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Abstract

The article has a critical and a meta-theoretical goal. It criticizes a new theoretical approach called 'general ecology'. This approach is based on a specific prediction of the future of media, namely that media technologies become smaller, more mobile, ubiquitous, and at the same time smarter and even capable of perception and feeling. The point of critique is that 'general ecology' does not deal with the economic consequences of increasingly smart technologies, although there is a vibrant discussion going on about this matter. The main problem (besides privacy) named in these discussions is the question if new technologies lead to technological unemployment and subsequently to a deep and structural crisis of capitalism. By juxtaposing the predictions of general ecology with an earlier prediction on the future of technology from the 1950s, its 'economic unconscious' becomes visible. A critique of current predictions needs always a historical approach. Finally, this discussion leads to the argument that the prediction of the future of media must not be separated from the future of society. Predictions are never neutral, but always based on a particular ideological and cultural vision of technology.

Introduction

The following essay has a critical and a meta-theoretical goal. It criticizes a new theoretical approach called 'general ecology'. This approach is based on a specific prediction of the future of media, namely that media technologies become smaller, more mobile, ubiquitous, and at the same time smarter and

even capable of perception and feeling. The point of critique is that 'general ecology' does not deal with the economic consequences of ever smarter technologies, although there is a vibrant discussion going on about this matter. The main problem named in these discussions (besides privacy) is the question if new technologies lead to technological unemployment and subsequently to a deep and structural crisis of capitalism. By juxtaposing the predictions of general ecology with an earlier prediction on the future of technology from the 1950s, its 'economic unconscious' becomes visible. A critique of current predictions needs always a historical approach (see Carey & Quirk 1989; Natale & Balbi 2014). Finally, this discussion leads to the argument that the prediction of the future of media must not be separated from the future of society. Predictions are never neutral, but always based on a particular ideological and cultural vision of technology.

1. 'General ecology' and its predictions

When we speak of the 'future of the media' today, certain developmental trends seem to be crystal clear. Media technologies are becoming ever smaller and thus ever more mobile and ubiquitous. Soon all kinds of objects will be tagged using RFID (= Radio Frequency Identification; see Rosol, 2008) and will merge together to form an 'Internet of Things'; smartphones and their networking properties will become even more closely attached to our bodies in the form of Google Glass – we even talk about 'smart dust', and it is predicted that soon thousands of tiny computers will lie in the corners of rooms like specks of dust (Weiser, 1991; Warneke et al., 2001; Anderson, 2013).

Quite often, this trajectory of media development appears to be taken for granted (for a critique of it, cf. Dourish & Bell, 2011). In the current 'media-philosophical' debate it has led to a "radically ecological view," a new form of media ecology, which is described by Hörl (2011, 23) with the notion of 'general ecology'. The recent texts of Mark B. N. Hansen, for example, are exemplary of this approach:

> In our interactions with the atmospheric media of the 21st century, we human individuals as special, independent and quasi-autonomous subjects no longer stand in contrast to various media objects; rather, we constitute ourselves as subjects through the operation of a myriad multiscalar processes, some of which (neuronal processing, for example) seem more 'embodied', while others (such as

> rhythmic synchronisation with material events) appear more 'worldly'. In today's media surroundings, our subjectivity is thus not offset against a (medial) world of objects (or, to be precise, is offset only in a derivative manner), and does not differ in kind from the microprocesses that pervade it. (Hansen, 2011, p. 367)

The shrinking size and ubiquitous nature transform media devices into 'atmospheric media'. But on top of this, it is crucial to Hansen's argument that a "huge expansion of sensibility" (p. 372) has already occurred and will continue to occur with the atmospheric media:

> For the first time in our history, [...] our long-lasting and thus far almost unquestioned privileges as the most complex agents of feeling are being questioned, if not even overthrown, by the technical capacity to feel introduced by our 'smart' devices and technologies, a capacity that is spreading ubiquitously and is capable of being reproduced on a massive scale. (Hansen, 2011, p. 367)

Even though Hansen's line of argument, which draws on the work of Alfred North Whitehead, is far too complex to be reproduced here, we can note that he attempts to describe a situation in which ever smaller, ever more mobile and ever more imperceptible media, capable of 'feeling', pervade our surroundings to such an extent that only ecological terminology seems appropriate. Such a situation is proposed as the media's irrefutable future. As I will show, however, this image is biased and shot through with an ideological structure that could be called the 'economic unconscious'.

2. Hints of an economic unconscious in 'general ecology'

The first hint that there might be an ideological bias to 'general ecology' lies in a simple question, which I will pursue in this section of the text: If the term 'ecology' is used (even though Hansen speaks more of 'environment'), then where is its shadow, the economy? This should not be understood as a critique of Hansen's ideas; rather, it should be noted that predictions tend to extrapolate existing technological trends into the future while simultaneously implying the existence of a stable social background. While most future scenarios technologies seem to develop at lightning speed, the social order of these scenarios is of an impressive rigidity and stability, which seldom corresponds to historical reality (see Van Riper 2013). Thus,

Hansen neglects to mention the social shifts that might accompany the radical expansion of sensory-atmospheric media environments. In terms of media theory, this must remain unsatisfactory, for if there is one insight that the various branches of current media theory might agree on, it surely is that media are not mere tools of assumed stable purposes, but instead co-constitute the world. Let us return to Hansen here:

> Taken individually, these devices and technologies are of course far less complex than the human body and mind – and significantly so; however, in their entirety and by virtue of their ability to *work* more or less uninterrupted across a huge range of dimensions, they have already begun to overshadow us in their ability to collect and create sensory data. (Hansen, 2011, p. 367, emphasis added, J.S.)

While this passage, taken out of its context, should not be over-interpreted, it nonetheless appears significant that Hansen stresses the possibility that technologies may 'overshadow us' (i.e., humans) through their *work*. A kind of 'economic unconscious' emerges here, meaning that specific economic and social forms are simply taken for granted, presupposed, and therefore do not appear on the manifest level of discourse.

The term economic unconscious (which could be defined more precisely by using, for example, Marx's term of the fetish) is difficult in that its unconscious nature appears to obstruct any direct access to it. If such an unconscious is to be found in Hansen's text, then it would surely also be my and 'our' unconscious. How then are we supposed to observe it? One solution may be to historicise predictions of the future. Therefore, the following section will discuss a somewhat curious example of a predicted future dating from 1950. It will be concerned mainly with the fact that certain ideas about social form are extrapolated into the future without questioning them at all. Looking at this example can teach us to approach the question of the future of the media somewhat more cautiously; moreover, it helps raise our awareness of the hidden economic unconscious in 'general ecology'. This will be the focus of the final section of the present article.

3. The stability of social forms in a prediction from the 1950s and the disappearance of manual work by automated factories.

In February 1950, the American magazine *Popular Mechanics* published a text titled "Miracles you'll

see in the next fifty years" (Fig. 1 and 2) by Waldemar Kaempffert, who was the Science Editor of the *New York Times* from 1927 to 1953 (according to http://en.wikipedia.org/wiki/Waldemar_Kaempffert).

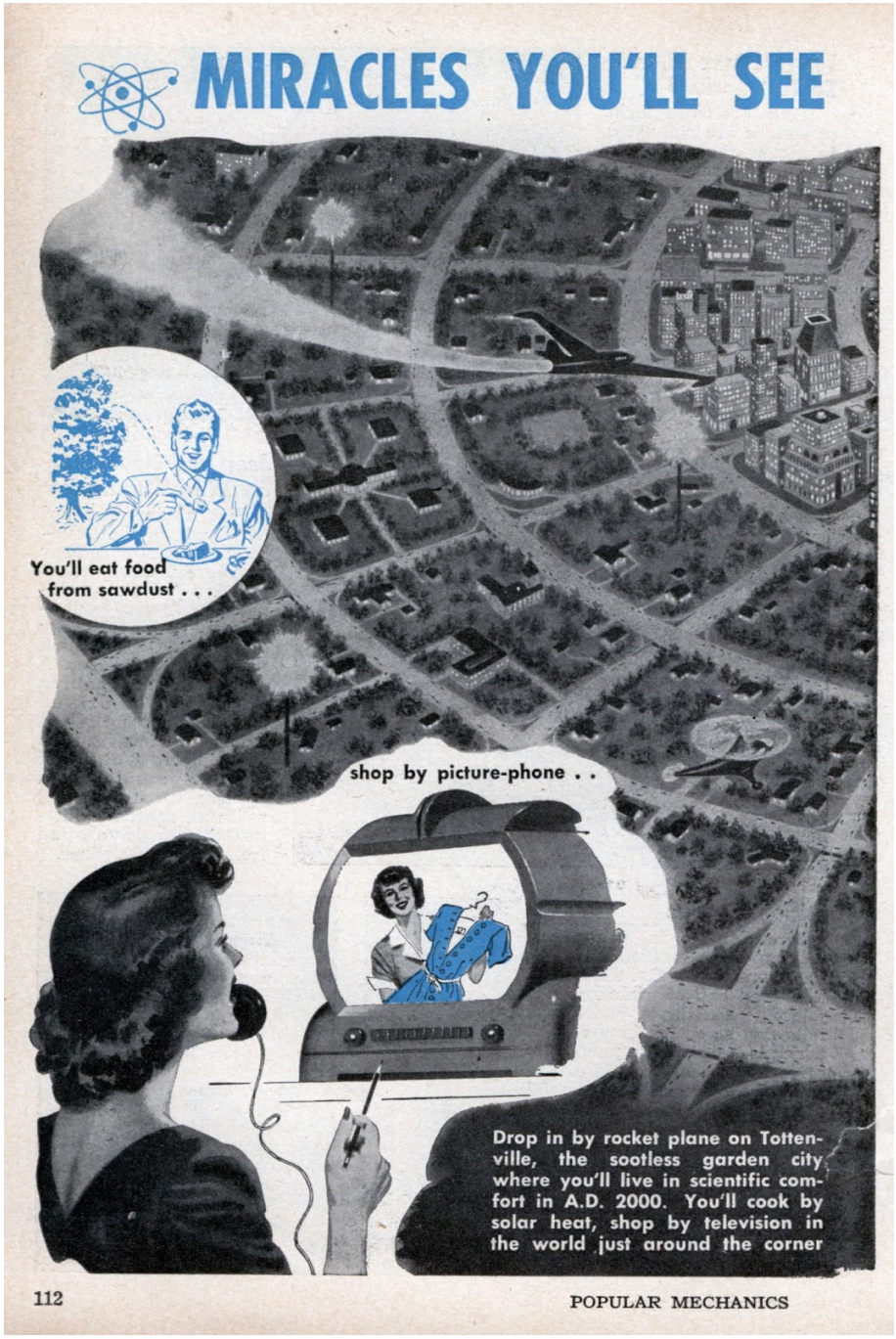


Fig. 1

IN THE NEXT FIFTY YEARS

By Waldemar Kaempffert
Science Editor, The New York Times

WHAT WILL the world be like in A.D. 2000? You can read the answer in your home, in the streets, in the trains and cars that carry you to your work, in the bargain basement of every department store. You don't realize what is happening because it is a piecemeal process. The jet-propelled plane is one piece, the latest insect killer is another. Thousands of such pieces are automatically dropping into their places to form the pattern of tomorrow's world.

The only obstacles to accurate prophecy are the vested interests, which may retard progress for economic reasons, tradition, conservatism, labor-union policies and legislation. If we confine ourselves to processes and inventions that are now being hatched in the laboratory, we shall not wander too far from reality.

The best way of visualizing the new world of A.D. 2000 is to introduce you to the Dobsons, who live in Tottenville, a hypothetical metropolitan suburb of 100,000. There are parks and playgrounds and green open spaces not only around detached houses but also around apartment houses. The heart of the town is the airport. Surrounding it are business houses, factories and hotels. In concentric circles beyond these lie the residential districts.

Tottenville is as clean as a whistle and quiet. It is a crime to burn raw coal and pollute air with smoke and soot. In the homes electricity is used to warm walls and to cook. Factories all burn gas, which is generated in sealed mines. The tars are removed and sold to the chemical industry for their values, and the gas thus laundered is piped to a thousand communities.

The highways that radiate from Tottenville are much like those of today, except that they are broader with hardly any curves. In some of the older cities, difficult to change because of the immense investment in real estate and buildings, the highways are double-decked. The upper deck is for fast nonstop traffic; the lower deck is much like our avenues, with brightly illuminated shops. Beneath the lower deck is the level reserved entirely for business vehicles.

Tottenville is illuminated by electric "suns" suspended from arms on steel towers 200 feet high. There are also lamps which are just as bright and varicolored as those that now dazzle us on every Main

. . . cook on a solar range

Rotta

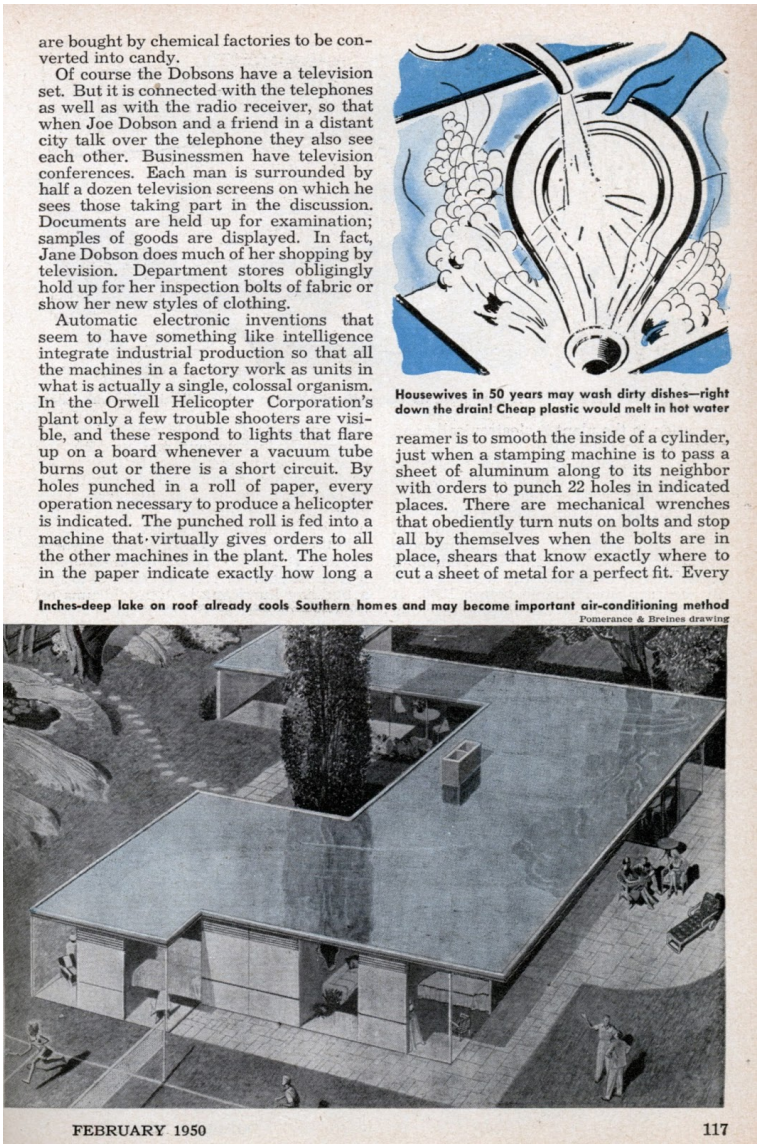
FEBRUARY 1950 113

Fig.2

The text attempts to make predictions about technology in the year 2000. It is interesting both in its absurd misjudgements and in its accurate predictions – for example, the essay emphasizes the role that solar energy will play in the future, an estimate that is quite striking for 1950, given the important role played by

nuclear energy at the time.

One particularly strange idea (Fig. 3) is that in the year 2000, housewives would wash dishes by simply dissolving plates of cheap plastic in hot water and washing them down the drain along with the washing up water. Fig. 4 shows a housewife cleaning her house with a hosepipe, as all objects are waterproof. These examples are funny and bizarre, but the two pages depicted here as Fig. 3 and Fig. 4 carry farther-reaching implications.



are bought by chemical factories to be converted into candy.

Of course the Dobsons have a television set. But it is connected with the telephones as well as with the radio receiver, so that when Joe Dobson and a friend in a distant city talk over the telephone they also see each other. Businessmen have television conferences. Each man is surrounded by half a dozen television screens on which he sees those taking part in the discussion. Documents are held up for examination; samples of goods are displayed. In fact, Jane Dobson does much of her shopping by television. Department stores obligingly hold up for her inspection bolts of fabric or show her new styles of clothing.

Automatic electronic inventions that seem to have something like intelligence integrate industrial production so that all the machines in a factory work as units in what is actually a single, colossal organism. In the Orwell Helicopter Corporation's plant only a few trouble shooters are visible, and these respond to lights that flare up on a board whenever a vacuum tube burns out or there is a short circuit. By holes punched in a roll of paper, every operation necessary to produce a helicopter is indicated. The punched roll is fed into a machine that virtually gives orders to all the other machines in the plant. The holes in the paper indicate exactly how long a

Housewives in 50 years may wash dirty dishes—right down the drain! Cheap plastic would melt in hot water

reamer is to smooth the inside of a cylinder, just when a stamping machine is to pass a sheet of aluminum along to its neighbor with orders to punch 22 holes in indicated places. There are mechanical wrenches that obediently turn nuts on bolts and stop all by themselves when the bolts are in place, shears that know exactly where to cut a sheet of metal for a perfect fit. Every

Inches-deep lake on roof already cools Southern homes and may become important air-conditioning method

Pomerance & Breines drawing

FEBRUARY 1950 117

Fig. 3

Because everything in her home is waterproof, the housewife of 2000 can do her daily cleaning with a hose

operation in the plant is electronically and automatically controlled.

One of the more remarkable electronic machines of 2000 is a development of one on which hundreds of thousands of dollars had been spent in the middle years of the 20th century by Dr. Vladimir Zworykin and Dr. John von Neumann. The purpose of this improved Zworykin-Von Neumann automaton is to predict the weather with an accuracy unattainable before 1980. It is a combination of calculating machine and forecaster. The calculator solves thousands of separate equations in a minute; the automatic forecaster carries out the computer's instructions and predicts the weather from hour to hour. In 1950, meteorologists had no time to deal with the 50-odd variables that should have been mathematically handled to predict the weather 24 hours in advance.

Following suggestions made by Zworykin and Von Neumann storms are more or less under control. It is easy enough to spot a budding hurricane in the doldrums off the coast of Africa. Before it has a chance to gather much strength and speed as it

(Continued to page 264)

Forecast of home of tomorrow? This house was built in few days by pouring concrete into standard forms

Revere Copper & Brass photo

Fig. 4

First of all, it appears to be taken for granted that women will still be doing all the housework in 2000. Aside from the fact that it is indeed the case that women are still often unilaterally burdened with family work today, this also reveals that, for all the technical progress assumed, the author was unable to imagine any change in social forms. For him, it seems only natural that men are the ones who work (while the housewives consume):

> Businessmen have television conferences. Each man is surrounded by half a dozen television screens on which he sees those taking part in the discussion. Documents are held up for examination;

> samples of goods are displayed. In fact, Jane Dobson does much of her shopping by television. Department stores obligingly hold up for her inspection bolts of fabric or show her new styles of clothing. (Kaempffert, 1950, p. 117)

I do not want to discuss the issue of gender roles in any greater depth here; it is simply intended to serve as an example of how social forms and structures are projected into the future. To recap: The men work and apparently earn money, which is then spent by the housewives in their 'shopping' sprees. Thus we arrive at the aspect of economic reproduction. Unsurprisingly for 1950s America, Kaempffert can only imagine the future of the year 2000 as a capitalist one – that is, one defined by wage labour, commodity forms, and money. This prediction has also been proven accurate. However, there lurks a dangerous conflict between technology and economy in the background, for the text subsequently states:

> Automatic electronic inventions that seem to have something like intelligence integrate industrial production so that all the machines in a factory work as units in what is actually a single, colossal organism. In the Orwell Helicopter Corporation's plant only a few trouble shooters are visible, and these respond to lights that flare up on a board whenever a vacuum tube burns out or there is a short circuit. By holes punched in a roll of paper, every operation necessary to produce a helicopter is indicated. The punched roll is fed into a machine that virtually gives orders to all the other machines in the plant. The holes in the paper indicate exactly how long a reamer is to smooth the inside of a cylinder, just when a stamping machine is to pass a sheet of aluminium along to its neighbor with orders to punch 22 holes in indicated places. There are mechanical wrenches that obediently turn nuts on bolts and stop all by themselves when the bolts are in place, shears that know exactly where to cut a sheet of metal for a perfect fit. Every operation in the plant is electronically and automatically controlled. (Kaempffert, 1950, p. 117/118)

A computer-based automated factory is obviously being described here. Of course, Kaempffert was unable to imagine computers in today's sense (and also that computers would be 'ubiquitous' in every household, which would have impeded cleaning houses with a hosepipe!). It is interesting, however, that he anticipates the processes of automation in industrial production, which were to revolutionize industry in the USA and beyond (Noble, 1984). Reading between the lines, one problem associated with automation – the

loss of manual work – is already implied when Kaempffert writes that only 'a few trouble shooters are visible' and adds: "There are mechanical wrenches that obediently turn nuts on bolts and stop *all by themselves* when the bolts are in place" (p.117, emphasis added, J.S.).

The debate on the extent to which (digital) technology destroys work and thus throws capitalism into a crisis in the long term has a long and controversial history. In his 1948 book on cybernetics, Norbert Wiener wrote of the coming potential of the "ultra-rapid computing machines":

> The automatic factory and the assembly line without human agents are only so far ahead of us as is limited by our willingness to put such a degree of effort into their engineering as was spent, for example, in the development of the technique of radar in the Second World War. [...] It may very well be a good thing for humanity to have the machine remove from it the need of menial and disagreeable tasks, or it may not. [...] It cannot be good for these new potentialities to be assessed in the terms of the open market [...] There is no rate of pay at which a United States pick-and-shovel laborer can live which is low enough to compete with the work of a steam shovel as an excavator. The modern industrial revolution is similarly bound to de-value the human brain, at least in its simpler and more routine decisions. [...] [T]aking the second [industrial] revolution as accomplished, the average human of mediocre attainments or less has nothing to sell that is worth anyone's money to buy. (Wiener, 1961, pp. 26-28)

In the chapter 'Automation' of his 1964 media theory classic *Understanding Media*, Marshall McLuhan still complained of the "folly of alarm about unemployment" (2003, p. 464). Sixteen years earlier, Wiener was apparently already aware that the third (he calls it the second) industrial revolution would result in a large-scale rationalisation of work due to cost-cutting competition – McLuhan himself calls it "competitive fury" (2003, p. 455).

Writing one hundred years earlier than McLuhan, Marx also stated this in his visionary anticipation of automated production: For when a human being becomes no more than "a watchman and regulator to the production process," then (at least for the majority) "labour [...] cease[s] to be the great well-spring of wealth." The less production is based on "direct labour time spent" and the more on "the general state of science and on the progress of technology," then the greater the extent to which "production based on

exchange value breaks down" (Marx, 2005, p. 705). This goes for example for industrial robots, which have made millions of workers redundant, from the car industry to the fully automated video rental store (cf. also Rifkin, 1995; see also the recent study by the Oxford Martin School, Programme on the Impacts of Future Technology, University of Oxford that predicts that "about 47 percent of total US employment is at risk" Frey & Osborne, 2013). Marx and his 'value-critical' successors (Ortlieb, 2008; Lohoff & Trenkle, 2011; Kurz, 2012, Ch. 15-18; recently a volume containing basic texts in English translation appeared, see Larsen & Nilges & Robinson & Brown, 2014) conclude from this that productivity development will ultimately destroy capitalism at some point, as a reproduction by means of wage labour, money, and consumption of commodities will become impossible. While compensatory mechanisms such as absolute market expansion exist, not only are these finite due to the finite nature of the *ecology*, but there is also no natural law guaranteeing that work will not disappear at a faster rate than those mechanisms can compensate for (see Lohoff/Trenkle, 2011, Ch. 2; Kurz 2012, Ch. 14). Capitalism finds itself in ever deeper crises (one symptom of which is the inflation of the financial markets), and the only remaining solution can be to overcome those social structures that Kaempffert takes for granted in his predicted future. For the radical neo-marxist 'critique of value' this would mean a transition to a "community of free individuals" (Marx) beyond the forms of work, commodities, money and the state. Of course, this suggestion may appear excessively radical. But even leaving this aside, the assumption of a technology-driven disappearance of work has been strongly criticized – the term 'productivity paradox' in particular has been used to argue that there is no proof that digital technologies increase productivity and thus destroy work. Erik Brynjolfsson (1992) distinguished himself in this regard; we will return to him shortly.

Even if we take an agnostic stance on whether it is true or not that work is disappearing, we can note that Kaempffert ignores in his prediction the possibility of conflict between social forms and technological advances and thus ignores the (possible or necessary) changes in social structures.

4. 'General ecology' and the disappearance of cognitive work by smart devices.

Hansen, writing in 2011, was of course not discussing industrial assembly line work, as Wiener had. Rather, he is concerned with the ability that "smartphones" and "smart sensors" (Hansen, 2011, p. 372, 390)

have to feel; (more or less) follow intelligent algorithms and thus "collect and create sensory data" (p. 367); and "overshadow us" (Hanson, 2011, 372, 290). Yet, in his emphasis on the 'smart' character of new technologies, his argument resembles Kaempfferts' musings on 'automatic electronic inventions that seem to have something like intelligence'. The main difference is that in, Hansen's prediction, it is not only manual work that can be substituted, as was the case in Kaempfferts text. Basically, he claims that atmospheric and smart media environments are now making sensory, cognitive and perhaps even emotional work a matter for digital technologies that thereby 'overshadow' human beings even in these fields. Hansen involuntarily introduces a line of argument that runs counter to the assertion made by many critics of the argument that digital technologies would destroy work. These critics argue that the digital elimination of, for example, industrial work is not a problem as one can move into the 'service sector', 'creative industries' or 'knowledge economy' instead. But what if 'smart' digital technologies can also perform cognitive and emotional work (see Frey & Osborne, 2013)?

This is all the more striking because the debate surrounding the digital substitution of work and the serious problems this poses for a capitalist economy was rekindled at more or less the same time as Hansen wrote his text. This debate has different currents: The 'value-critical' Marxist Left sees its views (and its sometimes stunning precise predictions) confirmed in the worldwide economic crisis and huge labour market problems that have prevailed since 2008 (Lohoff & Trenkle, 2011). Even authors who are not at all associated with a Marxist perspective take the same line. In 2009, the computer entrepreneur Martin Ford published a highly-regarded book, *The Lights in the Tunnel*. The book's blurb already poses unmistakeable questions: "Where will advancing technology, job automation, outsourcing and globalization lead? Is it possible that accelerating computer technology was a primary cause of the current global economic crisis?" (Ford, 2009). In one chapter (pp. 67-73) he emphasizes that a significant number of more cognitively complex tasks can be taken over by the growing artificial intelligence of our 'smart' devices (which is of course why they are called 'smart'). Mental labour is rationalized, too.

However, it is even more striking that none other than the aforementioned Erik Brynjolfsson (MIT Professor and Director of the Center for Digital Business), has now (with McAfee, 2011) published a book titled *Race against the Machine. How the Digital Revolution is Accelerating Innovation, Driving*

Productivity, and Irreversibly Transforming Employment and the Economy – even though he was an advocate of the 'productivity paradox' for many years:

> But there has been relatively little talk about the role of acceleration of technology. It may seem paradoxical that faster progress can hurt wages and jobs for millions of people, but we argue that's what's happening. As we'll show, computers are now doing many things that used to be the domain of people only. The pace and scale of this encroachment into human skills is relatively recent and has profound economic implications. (Brynjolfsson & McAfee, 2011, p. 9 and in greater detail pp. 12-27)

In a way, the computer industry or MIT are now also discovering the argument made by 'value-critical' Marx scholars, ostracized and derided for many years (for obvious ideological reasons), that the (digital) forces of production can come into fundamental conflict with the (capitalist) conditions of production. If even radical professional optimists such as Brynjolfsson admit to this, then the situation must be grave indeed. Of course, authors such as Ford or Brynjolfsson do not conclude that fundamental social changes are necessary, but believe that current social forms can be maintained with a few reforms (for a criticism of Brynjolfsson & McAfee, cf. Heß, 2013). However, this is only of secondary importance here.

It is certainly striking that the question of work (and its disappearance) does not appear in recent 'media-ecological' debates on the future of the media. Erich Hörl, the editor of the volume in which Hansen's text was first published, is also an observer of the "ecologisation of being through communication technology" (2011, p. 17) and the "general ecological reality of a largely cybernetic heterogenetic subjectivity techno-logically distributed throughout the environment" (p. 33). He thus calls for the new academic discipline of "General Ecology" (p. 23 ff.). In his text, he writes about the aforementioned RFID (and 'smart dust'):

> I am thinking for example, to cite one prominent development, of the evolution in media technology of RFID chips and the objects they label that are supposed to culminate in an Internet of Things. [...] By entering into an 'RFID world', [...] as Bruce Sterling somewhat emphatically called the new object orientation's military hyperindustrial complex, which at first glance appears to be a predominantly logistic reorganization that carries serious implications of a society of control, nothing less than subjectivity itself is changed, down to its very deepest levels. As Hayles put it in a nutshell: Together

> with embedded sensors, mobile technologies and relational databases, RFID destabilizes traditional ideas of how humans construct both the world and meaning. [...] In short: According to Hayles, RFID consolidates nothing more and nothing less than the currently popular theory of distributed cognition. It objectively transforms our image of thought. In *smart dust*, intelligent fine particles of tiny interconnected objective agents, a transcendental technicity, as it were, is revealed; a technicity that is characterised increasingly by technological immanence. 'Machine-ness' disappears into 'thing-ness'. [...] From my point of view, this constitutes RFID's significant historical and ontological eventfulness, in which a new primarity or even primordiality emerges from environmentality as a basic trait of the technological condition [...]. (pp. 27/28; Hörl is referring to an essay by Katherine Hayles in the same volume)

We can agree with this analysis, which (like Deleuze, 1992) refers to the implications of a society of control – for example, the possibility of always being able to be located – and furthermore, how RFID changes subjectivity and even the 'image of thought' (another Deleuzian phrase). But modern subjectivity is precisely defined by its relation to 'work', as Foucault (2001, p. 272 ff.) has shown. Hörl also addresses the role of work, but appears to categorize it – following Simondon – as part of an "antiquated image of technology" and a "foundering culture of meaning" (2011, p. 18) According to Hörl, the "*eco-technological subjectivity*" (p. 21, Hörl's emphasis) structured by distributed smart technologies (see also p. 29) can no longer be adequately covered by the term 'work'. On the one hand, this remains unconvincing given the nervous discussions surrounding the disappearance of work that have emerged precisely since the new and ever more ubiquitous digital technologies came into being (e.g. in Brynjolfsson) – obviously 'work' is and remains a central issue of our time. It holds true to a certain extent, even though we may argue differently than Hörl. In reality, thus the nervous discussion, work threatens to disappear in the face of the new 'atmospheric media'. Let us return to the example of RFID. One of the richest sources of information is the online *RFID Journal* (http://www.rfidjournal.com). The best introduction to this technology and the possibilities it offers is an article titled "What is RFID?" (http://www.rfidjournal.com/article/articleview/1339/1/129). The third paragraph already states explicitly: "Some auto-ID technologies, such as bar code systems, often require a person to manually scan a label or tag

to capture the data. RFID is designed to enable readers to capture data on tags and transmit it to a computer system – without needing a person to be involved." 'Without needing a person to be involved' – and yet another job is able to be cut. Thus, unlike Hörl, I would not argue that the new media environment can only be understood by renouncing the term 'work', to the contrary: Only when we understand how the new technologies destroy work can we understand that the (capitalist) society of work is actually a 'foundering culture of meaning'. Thus modern human subjectivity, which, according to Foucault, but also according to Hannah Arendt (1999, pp. 12/13; Arendt makes explicit reference to the disappearance of work), is focused on work, is fundamentally changed, and probably even more radically than by the insight that cognition is becoming distributed (or has been always distributed – and we're only realizing that now).

Similarly, Hansen's text makes no reference whatsoever to the question of (potentially problematic) shifts in social structures caused by "atmospheric media environments" (Hansen, 2011, p. 391); even though he, like Hörl, might at least have been familiar with Ford's book. The term society certainly makes an appearance in his text, albeit in an approach based on Whitehead: "Firstly, everything that can be experienced is societies, whether societies of real individuals, societies belonging to other societies (of real individuals) or societies of societies … (of real individuals)" (p. 376). At this point, an idea of society becomes apparent that is ultimately based upon 'individuals' – however these individuals are defined, whether as human and/or non-human. This methodological individualism (cf. Kurz, 2012, Ch. 3) makes it difficult to arrive at any definition of the *form* of society. However, reading Hansen in this way is not entirely justified, as he continues: "Taken individually […] real individuals can never be experienced or can only be experienced indirectly as elements within higher-order societies (and societies of societies…) accordingly" (2011, p. 376; also cf. p. 381). This means Hansen is well equipped to thematise the form of society itself – and concludes fittingly with a section on 'Technically decentralised societies'. There he poses the question of the "environmental agency […] exercised by the quantified sensations generated by our digital devices". He concludes that the "restrictions on what our mind can contain operatively" are:

> [An] argument in favour of technical distribution: The latter increases our cognitive, perceptive and sensory agency, precisely because it places us in a relationship of functional cooperation with cognitive, perceptive and sensory agents that operate autonomously and independently of our own

agency. (p. 408)

This is all correct – as we know from our helpful "smartphones", for example (p. 372). However, there is no *a priori* reason to assume that the technical agents 'operating autonomously and independently of our agency' always *cooperate* with us – might they not also *compete* with us? Hansen writes that the "ability [of smart and atmospheric devices] to *work* more or less uninterrupted across a huge range of dimensions" begins to "overshadow" us, that is, human beings (p. 372). Why, then, does Hansen give ungrounded preference to cooperation at the end of his text – even though we obviously live in a society shaped by "competitive fury" (McLuhan, 2003, p. 455)? And if we argue that the devices have to cooperate as they are basically our creatures – then they could hardly be 'independent' of our own agency (as Hansen writes). Could they not, instead of *increasing* our agency, *substitute* or even *destroy* it? For example by making our work obsolete?

In this regard, a pre-stabilized harmony between the new – 'smart' – media infrastructures and the structure of society is surreptitiously posited by Hansen. Any conflict between the forces and the conditions of production is negated as unfounded from the outset. Thus he basically repeats the structure of Kaempffert's text (and many others) – namely that of only ever being able to describe the future as technological progress against a stable social backdrop, an economic unconscious. However, this throws away needed critical potential (cf. e.g. Dyer-Witheford, 1999; Mosco, 2004), which is desperately required given that the capitalist world economy is rocked by serious upheaval; to say nothing of the fact that large parts of the world have more serious concerns than filling their environments with smart 'ubiquitous computing'. *The future of the media is always the future of the media in a future society*. Hansen's text represents an important contribution to the philosophical description of a world in which 'smart' devices are becoming ever more 'ubiquitous' – but without raising the critical issue of social forms, this text and others like it threaten to lapse into an overly too affirmative position.

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