Technology, Culture, Society and Man

Technology makes out so central an element in the life and mind of modern man, that it is impossible to think of this life without this element mentioned. With the term 'modern man' I think not only about the purely temporal aspect which characterizes individuals living in 'modern times' and i.e. in a specific historical period and more specifically in newest times and especially the latest times, but I think about what is common about the form of life, the content of life and form of mind that characterizes these individuals as members of a high-technological culture – the many differences that yet exist not taken into consideration. In other words I think mainly about us who live in Northern Europe and North America today. Of course we can try to imagine what life would be like for us without access to technology and try to imagine what it would be like to be without knowledge about this, but those imaginings which this doing would imply would probably either relate to empirical matters on the background of imagining what life is like where technology is at a low level, as we 'know' it from the so-called 'third world', but it would still be seen from the view of the technologically influenced mind, which we can hardly escape or get behind.

If this is true, then it is part of our understanding of ourselves as human beings, i.e. as cultural beings, to have an understanding of the essence of the role of technology in our lives. Thus e.g. to have an understanding of technological specific problems and solutions. But the most basic understanding of technology we find – as we shall see – in an understanding of the many aspects of which technology is part or holds itself. Such an inclusive attempt is identical with a philosophical attempt to understand technology. I here understand a philosophical access as an example of an attempt to think together all aspects of a thing or theme and as an example of making a more precise critical conceptualisation of a problematic matter. An investigation of these separate aspects taken together makes out a synthetic thematizing of aspects of technology that various researchers and philosophers have made either their sole object, or made one of several objects for investigation, therefore representing narrow or broader attempts at investigation and understanding. These examples of understanding thus represent narrow or broader conceptualisations of technology. The attempt here is to show that technology can be best understood in the broadest sense – according to its dimensions.

My aim in this paper is to try to give an overview of the content of these dimensions as

themes and thus present a certain overview over the content of these themes and thus in a broad sense contribute to a synthesis of understanding by attempting to uncover and make precise some of the lines of connection that exist between the themes for discussion of technology. Doing that I shall perhaps present a picture of technology which is not in accordance with the more traditional picture and shall perhaps transgress some widespread notions. These notions often express a view of technology as something purely material – as material objects – and therefore as part of a field the content of which is close to the field of nature and therefore theoretically speaking and concerning understanding is basically close to or closest to the natural sciences. I shall try, though, to show that technology is more than that, and that technology, even seen from a material view, is best understood in the broad sense. It is my contention that thinking about, researching and understanding technology is not only a matter for or close to the field of the natural sciences, but is a matter for the humanities and social sciences. The boundary between these fields and their objects is not or ought not to be so sharp as is often considered.

As usual when one attempts at an understanding of a rather complex matter or a rather complex field of matters, it is desirable to take point of departure in a basic understanding that is common to and collects the possible aspects of the matter and thus helps the understanding of the connections between the aspects. Such a basic understanding tries to catch the essential properties or aspects of the matter – tries to determine its ontological status. In its shortest version such an attempt can have the character of a definition – and in its most ambitious version of a definition of essentials. I.e. it is a definition which exhaustively presents all the necessary and sufficient properties which the object has as represented by one term: the concept. Already here is opened up of a general problematics that has not only to do with technology, but has to do with forms of existence of objects in general, and the concepts that we have of them. This is not the place to deal with this matter in general and is not the place where it should be resolved whether essentialism or modified versions of it is a sound metaphysical position, but it is my contention that at least technology does not and its versions do not have a nature of essence and cannot be made the object essentialistic or reductivistic considerations.[1] Initially this ought to be obvious, if we just see that technology does not consist only of the many different material objects that we intuitively identify with technology, for these objects somehow imply the use, the users of the objects and the frame or contextf(s) within which these users exist. There is, although, a view on technology which ascribes technology an essential nature in the sense

of inherent logic. This view has been called an ”essentialistic” view on technology, but this view is – as we shall see – not identical with an essentialistic metaphysics in general. I.e. it is not necessarily identical with the extensive view that something exists, namely substances that make all the respectively different objects what they are or must be because of inherent, essence-causing properties which are fundamentally causally determining for their interaction with other ”things”, and that this essential nature can be possibly caught in a definition.

Traditionally speaking we have two terms concerning technology. The primary term, of course, is ’technics’ which has been developed or derived from the Greek word τεχνε (techné). The Greek term no way, however, denote only material objects, and i.e. – in order to be precise – does not denote the nature of objects, namely as tools and perhaps as apparatuses and machines, but rather denote a capability or the craft of a craftsman, and i.e. denotes a capabililty-based and perhaps artistic capability-based overcoming of material-, social- and political obstacles. This craft therefore makes out the condition for making objects from materials of nature – for making artefacts.

Yet the modern use – derived from the term ’technics’ – in the mind of many people refer to material objects, and i.e. to tools and etc. To this adds the term ’technology’ – a compound of technics and logos – as a term for a knowledge of technics. This tradition – this distinction – yet is rarely no longer maintained. There may be two causes for this. The first cause may be the one that affects much linguistic development, namely that common language competence cannot operate with more than a certain amount of nuances and therefore with a certain amount of words and therefore again often operates with fewer or only one word in the context. The other cause might be that the distinction – as we will see – in principle makes no much sense or no sense at all, and that it is best to choose the term which best covers all the aspects of the object with which we are concerned.

All this should make out the background for understanding the future of technology and its impact on our lives concerning cultural and working-life aspects.

The “Essence” of Technology. A Preliminary Stipulation

In spite of the contention that technology has no true essence in substantial sense, it is of course not excluded, that it has an essence in a different sense. This sense of ’essence’ might e.g. comprise the connection between objects of concepts which are unconditionally necessary for understanding an ”object” as being an example of technology and a behaviour as being technological. If we can establish such a connection, we have caught the ontological features that make technology possible, and which therefore together make out what we with a modification might call the ”essence” of technology. This essence may be coined out in a definition which so far reads like this:

Technology is an example of operationalized or operationalisable knowledge about – and most often is an example of several operationalised cooperative elements of knowledge about – working principles with an intended instrumental function for fulfilling goals of action.

The content of this definition shall be dealt with and explained in the following.

Such a definition of course does not anyway pretend to define technology exhaustively and thus make possible an agreed or safe settlement on the question, whether this or that object falls under the definition and therefore can be seen as a true example of technology. The function of the definition is to be tentative or rather is to give a foundation for an overview and for a notion of determining or characterizing limits and thus to create the foundation for a testing and explorative and clarifying delimitation in relation to objects of nature and in relation to human made objects and perhaps human acts which are not examples of technologies or do not use technologies.

Means and Instruments

The definition does not tell anything about in which medium the operationalization takes place[2] or may find place and therefore does not immediately say anything about possibilities of delimitation.

According to the mentioned definition of technology, then technology is part of human actions, namely the aspect of actions which does not only make use of the being's own body, but beyond that makes use of means for obtaining of goals. But not all means of action have the nature of a technological matter. There exist very few means in a context of action to which can neither be ascribed the status of a tool nor status of operationalization. Most of the food that we eat of course has the status as a means, but it can hardly be ascribed technological status. Of course food serves as a means for survival, but we can hardly without speaking metaphorically consider food as an instrumental or tool-like means. The definition only says, that the means that have an intended instrumental function is an example of technology. In spite of this demand, the user needs not to be fully conscious of the intention and needs not perhaps also know (have knowledge about) all the principles on which the success of the outcome depends. Yet the user must have an in principle phraseable intention with his or her use in order for the use to be called technological, and there must be someone who has created the knowledge about the working principles which the specific technology expresses and utilizes. Food does not become technological in itself till when it is object of very specific goals and principles for their obtaining: e.g. slimming techniques or specific food oriented health techniques. Food of course can be made the object of technological processing of both gastronomical and industrial kind. In the first mentioned context focus is on the purpose of the experience of taste, and in the second context the purpose of the focus is mass-production.

If these demands are not presupposed, then all human use of means and behaviour related to means is technological, and the same is true of the use of means by certain animals. The absence of the demands will first of all dissolve the meaningfulness of the use of the term (concept) technology and secondly would presuppose an intending and knowledge which is hardly present in most animals except in higher primates. If we therefore use the term technology about use of means and tools in other cases than those required by the demands of the definition, we must consider this use as metaphorical.

We probably also have to say, that much of the content of dealings that human beings have with each other has the character of "use" and of use as means, but we will hardly talk about use as a means and therefore talk about outspoken use as means or tools of technology except in cases when this use is strongly one-sided in one person's or group's favour and calculated and possibly depersonalizing and dehumanizing. In normal cases in a

human context, even use of other human beings as a means contains some personal human relationships.

Yet technologies exist within this context ranging from techniques of attention, techniques of seduction, techniques of love and techniques of sexuality ranging to to couple- and group therapy and to techniques of controlling behaviour and efficiency of labour.

Non-material Means

Not all means have yet a material character. Certain technologies of physiological, therapeutic and controlling kind are solely based on a use of knowledge about bodily and psychic functions. Here is thought, of course, specially at body therapy that does not use tools: gymnastics and body exercises[3], massage and the like, talk therapy, hypnosis, techniques of breathing and the like, and controlling through affecting the emotions: 'technologies of mind', 'technologies of mood'[4]. In these contexts, of course, use of tools may take place and very often takes place. The rich technology that in most recent modern times characterizes this context are known from fitness programs, medicine and surgery of a more or less advanced kind, ranging to psychotropics.

Cultural Techniques

Cultural techniques are the techniques the purpose of which is to secure the cultural and social integration. I.e. techniques that should develop specific desirable patterns of behaviour on the basis of patterns of way of experiencing by the members of the culture and the bearers of culture and make certain that these ways of experiencing are preserved and mediated to new members of the culture. The integration itself is an expression of a certain mark of unity of experiencing and therefore a union of experiencing in order to secure an experience of connectedness. The essential factor here is the learning of norms, integrated in emotional life. These sorts of techniques in a strange way unite or make goals and means coincide and therefore often make them seem self-evident and opaque to the bearers. The

means which are used – as mentioned – are means that shall secure control of ways of experiencing, and here not only knowledge about the world in general make out an indispensable element, but especially knowledge about which features of the world that are important and how things should be understood on this basis. The ”means” in this context concerning the consciousness internally is our emotions and attitudes which are developed with a specific cognitive and affective aspect through specific connectings in order to secure certain experiencings[5], and the outer ”means” are overall made out of rituals and traditions: the repeated content of which forms and secures the content of emotions and attitudes. We might in this context talk about how the culturally and socially implicit and explicit values aims at being secured through internalization in the emotional links.

Integrative techniques, though, are rarely the only techniques in a culture. Techniques also exist the purpose of which are to secure existing power relations or to secure existing power relations by other means than accept or as cooperation. These more controlling techniques we shall return to under the heading of social techniques.

Artefacts

The essence of artefacts are determined by the function they have or by the role they play; and the type of artefacts which are of a truly technological kind are artefacts, i.e. tools, appliances and machines which have a specific purpose-fulfilling function according to given principles. Most of the objects by which we are surrounded – in spite of level of technological development – therefore are examples of technology, but the amount and their technological complexity increase with the level of technologizing.

Non-technological Artefacts

Non-technological artefacts are characterized by either not having an internal operationalizable function or by not having a specific purpose. Houses have technological nature or status according to that consideration. They operationalize specific principles for

a place for living with the purpose of procuring shelter and comfort by means of less or more developed technologies. Le Corbusier could thus dub houses as ’machines for living’.

Objects of decoration without operationalizable function, of course, have the purpose of giving pleasure to the viewer, but such a fulfilling of the purpose is not guaranteed. The absence of an operationalizable principle excludes the guarantee of success and makes success contingent or dependent of other, external factors. Created objects of decoration are, of course, always created by means of technology, but th are not necessarily technological in themselves. Technological objects can on the other hand be attempted to appear more or less as decoration or as decorated or to be adapted in appearance and utility, so that to their function is added an element of something inviting and pleasantly interesting: an element of technological aesthetics. The same goes for other elements in our lives as clothes, perfumes, scents etc.

Works of Art

Works of art can hardly be called technology. The production of works of art use techniques in every and each link, but the finished product is not in itself an example of technology. This applies to the singular piece of work of art, but it not least applies to the reproducible work of art and staged or rendered work of art. Pictorial art in a broad sense is an example of applied techniques, works of performed music is based on musical instrumental techniques and of techniques of playing together. The accessibility of literary works of art is related to the development of the art of printing etc., and the staging of plays for the scene and playing from the score also needs learned technical skills. Works of art as finished products although also use techniques as e.g. style and contexts of meaning at any link and i.e. principles of meaning and sense that transgress common principles of meaning and sense and create experiences which are not the products of principles. I.e. works of art create experiences of cognitive and emotional kind which have both a unity of commonly human content and the character of something singular and something uniquely subjective. The effects of works of art therefore are never exactly the same.

This outlook on works of art is of course an example of a strongly limited picture of this kind

of ”objects” and only intends to place them in an ontological context.

When we are trying to find the border between the sort of means that are of a non-technological kind, and the means that are of a technological kind, we do not have other means than our conceptual intuitions and our reflections on their content with the purpose of making this content meaningful. Whether language as a whole or parts of it is meaningful concerning its references, and whether gymnastics or other self-influencing techniques based on knowledge are techniques that do not use tools, but are still to be considered as techniques is a question of individual notions, but not only that. The basis for these spontaneous conceptual notions may be attempted constantly clarified and brought in union in thought in order to be tested for its meaningfulness in the context.

Views on Technology

As can be seen, it is my contention, that technology is a very complex matter with a general complex of causal factors and relations of causes within different ontological spheres. This means, that a focus on one of these spheres make space for a possible explanation of the essence or role of technology, but this means also, that such an explanation is both limited and insufficient in itself, and it means also, that such an attempt expresses som preconditions in the view of technology which reflect other factors (limiting as it must always be) of cultural, historical and possibly personal kind. The philosophical access to a matter by nature attempts to transgress this limitation. An attempt of this kind, and i.e. an attempt at a ”full” understanding of the essence of technology includes an understanding of these factors. I.e. includes an understanding of the factors that led to this or that understanding of technology.

The problem with the different focuses in the views on technology is, that they use different conceptual apparatuses which can make it difficult to compare the views. Seen from their own point of view, they do not deal with a theme concerning technology, but tell the (full) truth about technology. Seen from another – overall – view they only show part of the truth, and their conceptual apparatus should therefore be translated into a synthetizing conceptual apparatus.

The following will make out an attempt at showing some views on technology on the background of the preconditions which the view expresses or on which it rests. When I distinguish, it is because many views do not relate to their own preconditions or do not do so explicitly concerning all their preconditions. It is, of course, always a problem, when one tries to bring views and their preconditions under categories. This problem consists among other things also in the arbitrariness and i.e. lack of certainty concerning the categorizing – a lack of certainty which will and must always exist. No overall system of categorizing system exists – and if it did, the world would look a lot different, but what exists is more or less purposeful ways of dividing categories and their content. The purposefulness is secured by overall and mutual meaningfulness in which the (part-)categorizings can be possibly placed. If the categories mutually elucidate and explain each other seen from an overall view, there is a great chance that the categorization is purposeful.

An attempt at establishing a purposeful categorizing system concerning technology must of course take point of departure in historical, existing views and try to piece these together into a coherent view. Such a doing places existing views in a system from where these are viewed. I have already indicated such a ”system”, but will indicate how this came into existence by moving the opposite way.

The Role of Technology?

The most comprehensive and central question concerning technology is: which role does technology play? The answer to this question depends, however, on which factors one ”chooses” to include. It is a question, whether one chooses to look at technology as tools instantiated, ie. whether one includes the purpose of technology, and therefore includes the causes or reasons for developing technology, and again whether one includes the cultural and therefore historical conditions under which technology develops.

The Function of Technology

No one will hardly disagree, that technology has a role. But whether one sees this role as something that can be understood from the object itself – as an expression of the object itself, is more doubtful. From the view of this doubted – but logically possible position – the role of technology is identified with function. These two terms need not, granted, represent conceptually different matters. We need not distinguish between the cultural role and the function of technology, but when we look at the technological object isolatedly, it is purposeful to reserve 'function' to the description of the content. This cannot be done, though, without understanding the purpose in accordance with which the function was intended. According to this view the purpose therefore makes out the constitutive element of the function. This ought to be obvious to anyone, if one thinks that no one is able to understand an example of technology, e.g. a tool, without understanding with which purpose it works.[6]

Technology should therefore be (best) understood internally seen from a functional angle. This function is – as mentioned above – therefore not necessarily instantiated in a specific medium. Inventions represent different ways of producing means for obtainings of goals, but as many means can in principle obtain the same goals, and as the means which do this in the best way, and i.e. fastest and with immediately smaller costs and risks for the user or the owner, there therefore is strong attention to this aspect, and there are almost no limits to the inventiveness that exists. We are here getting closer to the core of technology, and i.e. the interest in efficient intervention into the world and control over parts of the content of the future through iterative opportunities for control. Technology can therefore not be understood only through description of purpose and function – cannot be understood from a purely descriptive angle – but can only be understood, if the relationship between purpose and function is included, and i.e. if efficiency is included. Various technologies are almost always possible as means in relation to a specific goal, but the efficiency of the means varies. The fact exactly that technology is not tied to a specific medium, but is concerned with efficient obtaining of purposes by way of the means that nature, social conditions and the specific historical situation of knowledge makes possible, means that this field cannot be made the object of thoughts about essence. Machines for production of energy exist of many kinds today. There are both machines producing power as steam engines, machines based on petroproducts, nuclear power or wind- or hydropower. The difference in efficiency between these types of power-productions is obvious and so are the costs, and the technology which is most efficient in its function will normally be preferred unless it is too

expensive for the user, or unless the source of energy is not accessible to the specific user or unless that other natural conditions and costs for nature, or cultural or political factors are present and counterwork this tendency. Technology therefore in its nature is a normative matter, and this means, that technology represent values somehow and always is part of axiological contexts. This is hardly surprising, as this is the case concerning everything that has to do with human purposes. Technology therefore is no way to be understood as a neutral matter.

The Roles of Technology

The role of technology can only be understood by the role it plays in specific contexts, and we therefore have to speak about the roles of technology. In order get a picture of these roles many factors have to be taken into consideration. The factors we speak about are the factors which condition change, development or hampering of technologies.

New Possibilities, Reliefs and Power

In the context mentioned the basic factors have the nature of truisms, and the awareness of them often only is only present, when one reflects in a more abstract sense over one's own doings in relation to nature, to human beings and society and discover, that man's relation to nature is a relation of dependence – man being the dependent part, and that this dependency can be made less toilsome, can be relieved and thus open new opportunities and make life easier and less unsecure by means of technological means and inventiveness and cooperation with other human beings. Less toilsome by supplanting or relieving human toilsome labour with other energies and less unsecure by procuring means which can satisfy needs or desires immediately when necessary. Of course these basic factors cannot be separated, but for reasons of understanding a distinction is analytically necessary. The first basic factor consist in the will to seek new means for procuring of other, desired opportunities in life and originally for procuring means for opportunities of relieved life. Thus also for producing technology to be sold as commodities in the market. In a less

neutral and value-loaded formulation of the desirable opportunities in life, this is an expression of a will to establish lasting conditions of power, and here technology often makes out – and at least does so today – the most essential factor for such conditions. Much technology that we know from everyday life today in high-technological contexts, yet, has the character of technology of entertainment (condition of power over a life of boredom created by a technologically inactivizing culture?), and this factor can contribute to prevent us partly from seeing the other side of technology which is the history of overcoming[7] obstacles causing needs to be unsatisfied, and the history of the establishing of power[8]. Even if the last factor mentioned is still made apparent by weapons and warfare technologies. The second factor mentioned above concerns inventiveness and its foundation, and i.e. the factor that concerns being able to see the opportunities for satisfaction of needs and desires through possible, but yet not existing means. This inventiveness consists of a hardly specifiable capability to combine a more or less implicit knowledge about natural matters and materials, and especially about laws of nature, with the efficient operationizable opportunities that this knowledge ”promisses”. Thus inventiveness is not a separate factor in the context. It contains a foundation of purposefulness and a foundation of knowledge which together combine these in an absolutely new way, when this functions (best) for obtaining specific goals or perhaps for finding which new goals that newly invented means or instruments could be used to bring into existence. This foundation may consist in individual knowledge, but of course it grows in richness, if a specific culture has established such a developed foundation, and if more people with this foundation are involved in the same project – if we speak about established teams working on the project. To such an established culture belongs therefore an already given technology and culture of technology. Even if the mentioned inventiveness hardly in the end is specifiable as a capability – as mentioned above – because it contains an essential element of imagination, yet the foundation of knowledge may be attempted systematically developed, as we know it from educations of technicians and engineers and technological schools and institutes.

A basic factor is – as mentioned – human will to control the contingent conditions of human dependency on nature. This factor has been called the ”will to control over nature” (in German ”Wille zur Naturbeherrschung”). This insight was formulated by Descartes among others in a period, when there was a new focus on this factor among members of a small group belonging to the intellectual elite. An insight expressed in the following words: ”how much different automats or moving machines can do for human industry…” exemplified by

”…the grottoes and the fountains in the gardens of kings..” and ”…the clocks, the artificial fountains, the mills and other machines…” as expression of ”…a practical philosophy by which through knowing the powers and effects which are in fire, water and air, the stars, the heavens and all the other bodies that surround us, as obviously as we know the techniques of our craftsmen, can make us the lord and master of nature…”[9] As such this view expresses a dream which has been present since Antiquity, but which no one dared to dream truly of becoming true then. [10] The optimism expressed here has ever since been present in large parts of the views of technology, but the view has definitely not been alone. We can thus find views on technology ranging from the most outspoken naive optimism to a pessimism concerning technology or an outspoken hate to or fear of technology: technophobia. While it can be said, that the outspoken optimism of technology has a common core which more or less consists of the just mentioned, yet there is not much to be said about this view, because it is just a view which finds its foundation in its confirmed and self-confirming expectations, in contrast to scepticism of technology which is a view somewhat more nuanced.

While the reason for optimism is one is, then the reasons for scepticism or level-headedness are plural. These include also outspoken hate of or disregard of the object. These reasons all reflect different values or views of values from which technology or specific technologies are viewed more or less positively and/or negatively. The outspoken optimistic view focuses solely on all the opportunities for improvement of life that technology holds. The outspoken technological optimist sees technologically speaking only the progress and identifies uniquely (all) progress with technological progresses. There is therefore an inner relationship between the values according to which or from which technology is assessed, and the (in principle descriptive) model for explanation of the essence of technology or the view of the ontological status of technology linked to this estimation. I will not allege, that it is impossible to get a true or even an approximately true picture of technology for this reason. My contention is, that only the undimensioned, narrow models of description give a false or incomplete picture and therefore either a too outspokenly optimistic or pessimistic view. As we cannot, the other way round, know anything for certain about the reasons of singular individuals for their views: whether singular views give reasons for overall views or overall views give reasons for views of singular individuals, we will have to look at the preconditions of the views.

A good example of this in an optimistic – and purely optimistic – context we find in Friedrich Dessauer.[11] Dessauer considers technology as a separate and autonomous metaphysical sphere the content of which exists in itself. Of course not as a sphere which in its nature materially speaking is like the objects technology also consists of, but as a sphere which exists by force of the discoverable solutions to problems. Therefore not a sphere which by its nature is material as the objects that make out technology, but a sphere which exists because of the discoverable opportunity for problem-solving within this particular sphere – or this ”realm” as Dessauer puts it. This is an addition to a Kantian three world ontology and thus a four world ontology. The fourth world therefore exists in its own right before the inventor invented it or to put it more correctly: discovered it. The inventor should from this point of view more correctly be dubbed the discoverer:

Among the objects of the fourth realm there is some essence which has passed out of it by means of human action. The technical or invented object which is perceived in the external world like a tree consequently implies an encounter of a different kind than the encounter with a natural thing. It is a re-seeing: and still more than that, a re-finding – of a third thing.[12]

This ontological status implies an independence in relation to mind – a neutral value – in relation to the use which can be made of it, and this view on the independent existence of technology does not include or accept the cultural dimension and the dimension of costs concerning technology. Still technology would never be developed, if human mind did not turn to this realm, but in the way one might consider the existence of certain values as independent of the content of mind, but not existing without minds, the same way one might – with an analogy – consider the world of technology as a value in itself, a discoverable value which has its own logic of effect because of this, a logic which is the logic of progress:

Our contemporaries complain about “technological progress”. But, in truth, no one opposes this power of the fourth realm, permitted – indeed, demanded – by mankind, continues to flow onward, probably to be stengthened from century to century; it will continue the transformation of the earth so that all science fiction and utopian visions will be put to

shame.[13]

This logic of development and optimism is found also – as well-known – in more traditional Marxian thought. Here yet with an equally strong focus on another aspect of the logic of development namely the unequal distribution of resources and the painful consequences which the struggle about access to and development of the means of production has to those who are exploited and weak. The necessary and positive development must go through stages of misery in order to obtain full flourishing in communist society.

The more level-headed, the sceptics or even the hateful viewers are, of course, in the same situation concerning mixing values and facts. Their negative attitudes also contain a mixture of specific ontologies and values.

Also on the background of the earlier mentioned basic factor concerning development of technology, namely the will to find new means, it is clear, that it is attitudes within this field which can hamper or stop technological change and development.

This is stated without an assessment of whether this is good or bad. We cannot assess the reasons or motives that drive the resistance against technology without relating them more basic values or values about which we can reasonably agree.

Traditionalism/culturalism

As a theme in the philosophy of technology traditionalism has two sides. As a cultural view traditionalism is culturally conserving. Traditionalism is a ”view” stating, that specific or perhaps all cultural features represent or express values in themselves which should be preserved. Such a view can represent either an opposition against technological renewal because of opposition against cultural change or can represent an opposition against just cultural change[14].

In the first case we find the will to impediment of technology which we know from many

traditionalistic cultures. The Amish people and the Shakers in The United States are recent and well-known examples in the Western World, but large parts of the pre-romantic movement (e.g. William Blake) and the romantic movement, parts of the socialistic movement have also placed themselves here as an expression of opposition against industrial technologizing and often as proponents of good craft. As exponents of this view one is not absolutely against technology – but is proponent for technology being used and preserved at a certain level. Traditionalism is most often very diffuse in its view on permissible and not permissible changes and is unable to express sharp lines or clear limits. The limits are most often experienced through the expressed opposition against technology, and all traditionalistic cultures are therefore not against technological goods or they can be divided in their views. We can see this case as some sort of cultural fight and an expression of a cultural struggle for self-protection in big parts of the world today. A cultural fight in which technology plays a more or less important part. Weapons technology seem yet to have an attraction in most places and to be acceptable. It is even possible that strongly traditionalistic cultures can play a leading role in the development of new technology as has been the case in The United States in recent times. The truth of this contention need a longer support and explanation which I shall not attempt here, but mentioning that the cultures of The United States are many and some of them progressive, but the majority culture is traditionalistic.

In the second case we find examples of views on technology which think, that the role of technology is to preserve and secure existing culture or parts of it, but thinks so as a descriptive view on technology – from a meta-point of view – that this is the function of technology, that technology serves norms. The views on technology which say, that this is what technology is about, can exist yet in several variations according to their metaphysical or axiological foundations. The uniting factor in these views is that they consider culture as the dominant element in the development of technology and therefore as the foundation for understanding and researching in technology. These are constructivist views on technology. I.e. in this view examples of technology are constructs with cultural/social purposes.

If the purpose of technology is considered to be cultural dominance, then we have a view that equals the view of Foucault.[15]

In this view technology represents a social logic of power and has a logic of its own and

does not primarily represent a logic of control over nature, and in this game of logic human beings are instruments without exception. The trends of development can all be understood as examples of power-relations and striving for preservation of power, and the trends have no intrinsic understandable logics apart from the logics of power in various contexts.

If in contrast the purpose og technology is considered to preserve and especially to preserve a specific culture including certain technological cultures, then we have yet another view on technology. We here talk about technology as having a normfulfilling function, and that technological development therefore is determined by or co-determined by the aid that technology can yield in support of certain norms. An example of this could be the development of the automatic door closer. Instead of a note on the door with a request for closing the door in order to avoid theft, draught, waste of energy or possible spread of fire, the automatic door closer is developed thus heightening the possibility of fulfilling of the norms in contrast to the mere request. This view is represented in the thinking of Bruno Latour from whom the example has been taken.[16] Latour has – if anyone – drawn attention to the fact, that cultural features and therefore also technological cultural features such as research- and laboratory cultures etc. are determining or co-determining in thechnological development, and that an understanding of technology therefore includes the cultural dimension. The study of technology thus has a hermeneutic dimension: a sociological and historical dimension and therefore is a humanistic disciplin.[17] The history of technology therefore is a very essential disciplin in the context we are researching, but I will only touch it hintingly here.

Even if both of these views – in their more radical versions – do not tell the whole truth about the essence of technology, still they tell a very essential truth. The essentiality of the cultural dimension was mentioned above and shall not be repeated, but Foucault's awareness of the social dimension of technology is very essential. This is another dimension than the cultural technological dimension mentioned above. While the cultural technological dimension is understood as having an integrative function, social technologies have more a nature of control. Some people will deny the special status of the integrative element, but I will contend, that there is a distinction. The integrative element is based on emotions and attitudes, but with a possible understanding of their reasons and functions as a foundation for coordinations of actions. Something which concerning the last aspect is only or best known from a reflective culture.

Social technologies are necessary in any societies just a bit complex, because social cohesion is not secured only by regulation of emotional life and homogenous ways of living at a minor level. The more complex societies are, and the less they are characterized by equality, characerized by lack of influence of the many and characterized by conflict, the more these technologies are needed. In a complex society as instruments needed to solve problems of complexity with the impending danger that these technologies become complex themselves, opaque and unmanagable and lose their function and cause problems which are alleged only to be solved by new technological tools in the hand of a group outside democratic control: namely technocrats.

Technocracy therefore makes out a constant danger. Both under the conditions of societies characterized by lack of influence of the people and under condtions of societies characterized by conflicts and under both conditions social technologies serve primarily as instruments to preserve power through control. The role of the social technologies is to ensure as little opposition as possible and as much adherence and subservience as possible in these contexts. The instruments for this is control over minds by disciplining, indoctrinizing, speak to the fear in individuals and groups, and where it is necessary to forbid information about actual facts (censorship), by concealing the truth of matters and distorting information and produce information that is faked and false (propaganda). Media technologies play a central role in this context with their instruments for influencing and thus also play a central role in the struggle for dominating these instruments.

Inattention or Indifference

Inattention or indifference towards technological opportunities or possible development of technology is an example of an attitude of not feeling that anything is lacking or of not feeling that technology might influence one’s life significantly. I.e. that one does not miss anything or does not seem to miss anything which technology might procure This ”attitude of luxury” is identical with the absence of the formerly mentioned will to search for new means for procuring different, desirable opportunities in life. When I dub it an ”attitude of

luxury", it is because we are here dealing with an extraordinary situation compared with the need that the greatest part of humanity have always suffered. And the priviliged situation of these bearers of this mentioned attitude can hardly rest on their own work. If the bearers of such an attitude make out the dominating power factor in society, then there is no or only little or scant technological development. This only happens presumably in situations, when the production of goods is made by large amounts of slave labour or slavelike labour. In such situations incentives to development of technology is little, perhaps except for technology in the field of warfare, because under such circumstances such technology is necessary and object of special interest. We find examples of this – as Koyré draws attention to – in Ancient Egypt, Ancient Greece and Ancient Rome, where technological development was astonishingly slow compared to the development in other cultural spheres.[18] Yet there are other hampering factors.

Scepticism and Hostility

A special aspect of the just mentioned, but with a more outspoken cultural dimension, could be the aristocratic disgust and disrespect for physical and manually practical labour which an intellectually active elite develops and "hands over to tradition" and in Antiquity turns to a positive focus on vita contemplativa.[19] This view is not foreign to the intellectuals within the humanities of later times, though of course there are exeptions. Here we do not speak about a culture that is hampering to technological development, but we speak about a culture which is "offended about" the technological/natural scientific focus on matters. This is the background for the development of one side of of what C.P. Snow dubbed "the two cultures".[20]

Potential for Abuse, Costs and Intrinsic Logic

The most valuable crticism against technology in general concerns its potential for abuse, its costs and its alleged intrinsic logic and the consequenly negative influence on human freedom.

As for potential for abuse there is no doubt. Technology produces – as is its function – instruments of power and make these instrument available. Often these instruments of power are terrifying. Does this fact give reason for objections against technology in general or against specific technologies? Well, hardly objections against technology in general, if some technologies produce goods without great costs. There is therefore only reason for objections against specific technologies with a great potential for abuse and irrepairable costs for nature. E.g. nuclear weapons and other sorts of weapon and prouction based on coal and petrol, but a lot of of other examples may probably be given. Not only concerning warfare technology, but instruments to survey and control members of society, automatization that creates mass unemployment. To this adds the contention about the intrinsic logic of technology. In one view that logic is closely connected to the formerly mentioned factor for the objection against technology, namely that the intrinsic logic of technology sooner or later will produce instruments for abuse, and that these instruments will consequently be apllied. This view therefore contends, that technology should not only be controlled, but should be stopped.

The problem concerning the costs of technology is more difficult to decide. Is it so, that any gain produced by technology is equaled by a similar cost? E.g. as development of technological instruments for suppression, for unnessesary labour, loss of ressources and pollution? If so the visibility oft his is not perhaps immidiately obvious, because it might be suppressed or hidden and therefore is not seen in relation to the values of which so many are destroyed as there are produced positive values. We find such a view in Jaques Ellul who thinks, that technological problems are not solved by technology. Against such problems only ethics and reflective thinking is of any aid.[21] Denial of this view is, of course, an example of of the earlier mentioned optimism.

We here find examples of opposition against cultural change produced specifically by technology and technological means or against uncontrolled technology. An anti-technological conservatism of some kind.

The mentioned contention about the intrinsic logic of technology and its repressive function in itself needs a backing in the shape of a theory which can explain the content of the contention. In this field we find several competing theories the object of which is the relationship between technology and freedom.

Technology and Freedom

Does technology have its own inertia? And i.e. are we bereaved of power by technology? Or is it rather a political question? Under the discussion of the concept of social technologies it was mentioned, that human beings can be influenced by and can be controlled by technological means. But is it also the case, that human mind is totally controlled by technology? A theory which answers the question in a positive way preconditions total or hard determinism. Such a case of course is thinkable, but hardly plausible concerning that the determining mechanism in the context should be something completely outside and independent of mind without causally explaining links between these matters. Why is the influence only goin in one direction? One needs not be an opponent of the assertion of hard determinism to wonder about such a theory. I do not know, if anyone has asserted such a view in this formulation, but superficially seen this formulation makes out the essence of the theories that do not specify the causal connections.

A more valid bid ought to explain how it is possible in spite of an accepted human freedom, in the sense of the existence of free will, is possible, that this free will is limited by by certain factors, and i.e. that it is limitable so that the decisions which are made either do not have their actual origin in the individual or are against the interest of the individual without this being clear to that same individual.

The first view dealing with the problem of origin of change concerns a question of freedom itself, whereas the other view concerns the question of rationality, namely either about the intrinsic logic of rationality or about absence of rationality. The last view preconditons that a transparency is possible, and that it is possible in principle to see through one’s own irrationalities. The first aspect of the last view concerns the relationship between technology and mind – a controlling relationship between technology and mind, whereas the other aspect concerns relationships in mind – a controlling relationship between parts of mind.

A theory about this last aspect states, that man as authentic is free because of his

understanding of himself and his relationship to the world. This authentic relationship, however, may be broken, if man takes a specific attitude towards nature, namely an attitude towards nature as a ressource for exploitation. In taking this attitude – which is a technological attitude as such – man does something to himself building a faith, that he can control nature by means of technology and thus control life. Says Heidegger who is the the author of this view or this theory.[22] This attitude, though, veils, that the essence of freedom is managing the uncovered truth – uncovering of truth in the open receptivity, but this freedom is substituted and dissolved and turns into its contrast in an attitude which is characterized by a will to control and therefore has to view reality in the light of utility only – and has to see itself as life as an object of utility for this utility. This of course is an attempt at in a very extreme short form to render the points of the view – without the heideggerian terminology.

According to Horkheimer og Adorno[23] reason itself is technological. Reason in its content is determined by and developed by the function by which its aim is to try to survive in a world primarily by the help of reason. Reason must be and is for that same reason determined by the objects of the world as instruments for avoiding things unpleasant and obtain things pleasant. Reason is in other words essentially instrumental. This fact implies, that such a basic technological approach to reality, a will to control over nature, represents an instrumentalizing of man himself in relation to nature that is exploited, if this exploitation is to be efficient. The result is a oppression and exploitation of other human beings as means in process of a self-oppression. Technology arises out of an attitude to be free and independent, but this attitude results in the opposite of what was dreamt and hoped for. Thus the conflict between the ideal of enlightenment and its contrast in practice.

This view has later been attempted revised and made more realistic/optimistic by other members of The Frankfurt School, and among them Marcuse who thought, that technology is not in itself oppressive, but that its goods can be used to satisfy an oppressed class and make the members of the class forget the forms of repression.[24] Another contribution to this revision of the view is found in the work of Jürgen Habermas. He pleads for an understanding that says, that technological and natural scientific success and the consequently ideologized promise of progress makes the instrumental concept of rationality succesful and thus leads away focus of awareness from oppression and exploitation. And leads away awareness from another and more basic rationality, namely a communicative

rationality. This rationality Habermas describes in later works as the fundamental rationality of which instrumental rationality is but an aspect without an existence of its own, but only characterized ontologically by the sort of object on which rationality is directed. [25] From this last point of view technology does not have a logic of its own.

Another bid for an explanation of the relation between technology and mind might be to understand human behaviour as an expression of a will to improve life with the opportunities that exist. If new opportunities are available human beings will therefore be prone to utilize and on this background expect even more opportunities. To put it simply: if there is anything that we can do as human beings there are always people who want to utilize these opportunities and if this want is satisfied, then expectations about more opportunities are increased by way of habit. Technologically speaking this means, that if specific technologies are available, e.g. medical technologies, then there will be an expectation of or a desire for using these tool in spite of problems of uncertaincy concerning costs, and thus an expectation is brought about a means or a cure for everything. If this is true, then the mechanism only works as something habitually and as such is possibly dissolved through reflection on the context.

Technology and its influence on experiences and experiencing

How does technology influence our ways of experiencing and our experiences? I have just hinted one way, but in principle it is impossible to catch all the ways in which this happens because the ways and the results are plural. The results are presumably influenced by the many technologies and the many ways of relating to technology that exist. The way of experiencing is probably different between the person who has never used a computer and the person who almost grew up with a computer. The essential uniting element in the experiences is, of course. the security which technology is created to offer and which it gives as experience and expectation, if it works – and vice versa. I.e. the experiences which are connected to or brought about by technology show the world in specific perspective of selfevidence and give cause for a corresponding frustration and irritation, when technology

does not function, and give cause for insecurity and fear when the expected security is not present or is threatened.

Technology and Values: Assessments/risks/ethics

No one will probably doubt that technology is connected to costs, but there is a strong disagreement about which are the costs and how heavy. It is it only a question about the mentioned potentials for abuse, coincidental possible disaster or whether technology has beyond that always ecological costs, potentials for danger that need observance or has unpridictable change-producing potentials of coincidence which all demand as point of departure to be taken into consideration and assessments when applying existing or new technology? This field has in increasing degree become object of interest under the names of technology assesment and risk assessment using the so-called precautionary principle.[26] Several cases in recent years have increased the focus on these aspects. Thus the accidents of two Space Shuttles, the handling of the case of Mad Cow Disease under both English and European auspices only to mention a few examples of many.

Though this assessment is a field within ethics and as such subject to this dscipline and to the principles of assessment that characterize this field, technology itself has contributed to the development of ethical considerations. The opportunities which technology supply still raise new questions concerning their use. Should they be applied? Does anyone have the right to use them? Or should they be brought into application? And who has the right to the fruits of this use? Etc. Etc. The answers are dependent on the principles of values by which we assess technology and assess its users. Nothing is new here, but with the speed of change of opportunities in demand for using them and their consequences, with the complexity, confusion and power that characterizes the field, this is a field which has made more clear to see many of the problems in traditional ethical theories, and it is at the same time a field in which factors for the same reasons has proven to be difficult to control and make the object of ethical agreement.

Technology and Progress

The history of technology is by and large identical with the history of progress, but is the history of progress also identical with the history of technology? There is hardly any doubt that the progresses that many of us will think have been done have a technological aspect, but that this aspect should be the only one is doubtful on the other hand. The factors which have developed progress in the sense of the best things about modernity, i.e. the rationalizing of the understanding of various fields of reality, are plural and are those that force into being the use of rationality in the broad sense, and i.e. the basic formal demands for giving reasons for contentions and demands for consistency and coherence amongst propositions in various fields. Within this field demands for development of technology and the production of knowledge about nature has played a very central role, but so has legalizations of societies.[27] Yet this development holds no promises, that the best about it is preserved. Progress is neither guaranteed by technology or by reason, but can be lost if there is not constant serious and democratic struggle for it.[28]

The understanding of the actual developing or hampering factors thus consists of an essential element in the understanding of development in history: in the history of progress and modernity.

Technology and the Natural Sciences

A traditional view on technology states, that technology is applied natural science. The idea is, that the insight into the natural laws which science delivers is applied for copying a specific effect that can serve as an instrument for specific purposes. Knowledge about magnetism and electricity plus knowledge about mechanical functions can thus be applied to make an electric motor that can drive a propeller in a ”tube” and thus cause the suction which is desired in a vacuum cleaner. If this view is true, then development in technology is totally dependent on development in the natural sciences. Several things, though, speak against the truth of this statement about the relation mentioned. First of all it is very little probable, that technological instruments are not brought about till the theoretical foundation is present. On the contrary. It is most often so, that some people have a notion of

some technological opportunities and test them, and then after that follows the more theoretical exploration of the foundation. Secondly, many technologies are not based on scientific knowledge, if I am right in the contentions above. Thirdly, studies of the history of natural sciences show, that progress – conversely – is based on the development of technology and not necessarily a technology which is closely connected to the field in which the progress takes place. An example of this could be the progress within astronomy that was brought about by the development of the telescope. The development of the telescope was based on the laws of optics, but caused progress within astronomy. A totally different field. Rather than considering the relationship as a relationship between theory and application – and in that order, the relationship should be viewed as a symbiotic relationship.[29]

Conclusion

We have now seen the many aspects of technology. The moral that we can learn is, that technology is basically a question of power, and that technology is not always a question of progress for mankind as a whole, but is mainly created as a tool for preserving the power of those already in power. The original developers of technology very often did not intend personal and group-limited power, but were fascinated by the opportunities as such. But in market competition contexts and political power contexts the inventions invariably end in the hands of those in power with the result of increasing power concentration. This does not mean – as we all know – that ordinary people do not have access to technology, but it means that this access is only there as a instrument for those in power. This is seen in so many contexts these years. A striking example is found within the market of capital finance. We here see, that those with the best technology can survey other buyers of stocks and buy the stocks that are object of greatest interest and therefore profitable seconds before the buyers they surveyed. Technological and financial power are increasingly intermerged resulting in increased political power of corporations, and traditional political power either challenged by or serving as a tool for corporate power.

The development we are facing in the nearest years to come concerning automatization of labour will only sharpen this conflict by pushing large parts of the members of the working

market out of the working market and into unemployment and leaving the remaining part in a precarious situation. What we face is an increased conflict between democratic- and welfare interests of larger majorities against the monopoly of power of corporations and oligarchs. The solution to this conflict is not technological, it is only political – and democratic.

Notes

[1] As for a thorough, surveying treatment of the relation between objects and concepts see e.g. Frank C. Keil: Concepts, Kinds and Cognitive Development. Boston: MIT Press 1989. One of Keil's essential insights is, that even if we – for different reasons – admit, that the types of essences exist, which we call 'natural classes', then this is, however, not the case when we look at non-natural things – artefacts. These have as means for human goals not an inherent nature, but can only be understood on the background of human aims. And I can add – as a personal view that will be expanded in the following: artefacts and therefore technologies are only understandable as something concerning human goals in a context.

[2] My awareness of exactly the aspect of operationalizing and therefore of the many possibilities of mediation and therefore again support for my contention concerning the broadness of the concept of technology I owe to Michael Polyani Polanyi. See Michael Polanyi: Personal Knowledge. Towards a Post-Critical Philosophy. Chicago: The University of Chicago Press 1955. Chapter II: The Logic of Achievement.

[3] I am, of course, aware, that these contexts in recent times includes and perhaps is dominated by material tools as seen below.

[4] See Dylan Evans: Emotion. The Science of Sentiment. Oxford: Oxford University Press 2001.

[5] This contention rests of, course, on a specific view of emotions and attitudes. There is no agreement about this matter. For a recent investigation see Peter Goldie: The Emotions. A

Philosophical Exploration. Oxford/New York: The Clarendon Press 2000. From this view one might metaphorically speaking talk about that emotions themselves represent a specific technology that culture and and we make ”use”.

[6] Some years ago there was a series on Danish TV in which various historians should try to guess the use and purpose of different tools. This series showed with all possible clarity, how incredibly difficult it is is to guess the purpose of a tool just from a study of the object itself.

[7] This said, it should be mentioned, that much energy has been spent ”…developing apparatuses that were without practical utility…”. Quotation in my translation from Alexandre Koyré: ‘Filosofferne og Maskinen’, in Alexandre Koyré: Tankens enhed. Essays om filosofi, videnskabshistorie og teknologi. Hans Reitzels Forlag: København 1998. s. 122.

[8] Cf. my paper: ‘Magt – afmagt. Et essay om magtens symboliseringer – og afmagtens realiteter’ in Filosofi nr 2. 2000.

[9] Qoutation from Alexandre Koyré p. 97 in my translation.

[10] Cf. Alexandre Koyré.

[11] Friedrich Dessauer: Philosophie der Technik: Das Problem der Realisierung. Bonn: Cohen-Verlag 1927. Dessauer belongs to the early part of philosophy of technology which as a discipline is rather new. This fact may also explain the outspoken optimism which we find here.

[12] Quoted in English translation from Carl Mitcham and Robert Macke (eds.): Philosophy and Technology. Readings in the philosophical problems of technology, New York/London: The Free Press/Collier-Macmillan Ltd 1972. p. 325. My italics.

[13] Ibid. p. 326.

[14] History shows many examples of persons, who have developed new technology, have been persecuted or incarcerated. Cf. Dessauer who informs, that they are known by

thousands.

[15] This view is found in large parts of his writings. E.g. *Discipline and Punish. The Birth of the Prison*, *The Birth of the Clinic* and the first volume of *The History of Sexuality, The Will to Knowledge*. I refer very broadly because the writings of Foucault are well-known and accesible.

[16] Bruno Latour: 'Where Are the Missing Masses? The Sociology of a Few Mundane Artefacts', in W. Bijker and J. Law (eds.): Shaping Technology/Building Society: Studies in Sociotechnical Change. Cambridge, Mass: MIT Press 1992.

[17] A matter especially stressed by e.g. Andrew Feenberg in support of the dimensioned view of technology that I plead for here. See Andrew Feenberg: Questioning Tchnology. London/New York: Routledge 1999.

[18] Cf. the text mentioned above by Koyré.

[19] A mattter which Koyré makes object of specific interest and discussion in a comparison with the later developments of technologies and their break with this tradition. Ibid.

[20] C.P. Snow: The Two Cultures. Cambridge: Cambridge University Press 1959.

[21] See Jaques Ellul: The Technological Order. Detroit: Wayne State University Press 1963.

[22] See Martin Heidegger: Die Frage nach der Technik. Stuttgart: Clett-Cotta 1962.

[23] M. Horkheimer und Th.W. Adorno: Dialektik der Aufklärung. Amsterdam: Medusa Verlag 1947.

[24] Herbert Marcuse: One-Dimensional Man, Boston: Beacon Press 1964.

[25] See Jürgen Habermas: Technologie und Wissenschaft als "Ideologie", Frankfurt am Main: Suhrkamp 1968, and Jürgen Habermas: Theorie des kommunikativen Handelns I-II, Frankfurt am Main: Suhrkamp 1981.

[26] See e.g. Karsten Klint Jensen: 'The moral Foundation of the Precautionary Principle', in Journal of Agricultural and Environmental Ethics No. 15, 2002. and Karsten Klint Jensen "Late lessons from early warnings: The precautionary principle 1896-2000. Environmental Issue report no. 22, published by European Environment Agency.

[27] I am here inspired by Habermas's description of the factors of rationalization in Modernity. He stresses particularly the importance of legalisation in his process and much less the importance of technology and the natural sciences although this aspect is implied in the "demythologisation" of understanding matters of life and society. See his Theorie des Kommunikativen Handelns I-II. Frankfurt am Main: Suhrkamp Verlag 1981.

[28] Cf. Georg Henrik vonWright: Myten om Fremskridtet. Tanker 1987-92 med en intellektuel biografi. København: Munksgaard – Rosinante 1994.

[29] See Rachel Laudan (ed.): The Nature of Technological Knowledge. Are Models of Scientific Change Relevant? Dordrecht/Boston/Lancaster: D. Reidel Publishing Company 1984.