The Technological Condition
(Set Lonnert, Reykjavik, Iceland, 21-23, February, 1997)

Perspective on the condition

There is no wonder, if the technological condition is in question. There is wonder though, to what extent we our selves regard this as central to us. The Western society have had a tremendous growth, no doubt, trough centuries. But not that many centuries. Its persistance has overridden many old territories, and thrown away many old cultural keystones. In the historical perspective, the Western society have had a short, but exponential growth. If we regard antiquity as pre us, or included in our society, doesn't make much a substantial difference. The technological condition wasn't set until both the moral and material rationale upheld an enlightenment dogma: *progress through technology*. And the technological condition has almost been set to present day man, where its kind ever may be. Probably we could not outrun society without the technology be the very means. And maybe the condition will die, as our society will eventually die.

As von Wright remarks, we could look upon the society in the long perspective, in a historical sense. There have been cultures distant apart in space and in time. Now, isolated cultures do and could hardly exist. They are connected to us through technological conditions. Western culture is perhaps surrounding the world, but not fully infiltrating it. We have eliminated time and space through technology. But moral and cultural strata doesn't meet that easily. Thus we have still exempli gratia, tribal wars. We do not understand each other, although we live in the same space and time. We have no integration of cultures. We have no integration of morals. We have no integration of religions. At least we can see that these latter conditions is not as the technological. There is no automatic integration logically following each other. We are still miles apart inspite of technology.

As our time and space is upheld through the technological condition, we ourselves as bodies are upheld with machines that some say could hardly be seperated from natural man. Some claim there is no natural man, anymore. Without the condition there would be no society as we know it. We have left natural life and become artificial ever more.

What do we do about it?

This dichotomy is not an absolute distinction, as that of a road choice. Technology was certainly existing in earlier cultures, as in the antiquity the greek and roman advanced technological

societies. But it was certainly not a techno-moral condition where upon society built. This is new. Thus I'm not being moralistic about this our condition, but I will underline the necessity of reflecting upon this very substructure inherited from the West and previously European culture. Why? Because it has come into question and sadly enough, alternatives are rather poor to my mind. We have to reevaluate it.

There are some, as we perhaps may call them, modern Luddites. Almost none in power take them seriously, but as time goes by, they'll certainly attract more and more people. They have looked at the technological condition as harmful, and regard negative consequenses it carries destructive, so it is better to eliminate it all. There are, as the industrial revolution begun, small groups which take the natural versus the technological distinction emphasized and implement it in their own societies. They often disregard other possibilities, i.e. other than minor adjustments.

There are people which regard negative consequenses of technology as side-effects, and e.g. environmental questions as one of these. The problems are almost always solvable by technological means. There is good as there is bad technology, thus. Recycling by certain technologies are good, and polluting industries are bad.

But aren't there alternatives which doesn't althogether either embrace or exclude the technological condition? Probably it must be technological, as well as, moral statement.

Technological Confusion

If the technological condition is a kind of *moral condition*, then there is no wonder why today, there is technological confusion. You may take a positive view, you may take a negative stand, or you may regard technology from a moderated point of departure.

Depending on what moral you may assent to, different technological options may be part of your choice. The dream of a morally indifferent technology, becomes an argument, which premiss lost considerable weight. Use is not easily distinguished from pure technology. Even if and when there is such an option, major social behaviour may determine its final use, anyway. And disregarding whether or not you will use the technology, you participate or not in human action. Action, which may ultimately be of a moral kind. As allsurrounding technology is wrapped around society, there are not many options left to choose between.

You may also subscribe differently, to different technologies. Perhaps cars is alright, but

nuclear power is wrong. Perhaps the electrical razor is alright, but biotechnological manipulation of DNA in your food is not. By what argument is one thing good and the other bad? Can we distinguish good technology from bad, and by what standards? Will simple enumeration do? Can we agree through national democracy, or international negotiations?

Take *nuclear power* for instance. In the debate some decades ago, all around Europe, in the USA and in Japan, discussion of its very existance were a hot issue. No doubt, participants were emotionally aroused. Considering what happend at the end of the second world war in Hiroshima and Nagasaki, it perhaps would surprise us severly if they weren't. To many people, peaceful use of nuclear power is connected to atomic bombs, or anyway a potential of misuse. Or at least unnecessary risc to the present and future of peaceful societies and generations. The proponents asured us that technology would be safe, or at least satisfactory, so we should not worry.

Take another emotionally explicitly tied technology: *biotechnology*. Biotechnology is a vast field and little understood by the public. But discussion on microbiology, molecular biology, biochemistry, chemical engineering, genetically altered plants and animals, genome analysis and gene theraphy, has recently been raised. Scientists try to tell us what to worry about and not. Public remains sceptic to what they consider unnatural. And as such, not wanted.

But then some say, that there is a distinction of pure science from applied science. In applied science you can make a choice of good or bad. Pure science, pure research in the physics of nuclear power or biotechnology by itself is not bad. How come then good applied science is compared with bad? Is science greatly misunderstood? Or is there perhaps some other question which has been raised, but was misunderstood by the scientists? These questions would take us into dicussions of science, relationships of science to technology and vice versa, etc. which I'll leave unremarked for the moment.

The Introspective

Our society recognizes — it seems to me — some sort of condition. But reading the negative response to technology, or modern technology, it is taken as a way to change the present pattern with some new alterations. Still the negative response is not taken as critique of the technological condition as such.

Let me mention one example. German forests dies. The probable cause is that the small openings where the leaves respire are devestated by ozon when sulphur dioxide react to

ultraviolett light radiation from the sun. The German goverment response was to give increased amount of funds to genetical research, which should develop new species of ozon resistant trees. Thus technology helps, where technology destroys. (p. 266)

I could also mention an example of how resistance to technology is *analysed.* The resistance to new technology is seen as a function in a predefined way. Resistance functions as giving technology a push in a new direction. It evaluates socio-technical activity, and makes the activity self-aware. The technology react, becomes introspective, take a new turn and leaves the introspective state. (p. 3)

Ergo, weather positive, moderated or negative point of departure doesn't make a substantial difference. The revise strategy almost always begin from the inside, and end from the inside. From the inside of the technological condition.

The Opaque

Society isn't easily evaluated from the inside. But possibly history can be helpful, making the condition visible? Some problems with historical concepts though, remain as they are often chronological stamps of time. As such they cannot be synchronized or compared, without additional difficulty. Only when either overlap in time, or when one succeed the other, they compare with regard to timeorder. At least, if you subscribe to presentday historicism.

With this in mind, we may approach Western society as a yet very limited culture in time. The span of the old and later Egyptians for example, is way much longer. South American cultures, Mesopotamian, Chinese, Indian, and others perhaps just have become archeological ripples in our historical awareness. They are not, and have not been, part of our cultural inheritage. They have become isolated islands, discriminated by time and fairly understood exept perhaps by a small number of scientists. Looking at West from *sub speciae aeternitatis* (if there is such a view), intensity in technological advancement and massive use of technology surely hasn't been precursored. An intresting question is, thus: when did it happend we left the comparable cultural state, and became dependent of the technological condition? I'll shortly return to this question.

Anticipation?

If we want to be ridgid historians, there is no such thing as "anticipation". Aristarchos didn't anticipate Copernicus. Heron's *aeropile* isn't a precursor of the steam engine. And the

Antikythera finding doesn't preclude the computer.

But why wasn't the primitive rotating steam sphere by Heron, used as a labour force? Perhaps it was too rudimentary or too fragile to last for very long. It still had some technical flaws to work as a proper engine. Perhaps there were no momentum which could lead Heron to the extended idea. Slaves were used, and hence no need for a technical replacement. Possibly there were no moral dictum which could be tied to a technological industrialization. Maybe, when technology isn't restricted to the sole amusement for the aristocracy and kept as a secret, but become a widened concern for society by itself, the moral which attach to technology and technological use change accordingly. Or is it the other way around? Or are they mutually dependent?

Francis Bacon

Francis Bacon have remained the historical exponent of an early material compiling and empirical scientific concern in the Scientific Revolution. Aristotle and syllogistic reasoning was replaced by critical induction based on empirical findings and experimental testing. If philosophy, natural philosophy and science was to be practical and useful, there were some preconceptions you would have to get rid of in order to seek knowledge. These preconceptions Bacon labeled idols. *Idola tribus* was the preconceptions of mankind, such as looking at nature from the viewpoint of man. *Idola spectus* was the preconceptions of the cave, which was individual preconceptions due to individual inclinations, talents or experiences. *Idola fori*, was the preconceptions of the marketplace. The priority of language before thought, that each word would correspond to a certain reality. *Idola theatri*, the preconceptions of the theatre, i.e. the preconception of adhering to current issues and opportune opinions.

If we can view nature without these preconceptions, then experiment and observation should lead us to real causes and real laws of nature. Man should not seek knowledge for the sole purpose of getting pleasure, nor fame, power, control of others, or other forms of persuing pure self-interest. The purpose of having science is that it should be useful in society, that it may be developed and used "for the benefit and use of life".

In *The New Atlantis*, Bacon tells us once again in the fashion of a tale the principles of scientific research, pratical and social organization. In the house of Salamo, one group seek to exploit the derived knowledge for practical and useful purposes to the life and knowledge of man. Some knowledge is kept as secret, also from the state. Still Bacon withholds some knowledge from getting public, as in antiquity. The differences from Alexandria and Heron are several, but one seems to be explicit and to some degree obvious. To Bacon science (and technology) should *not*

be used for pleasure and deceit of man. In antiquity there were in fact a special technical category dedicated to that purpose: θαυματα (thaumata). Whether or not the intension was to deceive, there seems to be no *explicit declation* to reveal technological simulations of nature or technological mysteries to the public. That's a very different moral attachment from Bacon's.

To Bacon there was a moral concern for science and technology to increase benefit and use of life. To emphasize: this is foremost a *material condition.* It does not imply man should be morally improved by means of science and technology. The Christian God were still the only possible connotation to good morals.

Condorcet

With the French Revolution and the Enlightenment there begins another era, which recently has been named *the modern project.* To the French intellectuals, God lost his powers or at least his powers were remarkably reduced. Deism was the general approach, and Christianity wasn't always the only possible religious way. Even if it probably was the best. *Les philosophes* wasn't generally social revoultionaries. Most time they accepted established social hiearchies and social status quo. Therefore no strong casual relationsship can be shown, or historical strong assertions made of connections from the Enlightenment which preceeded the French Revolution, to the Revolution itself.

One intresting exception in many ways is the revolutionary mathematician Condorcet. He was practically the only intellectual from the last generation of the Enlightenment, which participated actively in the Revolution. He didn't approve of Christianity and religion, nor of monarchy — naturally.

He also wrote articles in the *Encyclopedie.* About the *Encyclopedie, ou Dictionnaire raissonné des sciences, des arts et des métiers*, it could be claimed that it was partly a structure which continued Bacon's idea. Not only science, natural philosophy and natural science was parts, but also the more practical aspects such as craft and industry, besides life of man and man himself.

In *Esquisse d'un tableau historique des progrès de l'esprit humain* Condorcet sketch a continued history of progress which should lead the human man to ultimate perfection. In the forthcomming period there would be tendencies which would be continued from the past: "Nos espérances, sur l'état à venir de l'espèce humaine, pervent se réduire à ces trois point important: la destruction de l'inéglité entre les nation; les progrés de l'égalité dans un même peuple; enfin, le perfectionnement réel de l'homme." (p. 250) That is, no inequality between nations, no

inequality between classes and the perfection of the human nature itself, both intellectually, morally and physically. Man have no restriction tied to his own possible advancement of knowledge, of virtue or of the bodily improvement, which was such, as an extension of life in time.

Advancement of science were dependent of, and to, rational organization of society. The scientific advancement would produce citizens that could develop moral and political sciences, which were the basis of rational and political conduct. In fact, Condorcet makes this entailment a necessary connection. The physical sciences spread the habit of critical thought, replacing authority of tradition and custom. Hence, popular education in science especially, were a recipe to ensure progress.

In many ways Condorcet continued the promised utopia from Bacon. What I want to provide is an argument of the discontinuation, which take especially technology into a different perspective. To Bacon it is a material concern of progress. It will help us living our lifes in a better way. To Condorcet it will ultimately lead to moral improvement of man. Making it into a crude statement: technology have become a concern to society itself. Condorcet seems to hereby introduce a new concept, *progress of science* (and may we presume technology) will have impact on moral science and politics, and it will in fact have impact on the order of society itself. Virtue and moral improvement is definitely no longer an individual piety of man with inherited sin, to his God.

Rethorique

The entailment which appear rather straightforward to Condorcet, becomes blurred and opaque when we enter the 20th century. The condition was embedded into society. One important criterion of visibility is rethorique. If we return from the historical moments to present day, we find intresting rethorique relevant for not the least, information technology. I will from this moment on mainly speak about information technology, excluding other types of technologies.

Beniger in his *The Control Revolution*, lists 76 different names which have been used by authors for new eras to come, starting the enumeration from the 50'ties, modern societal transformations. Many of these carry historical connotations such as combinations of "revolution", organizational, educational, computer, information, third industrial, electronics, micro and communications revolution. Others are combined with "age" or "era", postcivilized, discontinuity, postliberal, technetronic, information, communications, computer, information, gene age or era. These are sometimes implicit promises of a golden future, leaving an obsolete

aged behind. Though sometimes they give metaphors of a comming uncertain change in the political and economical scene.

Sometimes the word "society" conflates with "history", giving collapse of work, postindustrial or posttraditional society. Others connotes to "man" and "society", such as lonely, posthistoric, organizational, class, service class, new service, one-dimensional, industrial, technological, postmodern, telematic, etc. Yet other invented words and hence concepts involve separately economical and politico-ideological motives. These sometimes connects to emotionally negative consequenses in the new society. But also "world without borders", or "anticipatory democracy", may point to a taste of "progress" of society. A small number of words ties to technology itself as wired or network.

Even if there are exceptions, the expectations of a new societal transformation seems to be partly dependent on foremost informational technology, and partly drastic changes within society. If my guess approximate reality to some degree, technology should somehow affect or be affected by morals, and not exist by itself in a moral vacuum. It also tends to be the case with the rethorique precisely reflects this.

Information technology

Sometimes rethorique of "information technology" have included occupations which deals with some information: intelligence, journalists, teachers, librarians, etc. Sometimes the label "information technology" have pointed to every possible information-based technology, including pen and paper. But to be sure, perhaps a preliminary limit should be put to the 20th century technology based on micro electronics, like modern media technology, telephony or other types of communication technologies.

Georg Henrik von Wright have said about the information technology that it has "a purpose to overcome the limitations set by space and time for activities which goals are oriented towards humans". As an example of this is that the dimension of time will be reduced to realtime, or perhaps better labeled "zerotime". Electrons take a minimum of time travelling. If I understand von Wright correctly, we don't need months as during the middleages to travel between Stockholm and Paris, but can easily meet each other in zerotime by picking up the telephone and dial. Planning time will perhaps decrease in importance. But we could also add that we have changed the timedimension in the other direction. From immediate time to expanded time, by memories storing faxmessages, telephone, video and sound recorders and lately electronical mail. The timezones blur, and the fax across the Atlantic musn't be read until they wake up

hours later. We expect the electronically based virtual room in the future. Space shrinks when we manipulate reality at a distance (such as through telepresence).

The computer

When the digital computer begun its appearance in Sweden after the second world war, it was called "mathematical machine" or "numerical machine". The Swedish state heavily sponsored its own construction of mathematical machines. It was a state matter. The board of Mathematical Machines (Matematikmaskinnämnden) begun to build there own machines. The first one was BESK, an acronym for "binary electronical sequence calculator", and later came the more technologically innovative BARK. The board consisted of representatives from the military, industry and research. BESK were in fact for a week or two, the fastest computer in the world. Soon though, the were no state sanctioned support for the board and its commitments, its construction of computers, or the future of its developed theories on computing. The military bought there own devices, industry bought some of the employees (some of the staff which runned and improved the machines) from the board, and research weren't powerful enough to get support for the idea of an extended life within INA, the institute for numerical analyses. At the end of the 40'ties and beginning of the 50'ties, the state probably regarded the needs of computing would be quite satisfactory with these two machines for a long time ahead.

When IBM introduced computers in Sweden in the 50'ties they were called "electronical brains". Suddenly the use didn't stop at the abstract borders of mathematics. Later dataprocessing was better understood and spread, whereby the advanced calculator was reduced to a "dator". Programming languages and new theories reconstructed the concept of what could be done. Sometimes computer with a swedish accent "komputer" have been used. Par example early by von Wright and recently by Lars Gustafsson.

Replacement technology?

Perhaps some information technology is a replacement technology? In that is the case it would probably inherit some morals from the technology which it replaces. If we take Internet as an example, the worldwide web maybe replace historical media like different kinds of broadcasting, periodicals and newspapers. The audience is cruedly considered as a collective group, and minor tailoring might be done. Single producers manufacture products accoring to the broadcasting model, and the worldwide web will probably look more like the unpersonal television: as many as possible should be attracted, to the lowest possible cost. The content will

be shaped accoring to the form it supposedly inherit.

But if we consider the Internet as mainly replacing traditional two-way communications, such as interpersonal dialogs, personal letters and telephony, there is no single audience and the content may shift accordingly. The essence of Internet will be personal forms of communications, extending from email, Internet Relay Chat and other forms of direct chats, mailing-lists, newsgroups and individually sculpured homepages. The multiple of audiences and producers will intermingle, which rather create the dynamic chaos of network switching than a static hiearchy of plans.

Already, in the 20th century telephony has to some, at least marginal, extent replaced letters, and likewise television replaced newspapers, movies and the theatre. The intresting question is not wheather the replacement is partial enough to consider it as replacement or not, but to what degree introduction of a new technology changed society or not. Restating it into the technological condition: to what extent did the accompanying moral let the use of technology be shaped into a new form?

Perhaps nothing more pregnant than precisely the idea of the freedom of Internet states a possible moral attached to a new technology. It's redundant to repeat the history of censurship, which shaped also much of the possible content of litterature and newspapers. But I will return to two possible moral constraints that shape information technology today, and perhaps in the future.

Dynamic technology?

There seems to be something which complicates the matters of information technology, at least if we regard the computer as the kernel of future developments. I believe it's becomming more obvious that the *software* is the peculiar mark of information technology, and the change that comes with it. On the other hand sofware manufacturers like Microsoft today, can obviosly dominate and restrain some innovation. Possibly, information technology has no closure. Bits as information have often more persistent life, than atoms as constellations.

Hardware technologies such as cars, doesn't alter that easily, even if it could to some degree be done in theory. Henry Ford could have made more archetypical cars that easily were disassembled and assembled, not only replacing an old motor with a new updated one, but also everything else such as another kind of motor. It wasn't perceived from the beginning that fate of the car would be, to be driven by petrol or gas. At first both the eletrical car and its

compeditor seemed to have equal chances, technically. But the oil industry and Standard Oil made the odds uneven, by the time of Henry Ford.

The industry of movies also made technical choises, which either lead to the survival of some or death of others. For instance sound, colour and attached technology, existed long before Hollywood reintroduced the inventions and uses. Certainly there have been attempts to introduce technologies which didn't survive, and should plausibly be explained rather by the fact that they were bad technologies, and not that they were excluded by some moral.

To give an example, in 1959 William Castle invented some tricks, which should give the audience the sensation of terror: the Percepto. Each cinema chair had an electronical generator attached to it, so that the viewer could get small electrical shocks at times. The movie *The Tingler* showed a gigantic worm which multiplied by bitting the victim. The bitting spread some substance into the spine and ultimately lead to the explosion of the victim. The only way to stop the terror of the worm was to shout and scream. In the movie there comes a moment when the screen suddenly becomes blank, white, and simultaneously a voice says: "Ladies and Gentlemen, please do not panic, but scream! Scream for your lives! The Tingler is loose in *this* theater, and if you don't scream it may kill you!" Castle hired cigarette girls which where among the audience, with instructions to scream highly. From the soundtrack of the movie there are also voices: "Help!", "It's on me!", "Look out!" etc. And as if this were not enough, the electronical generators were used to give the audience small electrical shocks to get the feeling of the Tingler were at them. Well, as you know the Percepto wasn't a technology that stayed for very long. (p. 29)

Information technology as new technology with moral constraints

If we look at information technology as a *new* technology, then what are the news? The debate among computer scientists and others in Sweden have concentrated on something which they call *a new way of thinking*. Already in the late 70'ties and beginning of the 80'ties Lars Christiansson made the first statement of it clear, that even if previous technologies have changed the mechanical work in relation to man, in future they will would change they way humans think. I don't think the worldwide web alter thinking into a non-linear way, though we might change habits of reading. I don't think information technology will change the way we think, but I *do* think it will change they way we might live. Bacon might approved this statement. But then regardless of thinking habits, information technology will change *within* the borders of moral constraints.

Take the example of network. Negroponte writes: "The true value of a network is less about information and more about community. /.../ It is creating a totally new, global social fabric." (p. 183). David Clark in an RFC (Request for Comments), says: "It is not proper to think of networks as connecting computers. Rather, they connect people. The great success of the internet is not technical, but in human impact. Electronic mail may not be a wonderful advance in Computer Science, but it is a whole new way for people to communicate." Network thus may change social habits of communication. To a large extent already, social interaction takes place through telecommunications, be it questions of love, war or money.

The prevoiusly mentioned question about *freedom* is a moral constraint to what the network might be used for. Still it is rather unclear if regulations and which kind of regulations, national or international, should be put to the network Internet. Still no comparable discussion of limits have been proposed for interpersonal contacts, through telecommunications or simple mail. But perhaps it will be.

Network gives the opportunity to freedom of social communication never before envisaged. And Condorcet may be partly right, if the critical and non-authoritarian scientific spirit have to spread, in order to get a grip of the information qualities. Truth never have been warranted. But now it becomes more obvious — some say.

Another constraint I find remarkable is the search, or hopes, for information technology as a *universal solution* to problems. First of all one could be suspicious, if at all there *are* problems of this kind. But often humans have had hopes for a medication that can cure any disease. A language that will help us all world wide to communicate with each other. A principle that all forces may combine to. A library where we can store all possible knowledge that can ever exist.

Today the computer and information technology have become a possible cure of almost such a magnitude, that they are considered as universal solution to all sorts of problems. Some say it will be a new society just around the corner. Many of the social calculus problems can be solved, perhaps. Others say society will stay the same, but technology will be radically different. People may improve their lives, but the problems of society, cannot be solved by new technology.

Of what the future yet may be, it hinges on the technological condition.

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