Society – Technology – People

Theory-Interviews on the relationship between societal and technological change.

Interview with Prof. Dr. Martina Heßler

This interview was filmed in Darmstadt on 13 March 2018. The interviewer was Robert Helmrich. It is part of a BIBB-research project on „Polarisierung von Tätigkeiten in der Wirtschaft 4.0 - Fachkräftequalifikationen und Fachkräftebedarf in der digitalisierten Arbeit von morgen“, funded by BMBF.

More information can be found here: https://www.bibb.de/de/94825.php

Provided online by the Federal Institute for Vocational Education and Training (BIBB) - imprint: https://www.bibb.de/en/65.php

Where do we find sources for technological change and social division of labour?

I would like to start by saying that I would not speak of drivers. Driver seems to me to be a term which is closely related to economics, which I believe also became fashionable alongside computerisation. Interdisciplinary technical research in particular has developed multifarious approaches. This indicates that this suggestion, which is linked to the drivers, and the associated notion that determinable stakeholders are responsible for development is not complex enough. Our interlinked structures are too complicated to enable one driver to be identified specifically, because there are very many approaches in interdisciplinary technical research. My approach, however, would be to move beyond all these approaches which already exist into historical technology anthropology, and here I am speaking more of conditions than of drivers. This historical technology anthropology means that we need to look into the issue of the position of humans in an engineered world, the issue of the changing relationship between people and machines and the issue of the human image. It is actually quite apparent, both historically and currently, that these human conceptions, the way in which people see themselves and the relationship they develop with technology, is a clear condition that co-determines technological development.
My perspective is historical and anthropological. Therefore, my focus with regard to this issue is on the relationship between humans and machines. Of course, we also need to say that the societal division of labour is between people and machines, which, naturally, is stratified by social groups and skills characteristics. But my actual interest is the relationship between humans and machines, and here I would say that these very human images are a co-determining factor alongside technological development, the relationship between humans and machines and the societal division of labour. If you have engineers, they will of course have a certain human image. This is often implicit, but they design technology with certain human images in mind. Interaction between

humans and machines needs to be developed, and human images are very relevant in this regard. Users of technology also develop a certain internal self-image. For example, they may control the technology. This then affects acceptance, use and also the long-term and medium-term development of technology.
So I certainly believe that we have a process, which is running in a more accelerated way than in the industrial revolution or even during the 1970s and 1980s. These developments are indeed impressive. Take for example the translation programmes, which were an object of ridicule for a long period. Today, they still have a long way to go before they are able to compete with good, professional, human translators, but fantastic progress has been made in a relatively short period. So that they are now massively used, as a template. So I believe, that an acceleration is taking place already. #00:03:30-9#

Who is driving technological change and social division of labour?

I think that anthropocentrism, in other words the notion that people are the actual controllers, shapers and users of technology and of the whole of the engineered world, is still very dominant and potent. This will remain the case and will determine the discourse very strongly. And this area is actually where I see a major problem, because it does not correspond to what we are experiencing and to what is happening at a practical level. Essentially, we need to reflect more closely on the fact that this formative position adopted by humans is not as commanding as people assume.
I think that major changes will occur because machines are now able to issue instructions. Before, we used to have card indexes and so forth, but now machines pass on instructions to people. We are essentially experiencing a tendency towards a neo-cybernetic system, in which people are a component within a work process and they are very closely linked with machines, resources, materials etc. and need to function via information in this system. #00:04:46-6#

Which consequences will arise from technological change?

Work has been a self-evident part of a work society for centuries. Such an identity is under threat if people perceive a risk that machines will perform their work, and I believe that this point is highly relevant to the technology development and societal division of labour. The focus is not always on replacement, but also on the redistribution of the division of labour. Therefore, machines take over tasks, but rather than replacing people, they create a new sort of interplay between humans and machines.

Decision-making is one question, which I believe is new. Artificial intelligence systems make decisions, which in some cases people are unable to understand. We have expert systems, which can process huge quantities of data, thus extending far beyond human capabilities. This provides the basis for the decision and people have no comprehension of how such a decision came about. This leads to a debate, which has been ongoing since as long ago as the 1950s, for example, when autopilot systems in aeroplanes

were one of the subjects under discussion: What actually happens if people lose these abilities? Of course, we forget all the skills if we do not perform them ourselves. There will then also be a shift in competences and in the tasks, people are able to carry themselves. At the moment, I think that reliance on machines is becoming much greater, and people will become much more dependent on cooperation with machines.

This means that working bodies, human bodies, will also change and human practices in the world of work will alter too. Another aspect that is very important to me is the self-perception of the respective workers, in which they see themselves and their understanding of the position they have in the work process.

And I believe that the question as to what is useful is also a highly controversial one. Nevertheless, it is a question, which needs to be posed and precisely within such a process of negotiation, I believe that things will need to be clarified or attempts will need to be made to arrive at an arrangement. In this case too, interdisciplinary technical research has clearly revealed that structural processes are highly complex. This was emphasized since the 1980s: no technological determinism. But we rather can and we must design and shape things! Nevertheless, the result of this design is seldom in line with intentions. This is precisely because the processes are so complex and involve so many stakeholders. For example, younger voices such as Peter Haff, who introduced the term technosphere, have said that we can basically develop things at a local level, in other words once again at the company level. But no steering or control opportunities now exist at more complex or at system levels. Because of the many different components within the system, something is happening which can no longer be controlled in any way by individual stakeholder groups. This means that things need to be shaped at the local operational level. This is, however, also dependent on significant correlations. So the question of design and development is a highly complex and difficult one. But it is one which needs to be tackled. I think the point is that we always need to be aware, that design and development will not lead to the intended outcomes, especially in the medium and long term. I believe that individual groups bear great responsibility or great potential responsibility with regard to what they need to consider and reflect upon when innovations are introduced.

Central to all of this, in my view, is one point, which is insufficiently addressed within the context of digitalisation: The question of resources and climate change. Because especially digitalisation consumes an unbelievable amount of energy and resources, an issue which is completely underestimated and absent from the debate. Both in our personal lives and at companies. The consequences are that new technology and new energy and resources consumption are created whilst the climate debate continues to be conducted independently. Basically, these discourses need to be merged. So here we perhaps have negative consequences that should be taken into account: the environment, climate and use of resources. There can also be negative consequences and I believe there are some, which we can historically see in every transformation. Even if a transformation is not disruptive, there are always losers. I am absolutely sure that the same will happen this time too. There will be people who cannot keep up,

people who will be unwilling or unable to go along with such continuing training and learning processes. This is certainly one of the negative outcomes of transformation processes of this kind. Positive implications can, of course, also occur. We have lots of positive consequences when digitalisation is deployed in medicine, when expert systems can detect diseases and so forth. Strictly speaking, you have to answer specifically this question in many empirical examples and you have to take a closer look at what is happening.

So I would point to the question of resources and energy consumption caused by digitalisation, and of course the issues of data security and use of data are now also very obvious. But I believe these matters are being discussed, even if we are a long way from finding a solution. Nevertheless, the issue of resources and energy consumption is in my opinion being completely underestimated within the context of digitalisation. #00:10:24-7#

How are drivers and consequences of technological change connected?

For historians, the term mechanisms perhaps presents similar difficulties to those posed by the term drivers. This is because it has its basis in a concept of causality, i.e. the ability to allocate clear mechanisms. The actual current tendency of historians is to look at the question of how rather than why. From my historical and anthropological perspective, I would not speak of mechanisms. Perhaps I would answer the question by saying that the historical and anthropological perspective certainly presents us with different basic issues and problem areas. These have been a constant object of discussion of industrialisation since the early modern era, and issues relate to matters such as: what position do humans have in a highly technologized world? How are people respectively defined, particularly with regard to technology? Do they see themselves as a cyborg or as a competitor to technology? An operator or a technical being? These are questions which have been constant objects of discussion historically, and they remain virulent issues in the present day.
The second important point is, I feel, that the discourse is presently too closely focused on digitalisation and on AI, in a very one-dimensional way. We basically also need to look at the interplay between various technologies, i.e. the neurosciences, gene technology, infrastructure and mobility and communication technologies. All of these play a major role in the world of work, at least infrastructure and mobility and communication technologies and possibly also genetics and the neurosciences. I think one of the greatest challenges is simply to think about all of these together. What happens when we achieve breakthroughs, developments and further developments in different fields and when people need to reposition themselves and are faced with entirely new challenges and responsibility? This is an important point, I believe. Thinking about these things collectively.
There is an apt quotation from Käte Meyer-Drawe, which I always like to mention. She says that people are reflected in their machines and try to solve their puzzle by engaging with machines – or by identifying with machines, there is considerable variance in this regard. She applies this to the early modern era, and indeed I believe that it is a

question that has been posed since the time of Descartes.
Nevertheless, there are historical differences and shifts. Firstly, of course, we have amalgamation. The term cyborg does not emerge until the second half of the 20th century. And we have a whole new phenomenon in that people describe themselves as technical beings. So this basic issue of the relationship between humans and machines is always present, but there are nuances or considerable shifts in the way in which it is perceived.
I believe that there are always path dependences. Solely because of infrastructures, and we can see this in the case of digitalisation or non-existing infrastructures. At the same time, path theory now also includes critical junctures where we can turn off, alternative paths. I think that this entails more expenditure, more strength and more societal engagement, but in principle I would not emphasise path dependence too strongly.
#00:13:49-4#

What measures can be taken to steer technological change?

The challenge, which I now see from my historical and anthropological perspective, is that we need a new kind of anthropological reflection. This is not the first time such discourses have been conducted. There was a brief but intensive anthropological discussion around the year 2000, and I think that we need to carry this out again today. The challenge is that we need to arrive at a societal understanding of the role that people should play and of the role that should be played by machines. How much decision making do we want to surrender to machines, where is this legitimate and useful and in which areas is it not? I believe that it is somewhat problematic if legitimation has its basis in the fact that the person ultimately remains the decision maker, because it is an illusion to say this, when machines make decisions and we are no longer able to understand these decisions. So I actually think that the challenge lies in renegotiating and redetermining the position of people. This does not just apply to narrower technological developments. The debate also relates to the Anthropocene, and I think that humans need to adopt a position that moves away from anthropocentrism, but nevertheless still takes account of the responsibility of a being which manufactures and produces more than any other entity on Earth, including technology.
My vision would actually be citizens' forums, in which such issues are discussed at a broad societal level. This does not necessarily need to take place at companies, but they could be held locally. There have often been discussion groups and citizens' forums in the past, including within the context of gene technology and nanotechnology. Such groups would operate under guidance, but a kind of "grass roots" movement emerging from below could lead to a significant process of understanding regarding the issue of the human image. I believe that they could make a major contribution towards at least calling into question the anthropocentric illusion which many people still hold.