need for unfinished structures in a project of transformation

In spring 2000, when we started work on formulating the programme »Media Technology focusing on interactive systems«, we also wanted to create a new context for the programme, since we also perceived it as a project of pedagogical transformations.

Even in the texts that formed the basis for the study plan, we wanted to be clear in our aim of being more than just another course of study, *but without passing judgement on the others*. We wanted to create our own culture and context, our own language, our own prerequisites that we could be accountable for—*not to be made subject to comparison, but to create an arena for transformations and hope*.

In this process, we knew that we would need room to make mistakes, since this is a way to try out new ideas freely, without prestige.

Another reason that we wanted to be able to formulate ourselves freely, without having to look over our shoulders, was the favourable position we found ourselves in:

We had been charged with compiling a study programme in a field of knowledge that did not yet have an independent main topic²⁷—the borders of the field had not yet been defined.

We could recruit people to the project that shared our fundamental values.

We received a great deal of support and encouragement from the University and the Department.

We were to build up a new campus, entailing that we had to build even the physical environment from scratch.

We wanted to do this work in collaboration with students and people both at Blekinge Institute of Technology and outside who were interested in our scheme.

At that time, the commercial applications of our field of knowledge seemed to have run their course. IT companies and media companies in the >new economy< were losing status and money, and many enterprises were going

bankrupt. This meant that the external expectations were more realistic than they had been just six months earlier. People were not expecting miracles with immediate effect.

The telecommunications industry was in something of a vacuum between two generations of technology, meaning that we could approach the telecommunications industry and specify demands rather than the other way round.

In one of the first outlines for the course, we wrote:

»To ensure that the programme has good possibilities for development, is attractive on the expansive media market and does not end up offering simply 'more of the same', we will need a focus founded on an analysis of competencies and the environment.

ACTLab, University of Texas describes the challenges thus:

>[...] you can't analyze New Media with old disciplinary tools ... you can try, and you will evince data, but you won't really learn anything worthwhile. You need new tools, new methods, new disciplinary languages, and you won't find them waiting inside traditional disciplinary forms<<?

»Since the future workplaces of the students operate with process-focused projects, we ought to ensure that the study programme uses the same form of work. This means that classes and projects must follow one another, so that knowledge can be translated into practice, and many different methods of resolving problems must be included in the programme«²⁹.

However the real challenge for us was the combination we wanted to achieve in the study programme. We wanted to try to combine a technical education with more aspects of gestalting, and at the same time also work in a process-oriented and thus reflective way—to accommodate many different needs, many different expectations, many different understandings of knowledge and to dare to live in uncertainty and without prestige—to create a systemic trust based more on relations than schemes; to dare not to have all the answers and at the same time have a good organisation and sound economy that communicates the necessary legitimacy to the students and ourselves.

As far as the technical part of the course was concerned, there was always a strong tradition in place since we were part of a technical college. Our goal was to strike a balance between taking advantage of what was best about this tradition and at the same time exploring new possibilities. This was not entirely without complications.

Since the programme had been initiated at the Department of Software Engineering and Computer Science, it was initially defined as a computer sci-

ence programme and continued to be so even after we had been given media technology as our main subject. There were (and indeed still are) tendencies for the programme to have an inferior position compared with some of our predecessors in computer science. Norms dictate that for the programme to be technical, it must by definition be anchored in computer science according to the definition of computer science used at Blekinge Institute of Technology. However, since our goal is to explore the subject of media technology, we cannot force the ideas of the programme into these kinds of categories.

With regard to the interpretive, creative part of the programme, we found useful insights in an evaluation report published by the University College of Film, Radio, Television and Theatre (DI), written in connection with a quality assessment by the Swedish National Agency for Higher Education (Hsv)³⁰.

Concerning disorder and order at the University College of Film, Radio, Television and Theatre, the principal, Kjell Grede, wrote:

I have always claimed that order and disorder shall rule at the University College of Film, Radio, Television and Theatre. By this, I mean that within order, there must be plenty of room for disorder. [...] This claim is in conflict with practically the whole of society and with the standard forms of organisation in all institutions. As a starting point for exercising authority, the idea is misconceived and doomed to fail, unless the economy is very carefully looked after and unless the overall impression of the students' level at the final examination corresponds to certain stringent requirements that are comprehensible and convincing to the world.

The University College of Film, Radio, Television and Theatre is a creative forum, not only an institution of learning. The word creative is often abused and ought to be defined more clearly: *creativity is the basis for the University College of Film, Radio, Television and Theatre's education and mandate.*

True creativity cannot be planned. Then it is merely a commissioned work. In this case, you can foresee the beginning, middle and end. In the creative process, you are out on an adventure, a voyage of discovery, without a map. In art, we also make an attempt to communicate our discoveries with the world. It is a conquest of new knowledge about people. This knowledge may demand a new language or a new way of using the old one. This creative process is of course in conflict with the predefined economic constraints that are imposed on creative productions. It also violates attempts to plan use of time. [...] Thus: a student ought, if his/her talent permits, to be able to test the boundaries of what is possible in the field of tension between creativity and economy. The University College of Film, Radio, Television and Theatre's pedagogy is also based on this. The creative student's intentions, ability to interpret and create, expression of feelings, etc. appear in the creative situation in an entirely different way to when a project in the planning phase is presented verbally and intellectually.

It is only in the creative situation that the student becomes clear both to himself and to the teacher. [...]

The fact that many students scarcely attain the level of creativity described here during their studies is not important, since this is merely the beginning of a life-long process. For this reason, disorder must reign (*within the constraints* of an orderly annual budget and an orderly overall plan for the course), in order to facilitate a creative situation. In this context, is it possible to bring more order into the disorder without it becoming repressive? This question is asked daily at the University College of Film, Radio, Television and Theatre, but in different terms.

This quote focuses attention on what is the central issue for us: can the media technology programme be a technical education that triggers creativity? Did we manage to communicate this within the university, to our students and to the outside world (without wanting to compare ourselves to the University College of Film, Radio, Television and Theatre in any other way)?

Kjell Grede also discusses another aspect that was decisive for us:

The courses at the University College of Film, Radio, Television and Theatre are sometimes, but not always, harmonic. Nor should they strive to be, if the College is to retain the quality it has achieved. This is worth pointing out, since sometimes even some of the teachers at the College regard it as a failure when conflicts and tensions arise. These conflicts often add value to the courses and the productions. The University College of Film, Radio, Television and Theatre should pride itself on its ability to handle conflicts, not on eliminating the tensions that give rise to them. Trying to determine which conflicts and tensions are of value and which are not is of course a quality requirement³¹.

In the pioneering phase we found ourselves in, there were no tensions between the members of staff. We were the ones *making* the programme; it consisted of our ideas. However, the students that came to us brought with them all their previous experiences from education and the norms that they were governed by. How could we maintain openness, i.e. ensure that the students did not start to categorise us, themselves and the course as >good< or >bad< from the outset?

Like us, the students were scared, brave, indulgent, categorical and flexible. We soon realised that we would not be able to foresee what would happen.

We therefore started work on the first three courses with different points of departure. For one course, we contracted a part-time teacher who provided traditional teaching, whilst for the other two courses, we tried to actively involve the students in developing the classes. The first course provided the necessary security of familiarity; the other two created the kind of tensions that were necessary to drive our project of transformation forwards.

Perhaps the most important thing is to determine which conflicts and tensions add value and contribute to enhancing the quality of the programme. But perhaps equally important, and equally difficult is the question of how we and the students can verbalise our feelings of unease, alienation and unfairness without these being queried. How can we integrate the different temporal perspectives, in that the students only have three or four years, whereas we can allow ourselves a longer perspective?

Here we will simply have to fumble our way forwards, since it is these kinds of signals that can bring about a potential for change and give our work on the programme energy.

Local knowledge

In order to give the students that applied to the programme the opportunity to make up their minds about us, we sent out a welcoming letter in early summer 2000 so that they would not feel deceived later:

In the middle of August 2000, a new chapter will start in the history of Karlshamn. The University is opening a campus there!

Those of us that have been involved in the planning of the media technology programme want you to be there—for two reasons. This is a unique occasion that will never be repeated, and it may represent the beginning of a new chapter in your life too.

The following elements of the programme will be important:

Our premises are in a newly renovated quayside warehouse from the nineteenth century, 20 metres from the sea and five minutes' walk from the marketplace. Our premises are on the third floor with excellent facilities for developing a new course of study—good technology and plenty of room for working that we hope will encourage free thought and new ideas.

We are mobile—each of us has been equipped with a laptop for the duration of the course of study. The laptop allows you to work with most aspects included in the study programme. It means you can be anywhere in the world and carrying on working as if you were at home.

We are pioneers—nobody has taken this course before. We are beating a new track. As a result, we would like to invite you to help us design the programme. We cannot and do not want to decide all the details, since we know that 65

people think more and better than four. The course is built on a foundation of individual responsibility and entails a lot of freedom.

The course is based on project assignments—one per term. We will start out with *web production*, during the course of which we will create a website for the programme. In order to be able to build complex websites, we will need courses in computer technology, operating systems, programming and databases. During the spring, the project is *video productions*, which will be published on the Internet. For this project we will need courses in video techniques, advanced programming, mathematics, etc.

Our goal is to give you the best education and allow you opportunities to influence the development in the industry. In brief, we want you to get the education that we would have liked to have had.

And then we started. Stumbling and unsure and without defining the roles we would play in advance, we did everything from installing technical systems to assembling furniture to teaching classes to having intensive conversations with the students—one to one and in groups—about where all this might lead.

In order to further break away from established educational patterns, we defined the following practical conditions: we wanted to have at least sixty students in order to escape from the classical classroom pattern, which can easily serve to preserve and reproduce old habits in a pedagogical change project. We also made sure that the staff and the students had the opportunity to choose their own starting point in the project, i.e. that each individual could choose the initial position that they found the most comfortable. For example, students that enjoyed practical tasks offered their services in connection with installing the technical systems; people that were happier talking talked; students that wanted to try out the games capacity of the laptops, linked up to the Internet and played *Half Life* for the first few days.

After a little while we were able to recognise a pattern and discern where the students' problems lay. Each individual had brought along his/her own understanding of what knowledge is and how you go about acquiring it. Were we going to be able to maintain a working environment where everybody's voice was equally important and necessary for the reform work?

Learning processes

According to Donna Haraway, knowledges are always locally situated³². What knowledges are are defined on the basis of the economic, cultural and social contexts that surround the institutions or places where the knowledge is created. This means that the issue of whether a particular piece of knowledge is relevant or not can only be determined locally, in the place where it arises.

How do the students' ideas about knowledge that they related to through their different backgrounds and experiences arise? Are there any common characteristics? Is it possible to recognise the norms that the Swedish secondary education system embraces and which leave deep traces after twelve years of exposure? In general, the Swedish secondary education system has adhered to the following values:

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competition
linear learning: goal–method–result
from reduced components to the whole system
group dominance
teacher authority
known answers to known questions
result dominance<sup>33</sup>.
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These kinds of values were perfectly in tune with traditional methods of education where imperatives and questions beginning with >what< (be punctual, meet the requirements, what should I do?) are more important than >why< and especially >how<. The decisive factor for the values of conventional education is what utility value³⁴ means can provide.

However, in an education aimed at preparing students to become good digital craftsmen, good narrators and good technical philosophers³⁵, these kinds of norms are more of a hindrance than a help. At the same time, there is a duality inherent in transformatory projects—change can also become a norm, a straightjacket, if the focus is always on the processes and we forget that media technology is also a body.

Assuming these were the values that our students had been exposed to and brought with them when they came, what sort of values did they encounter on the media technology programme that might come across as unfamiliar and scary?

Instead of encouraging competition, promoting the rule and authority of the teacher and providing known answers to known questions, the media technology programme emphasised the unfinished. There is not merely one valid answer; instead, the individuals that are working and studying shall together seek the unknown:

One of the aims of the programme is to explore new and unknown paths. The techniques, the forms of production and media that are the programme's domain undergo constant change. In order to be able to harness this dynamic, it is necessary that the programme work and the daily educational situation have great potential for change. The conditions that render this possible include leaving room for new thoughts and ideas in courses and projects and ensuring that unconditional discussions of ideas are always possible between students, teachers and external parties³⁶.

It became apparent during the year that these two sets of values were not always compatible. For example, students reported³⁷:

»I think that the text of the welcoming letter reflected the reality.

The year was roughly as I had imagined. There were some disputes in the first term, but I had expected that, as things are seldom perfect in the beginning. What was not as I had hoped were the courses on web production. There were far too few graphical lectures, and I had hoped to have classes in PHP and ASP, etc., meaning it was difficult to make much progress in the area of web design. But there are books and magazines—good ones too. If you want to learn these things, you have to do it in your own free time, which is a bit of a shame.

I don't think we had too much of any one subject. In fact, I think we had too few classes sometimes, although this was of course the idea—we were supposed to learn to think for ourselves before we got help.«

»The reason I chose this programme was that I could choose the targets myself, i.e. I could study the subjects that interest me.

I really hope that I will be more satisfied in the second year and that I will enjoy it more.

I think the idea that we shall learn skills and acquire knowledge ourselves (as opposed to having them served to us on a platter) is good, but we will always need guidance and supervision.

The more people there are, the more structure is required to ensure that things work out. Freedom and responsibility are fine, but there must be limits...

We go to school to learn, and to this end we need guidance and mainstays, but where are they?«

»What I think is the most interesting is the line: >The course is built on a foundation of individual responsibility and entails a lot of freedom.< That really hits the mark.

Otherwise, there is nothing that I think is not true. Perhaps it could have been stated more clearly that we, the students, can influence the course quite a lot."

I have chosen these quotes in order to discuss what is difficult in a transformatory project—*how* does it happen?

First of all, the students bring with them understandings of what knowledge is from other local contexts—they know what to expect.

Secondly, the students have a general *real-time perception* in their learning process: >If I'm going to learn anything, I'm going to learn it now!<

This means of perceiving of time is partly a result of the fact that the individual student finds it difficult to imagine the entire study programme, i.e. that learning processes are not linear and cumulative, but rather repetitive, fragmentary processes where elements of failure and frustration generate an energy that is necessary but not always tangible at the time.

Experiences of order and disorder overlap. When the frustration becomes too great, it is tempting to resort to the role of the teacher as an expert system—the omniscient expert who on a meta-level can see the individual student's learning process from both the past and the future.

Through her practice as a psychotherapist, Harlene Anderson has indicated a number of different positions that can also be useful to clarify the fact that there are several ways in which teachers and students can relate to work on learning processes and at the same time stress education as a body³⁸.

She regards the learning process as a means of relating that encourages collaborative relations and processes between people with different perspectives and expertise.

A teacher is an expert in creating an environment that is conducive to learning and facilitating learning processes, and at the same time a person who is open, who shares and reflects on his/her own knowledge, opinions, thoughts and questions. In this way, the learning process becomes a joint questioning, based on the expertise of all the participants involved in the process.

The context of development work

In my description of the work to develop the media technology programme, I have tried both to be situated in the educational structure that exists at a technical university and at the same time to find time and space for the dialogues and projects that render possible a process of transformation.

In order to reconcile these two different approaches in my work, I have analysed the context in which the media technology programme is situated. I have tried to find models that provide an image of past and current educational structures in higher education and also demonstrate how potential processes of change can be described and communicated. I have also come to realise that these models cannot be unambiguous or stand alone, but rather overlap and exert a mutual influence on one another. My way of describing the context is not an attempt to recreate reality, but rather is stylised, in an effort to retain my focus—*how* do learning processes occur in a technical interpretive course of study at Blekinge Institute of Technology?

My personal reflections

In this work, I have tried to ensure myself room for dialogue by juxtaposing different people, theories and understandings with the answers I received to the process evaluation that was carried out among the first year of students in spring 2001.

As the work has progressed, it has become increasingly apparent that there is a very high degree of complexity, as a result of the following circumstances.

Since I am conducting this work as action research, it is important that I make myself visible in relation to the texts and theories I am testing and also to the students and readers. I am part of the modern project—I cannot position myself on the outside and observe without being seen, what Donna Haraway calls the god-trick³⁹.

Secondly, I have not done justice to John Dewey's philosophy of education here. Nor has the research into higher education being done at Örebro University received the mention it deserves. I hope to deal with both Dewey and the research into university education (and not least the conditions of the mass university) in greater detail in a future project.

Nor has the balancing act between transformation and security been adequately illuminated. An inclination to change can easily turn into a compulsion to change that excludes the possibilities that are available in the current situation. Who survives the change? What kind of people are unable to relate to their learning process? What is value adding? How do I relate to different people's different needs, as I cannot keep everyone happy?

Another circumstance is that I use the concept of gestalting implicitly, depending on the idea that the basic values for media technology are personal development through gestalting. Both concepts are being tested, but as I indicated in the introduction to this thesis—gestalting is about realising ideas by giving form to a content that is to be communicated through a medium. And what does it entail for my work that I am not part of traditional disciplines, but rather am trying to relate extradisciplinarily⁴⁰, in terms of the legitimacy of the project?

In the words of Sharon Travik, is it possible to be an *authority in transformation?*⁴¹

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FOOTNOTES

- 1. Trojer 2002, p. 54 ff, Nygaard 1996.
- 2. See Nygaard 1996.
- 3. See appendix no. 1.
- 4. Change of name from 2001-01-01, to the Department of Work Science and Media Technology.
- 5. A three-year graduate programme.
- 6. See appendix no. 1.
- 7. See p. 123.
- 8. Folk High Schools are schools that have the freedom to work with topics and questions that the students and staff feel it is relevant to study. They have no set curriculum and no formal examinations. Unlike >normal< schools, Folk High Schools are not bound by centrally standardised curriculum. Each school determines its own activities in view of the ideological and educational profile of the school. Today the main goal of Folk High Schools is to offer general education both to young people and adults, and its courses cover a wide spectrum of subjects. The schools are residential, and thus social life at such a school is seen as an important part of the educational programme, promoting, amongst other things, a sense of personal awareness and social responsibility.</p>
- 9. Nilsson 1997.
- 10. Liedman 1997, pp 199–342.
- 11. Ibid. p. 215.
- 12. Ibid. p. 216.
- 13. Ibid. p. 47 ff.
- 14. The concept of cultivation of the *imago Dei*—the likeness of God, i.e. through cultivation people fulfil their intended purpose.
- 15. Liedman 1997, p. 227 ff.
- 16. Dewey 1997, p. 39.
- 17. Dewey 1997, p. 140.
- 18. Giddens 1992.
- 19. Beck 1993, p. 33 ff.

- 20. Giddens 1991, p. 252 ff.
- 21. Gulbrandsen 2000, p. 76.
- 22. Gulbrandsen 1995, pp. 15-32.
- 23. Ibid. p. 29 f.
- 24. Forsmark 2000.
- 25. Patti Lather.
- 26. Anderson 1997, p. 39 ff.
- 27. The main subject was media technology, which we received in December 2000.
- 28. Ekdahl 2000, p. 1.
- 29. Ibid. p. 3.
- 30. The National Agency for Higher Education 1998, p. 39 f.
- 31. The National Agency for Higher Education 1998, p. 38.
- 32. Haraway 1991.
- 33. Ekdahl 1999, p. 111.
- 34. Liedman 1997, p. 375 ff.
- 35. Ekdahl 2001, p. 1 f.
- 36. Ekdahl 2001, p. 1 f.
- 37. These quotes are taken from the responses submitted by students to the process evaluation carried out in summer 2001.
- 38. Anderson 1997, p. 23 f.
- 39. Haraway 1991.
- 40. Or more correctly, extramurally, i.e. trying to exist outside the walls of established academia and at the same time also be on the inside.
- 41. Trojer, Gulbrandsen 1996.

From: "Peter Ekdahl" <peter.ekdahl@bth.se> To: <mt00@student.bth.se> X-Priority: 3 X-MSMail-Priority: Normal X-MimeOLE: Produced By Microsoft MimeOLE US.00.2919.6600 Process evaluation of the Media Technology programme 2000-2001

Background

Technology programme, have exercised our joint responsibilities and our freedom programme started. I would like you to help me get an idea about how you have This evaluation is not about what you thought of the individual courses, but interested in your thoughts, not in what you think other people might have thought. It is important that you reflect and consider. rather about how we, the people that have worked and studied on the Media Time flies. The best part of a year has passed since the Media Technology to develop a new programme that will benefit as many people as possible. experienced the course so far by recording some of your thoughts. I am

Main issues

On the basis of the welcome note you received when the course started in the autumn, my main questions are:

- What was true and what was not true in the welcome text?

- Was the year as you thought it would be?

- Have you been able to exploit your freedom and responsibility? What would you have liked more of or less of?

Our home

ω, "Our premises are in a newly renovated quayside warehouse from the nineteenth Our premises are on the third floor with excellent facilities for developing new course of study - good technology and plenty of room for working that we hope will encourage free thought and new ideas." century, 20 metres from the sea and five minutes' walk from the marketplace.

- Do you think that the "third floor" has worked as a place to develop the programme - was the technology good?

Was there sufficient room for free thought and new ideas?

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Our mobility

the course of study. The laptop allows you to work with most aspects included in "We are mobile - each of us has been equipped with a laptop for the duration of the study programme. It means you can be anywhere in the world and carrying on working as if you were at home.

- Do you think the laptops have been a useful addition to the programme or would a computer room have done just as well?

Our pioneering

track. As a result, we would like to invite you to help us design the programme. people think more and better than four. The course is built on a foundation of "We are pioneers - nobody has taken this course before. We are beating a new We cannot and do not want to decide all the details, since we know that 65 ndividual responsibility and entails a lot of freedom.

in computer technology, operating systems, programming and databases. During the spring, the project is video productions, which will be published on the Internet. For this project we will need courses in video techniques, advanced with web production, during the course of which we will create a website for the programme. In order to be able to build complex websites, we will need courses he course is based on project assignments - one per term. We will start out programming, mathematics, etc.

- Do you think that the invitation for you to help develop the course has been put into practice, or was it just empty words?

- In what way do you think you have helped contribute to the development of the course?

Do you think the system of project-based work has worked?

- Do you feel that you have had the opportunity to be involved in external projects for companies, etc.?

Did you find the general meetings on Fridays useful?

Any other comments?

I would be grateful if you could take the time to note as many points as possible. Please return your responses to me by 10 June. Best regards,

Peter