

Information and Communication Technology (ICT) for Deepening Human and Societal Qualities

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My contribution is mainly based on my chapters in the book “Humans on the Net” subtitled “ICT, Work Organisation and Human Beings” (Bradley Ed. 2001). The book was presented at the first EU conference “Work Life 2000” during the half year when Sweden chaired EU. The book serves as a basis to understand and hopefully for everyone to contribute with answers to questions such as: How will we live, learn and work in the future? Intellectual Capital - what does it mean? Employability – why is that an issue? How does change and power work? Quality of Life - how to achieve? How to get balance in our lives? New ways of influencing our lives? How could a theory help us to understand our lives in the ICT society? What impact on human behaviour and values do the networks have? What is internet stress? Digital divide - a new global phenomena? The Home as a communication sphere in the network era? Opportunities and risks?

Key words: Information Society, Work Life, Network, Smart home, Social impact, Organisational Design, Psychosocial, Quality of Life, ICT

1. INTRODUCTION

1.1 Background

The title of my speech is “Information and Communication Technology (ICT) for Deepening Human and Societal Qualities”. I argue that this topic is now more important than ever, due to the depth and wide use of ICT in the society. My key note address is an elaboration of the ideas developed in the book “Humans on the Net” subtitled “ICT, Work Organisation and Human Beings” (Bradley Ed. 2001). The book was presented at the first EU conference “Work Life 2000” during the half year when Sweden chaired EU.

The sections 2 – 8 will also be published in the documentation from World IT Forum, WITFOR 2003, which took place in Vilnius in August 2003. I served as an invited speaker in the Commission 8, which addressed “Social and ethical aspects of the information society”. At WITFOR 2003, the “Vilnius declaration” was adopted (see below).

The perspective “ICT for Deepening Human and Societal Qualities” is deeply rooted in my research. As an informatics professor I started as psychologist which is rather unusual. Empirical experiences show that it is important to have a balance between pure technical research and development and the behavioural and social science disciplines, ranging from psychology, sociology, cultural anthropology to various forms of research in software and hardware technologies and new fields such as nano technology.

The focus of attention in the IT related disciplines have so far been too much of “technology push” in stead of “human needs” or “people push”. IT universities such as the one in Stockholm where I belong, are trying to bring together disciplines from the traditional university and disciplines from the technical university in order to facilitate a necessary rethinking and reorientation of R&D, sometimes resulting in new centres which concern “Humans in the ICT-society” focusing on the human and societal aspects of ICT use.

1.2 Vilnius Declaration 2003 from the World IT Forum

The Vilnius declaration is available on:

http://www.witfor.lt/witfor_vilnius_declaration.pdf

I limit myself to quote from the primary goals, page 2 in the document:

"IFIP World Information Technology Forum: Vilnius Declaration: We, the participants from 68 countries at The First World Information Technology Forum (WITFOR), organised by IFIP under the auspices of UNESCO and hosted by the Government of Lithuania, gathered in Vilnius, Lithuania, 27-29 August 2003, address through the Forum the following major goals:

- **Bridging** the digital divide between rich and poor in the world; urban and rural societies; men and women; and different generations
- **Ensuring** the freedom of expression enshrined in Article 19 of the universal declaration of human rights and other such instruments
- **Reducing** poverty through the use of education and Information and Communications Technology (ICT)
- **Facilitating** the social integration of excluded segments of societies
- **Respecting** linguistic and cultural diversity
- **Fostering** the creation of public domains with full respect of intellectual property rights
- **Supporting** communities in fighting illiteracy
- **Encouraging** e-governance and e-democracy initiatives
- **Improving** the quality of life through effective health service systems
- **Protecting** the local and global environment for future generations".

1.3 Network of Excellence

In 2002 a Network of Excellence within the 6th EU Framework has been created - it concerns human organisation and psychosocial work environment related to Information and Communication Technology (ICT), as well as the psychosocial home environment. The purpose with the Network is to disseminate and synthesise research with a crossdisciplinary perspective and thereby focus on the interaction between ICT and work organisations, human communication, stress, allocation issues, knowledge transfer, and "global villages", areas which are addressed in my speech. The purpose is also to contribute to a discussion on desirable actions on various levels and utmost how ICT can be used for *deepening human qualities*.

The participants in the Network are distinguished researchers from Europe and some from USA and South East Asia. Most of the present participants have contributed with one chapter in my book "Humans on the Net".

The participants of the Network come from different research disciplines such as Informatics, Industrial Engineering, Organisational Behaviour and Communication, Psychology and Education. They all share a human perspective. The book serves as a basis to understand and hopefully for everyone to contribute with answers to questions such as:

- How will we live, learn and work in the future?
- Intellectual Capital - what does it mean?
- Employability – why is that an issue?
- How does change and power work?
- Quality of Life - how to achieve?
- How to get balance in our lives?
- New ways of influencing our lives?
- How could a theory help us to understand our lives in the ICT society?
- What impact on human behaviour and values do the networks have?
- What is internet stress?
- Digital divide - a new global phenomena?
- The Home as a communication sphere in the network era? Opportunities and risks?

2. CONTINUOUS AND ACCELERATING CHANGES ARE OCCURRING IN THE DESIGN OF ORGANISATION, WORK AND MANAGEMENT IN THE NET ERA

There is a main change pattern in the organisational structure related to the use of IT (computerisation), which in our research has been analysed during three main periods in the history of IT (Bradley 1986). What is happening with work content and work organisation in the latest (fourth) era of computerisation – the Net Era? We have achieved more *flexible work processes* regarding both the professional role itself and leadership. Further, the professional role, the learning role and the role of citizen are becoming more and more *integrated*. Repetitive jobs and physically strenuous jobs, including routine work, are disappearing and a total upgrading of qualifications has occurred. In parallel with this, the organisation has become flattened out. The type of organisational structure which has become more and more common is *networks*. Our ongoing research is directed towards *psychosocial and organisational aspects of networking*. In an international perspective more work tasks are becoming similar because *software programs* are sold world wide and the work tasks are carried out in a more and more similar way.

An old crocheted lace cloth is to my mind an excellent model for how the world might work: what social systems, organisations and official authorities will look like in the future. The *network era* has arrived and seems to be here to stay, and networks interact more and more *wirelessly*. It is possible to crochet all the time: each new loop (computer) is connected to another through the same yarn (tele technology). The *distribution of power* is now

possible in quite a deep sense, competence being transferred to the periphery, out to the line. The hierarchical structures of companies mirrored industrialisation and industrial technology during the mainframe period of the computerisation era. What characteristics does the network organisation have and how are people affected by this new structure? Some examples:

- direct communication between the various levels of the organisation
- barriers between idea and execution are disappearing
- reallocation of power in the organisation
- continuous changes of structure and roles
- openness to the surrounding world
- multidimensional virtual culture.

2.1 How does the workforce in *the flexible company* function?

At the centre there is a *core workforce* of permanent full-time employees who enjoy a wide range of employment rights and benefits; however, *the core workforce is decreasing*. The other growing part is called the *peripheral workforce*. This consists of part-time staff, self-employed consultants, sub-contracted and outsourced workers, and temporary and agency employees. Some of these “knowledge workers” are key resources, while others are exchangeable. Through the network organisational structure they might have very strong positions in the company through their expertise or social contact, although this is invisible. Power is invisible in these new forms of organisations: power has no outward manifestation and is not reflected to the same extent as before in properties and gadgets linked to leadership. One common trait is, however, that the peripheral workers are so-called *free agents*: they take care of their own security, skills development and personal marketing. They are very loosely, if at all, tied into the welfare system. They are strong when health and good times are present, but are in a high risk situation when health and family relations are taking away their energy and motivation.

Hence more and more we get *organic organisational structures*, with a focus on flexible work processes, including dynamic networks for capital and human resources (compare the network organisations above). Economic systems are being created where the present boundaries are increasingly becoming eroded. Advanced ICT support is used for various forms of collaboration. More and more individuals function as self-governing company units.

2.2 Regarding the *organisational context of the present age*, we can think and reflect on the following issues:

- What is the main focus of achievement? We are focusing on various forms of ingenuity at the present, i.e. the materialisation of technological wonders. More and more of the focus of achievement is shifting to raw imagination and the value of ideas and fantasy.
- How are human beings involved in the labour market? The present member status is to “be employed”. Workers have been paid for their time in fulfilling organisational roles. In the future we will see more of so-called free agents or portfolio individuals.
- How is knowledge managed? Today there are many ways: there are multiple channels to choose from (word of mouth, writing, audio visual, electronic). In the future we talk about meta channels, e.g. meta media of virtual reality (VR) and controlled reality environments (environments that we manipulate and manage in VR). In the latest wars we are not sure what could be “manipulated reality”.
- What is the geographical span? At present our work life is based on national and international trade which will be more and more without limits in the future and will undertake global forms. Electronic commerce and electronic market places are creating a strong change factor behind the structure of work life. The geographical space in the future is both global and beyond – included VR.

There is a risk associated with an 80/20 society, where 20% of the population is in employment and 80% is outside the labour market and there is a trap created by the global convergence of economy, politics, media and environments. Personally, I would like to see a kind of renaissance, a strong emphasis on jobs and tasks which require human unique competencies and which can not be replaced by ICT e.g. care of elderly people, children and health care.

In summary, too much of responsibility is put on the individual who:

- loses permanent employment
- has to manage his/her own competence development
- has to market himself/herself
- is expected to take on “any” job and “swallow” job enlargement
- is expected to be creative – with little compensation
- is a “unit” on a competitive world market.

Is this the freedom from paid work in a traditional sense? In my perspective we all need a basic security as (employees) citizens. Should our school system prepare for fostering “free agents” or portfolio individuals? Should school and learning prepare young people for acting proactively in meeting the ongoing unhealthy development? From an ethical point of view individual responsibility is “a word of honour”. Regarding our role as workers and citizens there is a need for balance between a strong society and strong individuals. Few persons are “strong”

throughout the life. We need to think in terms of sustainability both regarding environment and sustainable human beings.

3. NETWORKING - PSYCHOSOCIAL COMMUNICATION BECOMES A KEY ISSUE

There is a change taking place in the structure and quantity of the contacts and collaboration between people in working life, in private life and in the community as a whole. Electronic networks, electronic subcultures and electronic communities are emerging in work and private life with various functions.

If technology is used properly, it can give us more time for human contacts; in many cases, however, it has produced the opposite effect. Many people sit at a computer screen all day long, interacting only with the computer and not meeting other living human beings. The dialogue between people is running the risk of getting thinner. However, a new world opens up when we think in terms of the virtual company, the virtual classroom and the virtual living room. It appears that these new opportunities provide us with an insight into the value of meeting face to face, its importance for listening, for trust, and emotional support and safety. It is important that emotional development can find its place. Sometimes people can hide behind the computer screen, avoid conflicts or avoid difficult meetings with other persons. These are experiences which in the long run could contribute to personal growth and development. Children and young persons may lose an important time in the development of their identity if they are exposed too early and too intensely to electronic communication.

However, the feeling of belonging established when meeting in person can be facilitated and become enhanced with the support of electronic communication. Electronic meetings can also be deepened by following up contacts in the form of meetings in person. This ought to be an important goal. "Electronic solitude", i.e. the structural loneliness which is forced upon a person and which exists today, has to be prevented in the ICT society, or at least combated and counteracted. We now have totally new collaborative structures, with opportunities to achieve a deeper level democracy as well as international understanding. Today there are real prerequisites for peace.

Communication between people with an increased use of ICT makes it clear to us that communication has different purposes: it has a knowledge function, a social function, a control function and, not least, an expressive function. Qualitative aspects of communication, e.g. trust, confidence, interest, listening and emotional engagement will be needed more. New dimensions in the quality of communication will occur.

Some years ago being a visiting scholar at Stanford university, I started a project on "psychosocial communication" and made some pre studies in the Bay Area, this was in 1991 before internet exploded, but in research we sent files for many years over the net and in my family there were people working in the multinational IT business and who used their own internet at that time. I formulated some hypotheses on communication from these experiences.

- Our perception of time and space will change - we perceive that we have less time and that we are closer in space: Definitely confirmed.
- Structure, quantity, and quality of communication will change: Definitely confirmed. We have got a communication overload, we have got chat groups etc.
- Electronic subcultures appear: Confirmed. There are not only hackers culture, new groups with the same interests, cultures, religions are strengthening their cultures and new cultures are appearing.
- There will be a strengthening of traditional family life with few narrow contacts and an increase of remote contacts: Confirmed.
- The present gender structure will be more pronounced: At that time in 1990, I could see the male part of the families assembled around the computer and the female part more taking roles as observers. This is not true any more. Women communicate and use internet frequently, both in private and professional life. But regarding powerful positions in IT, both in business and in research and development, there is a male dominance and the gap seems to increase according a new Swedish investigation.
- Identity and self perception change: This hypothesis is in focus and constitute by now a big research area in informatics and political science and many disciplines in the social sciences.
- Subdivision in work and leisure lose relevance: Confirmed.

Countries are in various stages and phases. In some countries the industrial era has not proceeded the ICT age. This is true also for certain regions in the developed countries. This could lead to another pattern of communication, for example lack of physical transport and infrastructure seem initially to contribute to a leap in the use of mobile phones. The role of globe trotting youngsters play a certain role in the internet introduction and use, but there are mainly macro phenomena on the economical and political level that have the biggest explanation value for adoption of ICT.

4. STRESS - WITH ICT OUR TEMPO IS INCREASING

Our perception of time and space is changing. New opportunities for flexible work (telework), to work and learn independently of location, have changed our perception of space. What we require of ourselves in the way of pace and tempo is increasing all the time – there is a change in the level of our expectations (aspiration). People adapt

to the machine and its tempo. We become unconsciously affected by the speed of the machine. The words “slowly” and “quickly” have acquired quite new meanings. The same is true of the words “close” and “far away”.

There is a basic level of stress in our technological environments in large cities. It used to be entitled “technostress”, a phenomenon at the societal level. Technostress is a completely accelerated tempo, which to a large extent is a result of effectiveness and efficiency. It may be that technology fits better into a societal structure at the macro level, where small-scaleness, closeness to the environment, to nature, to the woods, lakes and the sea exist. One could talk about overstimulation, often in the big cities, and understimulation, often in rural areas, as promoting stress. These two opposites could be balanced.

The phenomenon called ICT stress can be characterised by too much or too little of various aspects or areas such as workload, amount of work, information, communication, contact with people, responsibility, flexibility, dependency, mobility, demands on development and training. Perhaps we could even revise the plans discussed in the 1970s for a “society of moderation”? A balanced society!

There are reasons to talk about “Internet stress”. Certain ICT stress is related to the fact that we have an increased *dependency* on computers and networks and an increased expectancy that these technologies are functioning well. We have got a super network with the Internet, which nowadays dominates electronic communication in business and private life. Stress phenomena in the Internet world *are information overload, contact overload, demands for availability, lack of organisational filters*, difficulty of separating “noise” from essentials, changing level of expectations and an altered *perception* of time and space in general.

5. ALLOCATION ISSUES - KNOWLEDGE TRANSFER - GLOBAL VILLAGES

5.1 The allocation issue and ICT

Twenty-five years ago, at a time when ICT was known as EDP (electronic data processing), I used to close my speeches by arguing that computerisation is really an issue of allocation. I argued from my initial research findings that computerisation will lead forward to a serious equation to solve; how to allocate various resources. In other words it has very much to do with allocating the “good life”: i.e. allocation of:

- work and leisure time
- citizens' services (paid/unpaid)
- production and reproduction
- allocation between cities and rural areas
- allocation of profit between sectors within a country
- allocation of profit between industrialised countries
- allocation of profit between industrialised countries and industrially developing countries.

Both physical power/strength (muscular) and “thought power” are being replaced by computers and ICT. However, the size of the part of human life that is work – or at least what we today refer to as work – does not seem to have diminished. We have achieved a subdivision which has created one group that is overworked and one group that is shut out from the workforce. This is not a necessary development; there are alternatives. More and more people could have access to a good life. The allocation question and ICT are *per se* an important research problem. Furthermore, ICT can support the “weak” in society, those people who have various kinds of handicaps: linguistic, physical or intellectual.

“Digital divide” is a descriptive and analytical term, “allocation issue” and allocation of resources is a more political term. Allocation Issues - Knowledge Transfer - Global villages – Digital Divide are terms addressing various facets of an important societal problem

Today Actions and rather Reactions are crucial. NGO movements such as "Attack" are bringing up these topic. “Universal Access” in Human Computer Interaction International community (HCII) is a special conference theme/track. A special journal “Universal Access” with the Editor from Greece, Constantine Stephanidis is summarising the research in the field. “Digital Divide” is the theme of a series of conferences world wide. The WITFOR conference is in this respect a strategic event that is the first one that deals with policy and action strategies on a global level regarding the digital divide and the ICT society.

There is a lack of economical theories to analyse the new world order – theories which are systemic and incorporate the social and humane costs.

5.2 Transfer/growth of knowledge and influence is an ongoing and deep process

What we call “knowledge transfer” is an important phenomenon in the present and future knowledge society. The transfer of knowledge could be exemplified with regard to urban-rural, experts- nonexperts, centre-periphery, north-south, nation-region, and globally.

ICT involves a transfer of power connected with knowledge. A decomposition of the traditional hierarchical structure is occurring. There is an embryo for renewal. Long-distance work, distance tuition and long-distance services already provide new prerequisites for the roles of regions.

The issue of knowledge has attracted much attention over the years – from the intensive and emotional AI debate – expert systems – knowledge-based systems – to the softer period of learning organisations, business re-engineering and creative organisations. Information Management is now Knowledge Management – perhaps due to the more sophisticated technology mix. We will probably reach Creativity Management, Fantasy Management and Trust Management in the future. Today there is scope for a follow-up due to the new era of technology. The same questions are more relevant today. However, more interesting to me is the creation, transfer and management of knowledge in the society as a whole as a basis for the reallocation of power, influence and widening of democracy.

Close connected to Knowledge Transfer is Learning in the new society. More emphasis should be devoted of the content of learning. What type of knowledge is desirable? Some years ago I read Jacques Delors report *Learning - The Treasure Within* (Unesco). He brought forward four pillars of education and I think they are very central for all learning in the future:

- Learning to know (for knowing)
- Learning to do
 - from skill to competence
 - from intellectual to behavioural skills
 - innovation and creativity in a local context
- Learning to live to together
 - discovering others
 - working towards common objectives
- Learning to be.

The two latest points; “learning to live together” and “learning to be” should be as important as the cognitive aspects of learning, if the world will have a future.

6. THEORETICAL MODELS ON THE COMPUTER TECHNOLOGY AND WORK LIFE REVISITED

The RAM research programme on “Computer technology and work life” was an interdisciplinary research programme initiated and led by Bradley at Stockholm University from 1974 to 1988. RAM referred to the Swedish expression for “Rationalisation” and “Work Environment”. A theoretical framework was developed by G. Bradley entitled “Computer Technology and Working Environment” (first published in 1977). The framework included two theoretical models, one more general (figure 1) and one model where the concepts and their interrelationships were specified (Bradley 1977, 1989). The models were empirically tested in three large work organisations in Sweden, representing three main historical periods of computer technology – from systems with batch processing to microcomputerisation. The psychosocial work environment was considered in terms of the following perspectives: 1. Three levels of analyses (individual, organisational, and societal) 2. objective and subjective work environments 3. interplay between levels 4. interplay between objective and subjective work environments 5. interplay between working life and private life 6. a life-cycle perspective.

The content of some of the concepts in the models may be summarised as follows. The *objective work environment* refers to areas of work that are germane to large groups of employees. The *subjective work environment* consists of perceptions and attitudes related to corresponding sets of factors in the objective work environment. The subjective work environment is closely linked to the concept of job satisfaction, which could be seen as a summarising concept.

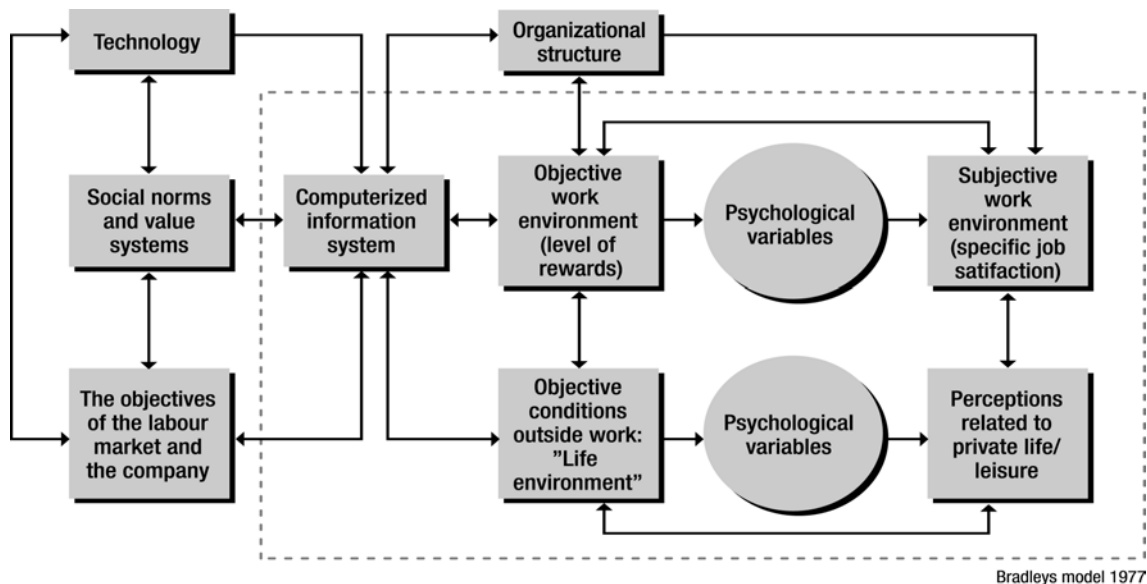


FIGURE 1. Theoretical model on Computer technology and work environment (Bradley 1977, 1989)

Psychological variables is a general term covering a number of intermediate, psychologically relevant variables such as the *level of aspiration* and the *weight* attached to specific work-environment areas. The concept of *psychosocial* refers to the process involving the interaction between the objective environment and the subjective one. *Essential concepts within the psychosocial work environment* include factors such as contact patterns and communication, organisational structure and design, work content and workload, participation in decision-making, promotional and development patterns, salary conditions and working hours.

Objective conditions outside work refers to behaviour, consumption and conditions that prevail during the hours spent away from work, according to the traditional definition of work. The theoretical models used in the RAM program were used as models in discussing what *structure* a computerised society should have (see the two-way arrows in the figure) and what might be desirable *goals*.

An extensive research strategy was applied with qualitative stages/methods and quantitative stages/methods for collection and analysis of data. Indices were created through multivariate analysis, and they corresponded well to the theories in the field of work and organisational theory). Theories, methods and results from the RAM programme are summarised in "Computers and the psychosocial work environment" (Bradley 1989). These measures and tools are still relevant for studies of the social and organisational impact of ICT.

In later projects a fourth period in the evolution of computer technology has been explored, both the psychosocial and the societal impact of ICT has been in focus, best referred to in our ongoing research programme entitled "Interplay ICT – Humans – Society". The fourth and present period of computerisation I would like to refer to as the "Network period", very much based on *the convergence* and integration of three main technologies; computer technology, tele technology and media technology. ICT is more and more being used in almost every activity and *embedded* in most of things around us. The graphical representations in my theoretical models have been changed, *converging circles better reflect the ongoing process*.

Both *Convergence* and *Interactions* are important features in the model. Convergence means a move towards a common point. Interaction means that technology interact with the social world with values and believes, there is an ongoing interaction between the clusters of circles.

- A convergence of computer technology, telecommunication technology and media is occurring to become ICT
- Professional Role (Work Life) and Private Role (Private Life) and Citizen's Role (Public Life) converge to become a Life Role
- Work Environment and Home Environment are converging to a Life Environment
- Effects on the Individual become more multi faceted and complex. This is valid both regarding the psychological and the physical effects (Effects on Humans)
- Technology, Economy, Norms/Values and Labour Market interact and converge and is entitled Globalisation
- A new emphasis on certain dimensions in the psychosocial environment occur
- New dimensions are appearing in the psychosocial environment. Openness for unforeseen implications is required.

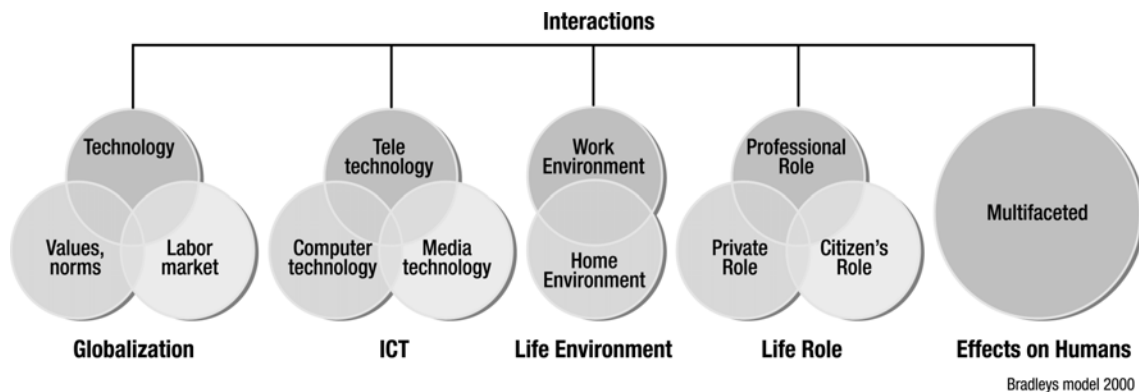


FIGURE 2. Convergence Model – ICT and Psychosocial Life Environment (Source:Bradley 2001)

Within informatics a discussion of focus is taking place: both analysis and design need to address not only the work process and management connected to the sphere of production life, but also *people's life environment*. Not only professional roles but also our roles as citizens and private persons are crucial. Community research in a broad sense comes to the fore, with respect to both physical and virtual communities. Analysis and design of *ICT and societal systems* both at local level and globally become important. There is also a need for new and additional actors at the deeper and broader integration of ICT in the society (children, elderly, and consumer organisations).

7. RESEARCH AND POLICY

7.1 Focus on some major psychosocial processes

One way to summarise the discussion on the IT society and the individual is to address psychosocial processes. These could be formulated as problem areas or viewed as *research questions and policy statements*. By now there are reasons to start up *normative research* which later on could be discussed across wider cultures. It concerns the classic question: *Is research value-free?*

Integration or Isolation: Do IT networks increase the quality and variety of social interactions (human-human communication), or do limits on social contacts via IT lead to higher levels of isolation and social disintegration? Normatively, ICT should contribute to an enrichment in the social contact between people and should be used to prevent social isolation and facilitate integration.

Autonomy or Control: Can enhancement in wireless and mobile IT systems at work and in private life permit greater autonomy and self determination, or are people more subject to control (indirectly shaping work pressures and job stress)? Flexible work/telecommuting and electronic performance monitoring are important to consider. Normatively, ICT should contribute to a greater autonomy for the individual and prevent stress reactions. Control or freedom is a classic issue often described in the terms of "privacy – integrity".

Overstimulation or Understimulation: Technostress, ICT stress and Internet stress are analysed in section 4 above. Normatively, ICT should facilitate information access for all and support individual learning, but at the same time prohibit various kinds of overload, e.g. information overload, contact overload.

Dehumanisation or Humanisation: Our bases for identity are being changed dramatically in the present network era. Are electronic interactions via IT networks leading to disintegration of the self and to the development of cultures of artificial personalities, or does the exchange of social contacts without physical constraints allow for greater understanding of the underlying characteristics of humanity? Normatively, ICT should contribute to the deepening and development of true human qualities and be used to provide time for people to develop themselves as human beings.

Sustainability: ICT should contribute to both environmental sustainability and human sustainability.

E- conflicts (wars) or E-cooperation (peace): E- conflicts must be avoided. E-cooperation and peace is a major concern.

7.2 Focus on Psychosocial Life Environment/Quality of Life and Well-Being

In my contacts with the media I have on occasion dared to go back to the books I have authored, primarily "Computers and the Psychosocial Work Environment" (1989), published in Swedish 1986. I conclude by saying that the research questions I proposed as important for the future are still highly relevant today, and perhaps more important than fourteen years ago. Why? I think that when we have been living in a society deeply and broadly affected by the new technology, it might be harder to identify both risks and opportunities. A new generation now exists, which has grown up in the digital environment. There are reasons today to go back to classics in research:

e.g. there are no more work environments in the traditional sense – they are dissolving, although phenomena identified in research into working life, in which *Scandinavia* was very active for many years, *have to be reviewed with a new perspective*. How are human needs of influence, belonging and meaning met in the new structures?

Some examples of desirable research focusing upon the individual are: how is ICT changing our: *identity and self-perception; social competence; creativity; integrity; trust; dependency; balance between emotional and rational components; balance between female and male; involvement and alienation*.

In a newly initiated research program, known as “Home of the Future”, a new ICT environment is coming into focus. In the development of the so called “Smart Homes, Smart Dwellings”, there is a growing market for all kinds of gadgets, desirable or not. We need to analyse and design “the good home” – when our roles are integrating. What is a home? “Working from home” or “Homing from work”, are concepts that we explore in this new research programme. The virtual and physical worlds are merging, we can virtually be at home wherever we are. We started with the help of the Swedish Trade Council in Los Angeles to understand what the trends are in this area, not to copy but to reflect upon them. We have completed three subprojects in the field: USA, Singapore/Malaysia, and Japan as well as studies on Young IT people in big cities and rural areas.

8. CONCLUDING REMARKS

New applications of information and communication technology are like seeds. They pop up all the time. Some of them will not survive and cannot grow. Others will stay and grow to beautiful plants and flowers. This is true for those applications which fulfil human needs and requirements: Basic physiological needs as well as need for influence on one’s own life conditions and society, need for social belongingness, need for a meaningful life content, and need for learning and developing oneself. I quote my self and my home page: “Deepening and Broadening of Democracy, Wellbeing and Quality of Life for All, and Peace should be the leading principles and goals for ICT”.

REFERENCES

- BRADLEY, G. (1977). Computer Technology, Work Life, and Communication. The Swedish delegation for long term research. FRN. Stockholm: Liber (In Swedish).
- BRADLEY, G. (1989). Computers and the Psychosocial Work Environment. London/New York/Philadelphia: Taylor & Francis. ISBN 0-85066-455-1.
- BRADLEY, G. (ED.) (2001), Humans on the Net - Information and Communication Technology (ICT), Work Organisation and Human Beings. Stockholm: Prentice. ISBN 91-7522-701-0.
- VILNIUS DECLARATION. World IT Forum - WITFOR 2003, Vilnius, August 27-29 2003. http://www.witfor.lt/witfor_vilnius_declaration.pdf
- WORLD IT FORUM – WITFOR 2003. Documentation of key note presentations and panel discussions from the 8 commissions. (Under publication).