Post-Industrial Design – Our Standpoint

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Post-Industrial Design – Our Standpoint

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Note: This text was originally published in German for the diploma publication «We! We are ourselves the method.» It provides an overview of the institute's usage of the term «post-industrial» and its consequences for our understanding of design and societal transformation, as well as for the methodology of teaching and designing.

Since its foundation in 1999, *HyperWerk* Institute has engaged with the creative possibilities for social transformation which have opened up between technology and society. Changes have been driven by the developments of IT and communication technologies, which have changed global communications (the Internet, Big Data), trade (Globalisation) and today also increasingly change production methods. *HyperWerk* uses the term *post-industrial design* for these kinds of art related activities. The prefix 'post' contains friction with the term «industrial» as well as introducing distance from its conceptual foundations. But it's not

about the proclamation of a new age of the world, nor is it about turning towards a minor sideshow set apart from the accelerated industrial developments. It's a matter of concretely utilizing the potential of technological developments that, for example, support the autonomization and individualization of production. As a consequence, a turning away from the industrial separation of design, production and use is impending for the discipline of design; a separation that established the invention of design as a vocation in the nineteenth century and which at that time expedited the marginalisation of handicrafts.

These current developments could be understood as the notes at the margin of the fourth Industrial Revolution. However this approach emphatically overlooks the necessity of a new orientation for our economy. The solution to environmental problems and resource scarcity, as well as reaching our climate goals, cannot or cannot only be brought about with greater measures of energy efficiency. The expected increase in productivity arising from the next wave of automated technologies can thus no longer be offset through new markets. The post-industrial problematic is formed through increasingly local and regional production circles, an integrated understanding of design, production and use, and developments geared towards an individualized production that is dependent upon only one person and is therefore autonomous. Which non-industrial developments between the basic possibilities and the likely developments are desirable? And what can design contribute?

Just as new media were thematically at the centre of the institute's work at its foundation, today we are guided by questions of digitally altered crafts, of storytelling to sketch out the on-going changes, together with the process of creative practice from different social, cultural and scientific fields. Our self-conception as a collaborative learning laboratory remains a constant focus. In our laboratory innovative forms of knowledge acquisition, competencies for designing processes, and design strategies are developed and operated together. Within this framework we develop a theme each year; the theme this year is «We! We are

ourselves the method!» The title already provides our direction: in which way is the acting, self-altering subject embedded into the process of work, herself the central method, the interface of new knowledge, new cognitions and aesthetic perceptions?

As is the case in every year such an undertaking can only succeed with the help of all involved. We would like to thank the graduates, the young students, the various teams, and our external partners. To everyone in our milieu who time and again impeded the writing of this text, thank you – by doing do you have provided ever more material and questions. Special thanks go to Sotirios Bahtsetzis, who is listed as the co-author of this text. Without his close cooperation and stimulating intellectual company, the complete theoretical treatment of our yearly theme would not have been possible.

Introduction

We look upon a romantic cultural landscape, a pond surrounded by lush green trees and meadows. Floating above the water is a half-built pedestrian bridge. The construction feels organic and

Bridge, a project of MX3D, photo: Joris Laarman Lab / MX3D

the basic framework seems to lift the bridge into the air like a network of branches. Two robotic arms work at the open end. They assemble the bridge as if without a sound, the romantic picture remaining undisturbed.

With this picture the Dutch company MX3D has powerfully illustrated their research and development project: a 3D-printed steel bridge assembled by robots. We are already familiar with robots from industrial contexts such as the car industry, but MX3D's presentation makes the post-industrial change palpable. Each component is produced individually and automatically; the construction presumably designed in a generative manner; the structural analysis calculated by computers and assembled by our buddies – the robots. This image stands for an alternative to the visions of dystopian science fiction. And it implies some fundamental questions: how can we deal with these rapid developments? How can we relate these jumps in development to our central resource, the Earth? And how can we bring them into harmony with our individual, social, and cultural needs?

The nature depicted is parkland altered by human hands into a romantic idyll of recreation. Welcome to the anthropocene – through our consumption of resources we have inscribed ourselves into geology as a force of nature![1] We determine nature, and this is true even in the most forbidding mountains, deserts or polar regions, whether it be through our direct interventions or the indirect consequences of our actions. In fact, all of our idylls of nature are culturally constructed, including their physical reality, our mental and spiritual understanding of them, and affectively in our emotional relations. We are the products of our own work on ourselves, embedded in social demands, normative processes, and our affective, emotional formation.

The concept *post-industrial* outlines possible social developments that work themselves into their shape through difference to the

1 The concept of the anthropocene was first introduced in 2000 by the Dutch meteorologist Paul Crutzen together with Eugene F. Stroemer (cf. Sloterdijk 2011, 7f).

industrial. Contrary to the currently much employed concept of the 4th Industrial Revolution[2] (e.g. Brynjolfsson / McAfee 2014), the concept *post-industrial* does not conceive of current social transformations as yet another industrial revolution. The driving forces of the anticipated revolution are automatisation through artificial intelligence and Big Data. From an industrial point of view, we see the development of a highly automatised and integrated global production and distribution system. This production is flexible and individualised, with small stocks and short delivery deadlines, resulting in a strong increase in productivity and a simultaneous massive reduction of available jobs. In the service sector, in particular, as well as in administrations, banking, and the insurance sector a massive amount of jobs will be lost.

Yet many elements of the changing socio-economic *dispositif* can also be understood in post-industrial terms. As we will show later in the section *A Concept in Search of its Meaning*, the concept of the post-industrial primarily arose in the 1950s and included the societal consequences of the emerging service-based society. Therefore what we understand today as the service, knowledge, and information society has to be seen as an integral part of what we here describe as the «post-industrial.» The strong turn towards flexibility inherent to the aforementioned developments can also point us in an alternative direction. This path would involve the simultaneous reduction of production units, which would increasingly resemble laboratories and workshops, and allow and require an integration of drafting, development, and production. The workforce would be highly qualified artisans, designers, and handy-people who could move across disciplines. Integral local and regional cycles can be strengthened. Drafting and production will not be the only areas to become proximate, as consumption and the feedback of experiences into the next

2 The 4th Industrial Revolution divides the industrial development into the time periods of the usage of steam and waterpower in manufacturing plants (1st Revolution), the emergence of electrified mass production with a strong division of labour (2nd Revolution), the automatisation of production through the usage of IT and electronics (3rd Revolution), and the usage of cyber-physical systems in the emerging 4th Industrial Revolution.

production cycle will also join the process. The investment costs for these types of workshops are much lower than the costs for the big manufacturing plants. Therefore alternative forms of economic organization, like cooperatives, open collectives, and common laboratories with shared intellectual property rights (open source in drafting and production) will also be easier to implement. Local and regional systems will enable alternative systems of use (collectives, commons), credit, and exchange (such as alternative currencies). The separation of cities into domestic, work, and leisure areas – necessitated by industrialization – can be lifted and the need for a daily commute minimized.

Yet all of this would be a mere footnote to another industrial revolution if it were not for the necessity of post-growth, the only way out, it seems to us, of impending resource scarcity, progressing environmental destruction, and climate change. There are limits to global mobility and further increases in productivity. More energy efficient systems will not solve the problems anymore (e.g. Paech 2012). All this does not yet entail the necessity of closing the gap between developed and less developed nations. It seems that only under conditions of post-growth will a self-regulating equilibrium and thereby a reduction of flows of migration be possible. Of course, one would have to specify here which level of development would be desirable and globally realisable in which cultural context. A reduction of the resource consumption in highly industrial countries is in any case a fundamental condition – a forcible adaptation of the whole world to the «Western» level would surpass the capacities of Earth several times over.

Global problems can only be solved globally, yet it requires that citizens take up such a perspective. According to Willke we can understand dissatisfaction with political parties, low voter turnouts, populism, opportunism, dependence upon specialized knowledge, and the economisation of all areas of social life as symptoms of the inadequacy of present control mechanisms. That is why politics has to rely on the decentralisation, delegating, and self-governing of functional systems. Moreover, the tasks of

politics have to pivot «from repair to resilience» (Willke 2014, 145). Politics should not interfere with all areas of life, nor be understood as administration and management, but rather focus on its core competencies, i.e. «the production of collectively binding decisions» (Willke 2014, 145). The fundamental rethinking of the functions of politics, economics, and civil society contributes to this discussion.

To return to MX3D's pedestrian bridge: it illustrates some of the possibilities described. It was made individually by a small collective with the help of highly developed 3D-printers, calculation models, and robots. The place of production was not the factory hall, where thousands of people perform highly divided labour. The necessary investments cannot be compared with the dimensions of large manufacturing plants. We recognize desirable changes in this example. Desirable in the sense that MX3D are using the possibilities of cyber-physical machines and thereby make visible possibilities for a reduction of the division of labour, a strengthening of local and regional cycles, as well as the possibility of collective forms of work and production. However, the beginnings of these developments do not lie in high-tech laboratories, but rather in neighbourly help and voluntary work, maker shops and the DIY movement, urban agriculture, artisanal and design collectives, the Commons initiative and Fab Labs. Here the 3D printer becomes a producer of spare parts for machines – and remains at the same time craftsman and model maker. We can see fundamental and qualitative developments of the industrial age here, which we designate by the term 'post-industrial'. We ask the question concerning the formability and function of design. This work conditions the continued engagement with questions regarding the desirability and necessity of these different developments. Are we capable of actively shaping the developments, or are we limited to cleaning up after catastrophes and crises? What can, what should, what does design want to do? How are we travelling – «by design or by disaster?» (Sommer & Welzer 2014, 26).

The developments of the last 30 years are embedded in the context of globalisation and a strong neo-liberal orientation. These developments lead to more than just the impending dissolution of labour and prosperity promises. The gaps in income, assets, and life expectancy between rich and poor, between centre and periphery, are constantly increasing. Where are taxes and labour costs the lowest? How can transport costs be minimized and global options used best? Today, the possibility of «a reduction of wage labour by 50 per cent in the European countries over the next 20 years» (Dirk Helbing in: Laukenmann 2015) is a real threat. How do we react to it? From an industrial and economic viewpoint the solution lies in the expansion of markets. Strongly simplified this means: if we double production we could avoid all unemployment, and social problems could be defused – more consumption for everyone! But this approach stands in sharp contrast to the already mentioned necessity of a reduction of total production and resource consumption.

All these developments are embedded in an epochal cultural transformation caused by electrical media like radio and television, as well as the new electronic media and informatics. In media studies this change is referred to as the beginning of a second oral society[3] (cf. Ong 1986, Havelock 2007). Global contemporaneity, the strengthening of oral communication since the introduction of radio and television, semantic algorithms and the connected, varied possibilities of Big Data – all these factors lead to an enormous and novel social excess of meaning[4] (*Sinnüberschuss*, Baecker 2007). The interpretation of events becomes globally negotiable – nothing seems to be carved in stone. From a systems theoretical point of view, this excess has to be

3 The concept of a secondary orality was introduced by Walter J. Ong at the end of the 60s of the last century and takes up the work of the canadian school in media studies. The possibilities of telephone, radio, television, audio- and videorecording systems, computers and internet are pushing back against the domination of the written fixation of knowledge, memory, and belief. Many elements of today's communications are resembling again more strongly the epistemologies of oral societies (i.e. their ways of generating knowledge).

4 The German word «Sinn» can refer to the physical senses, sense in the abstract (when something «makes sense»), or meaning. Here Baecker specifically uses the term in the context of systems theory to refer to the extra work created by a system as «dangerous» to it; any system will seek to eradicate this extra work as it introduces an «excess of meaning» which cannot be assimilated into that system.

responded to with a reduction in the overload to reach a new, different stability. This kind of work on the culture and structure of the next society will be a massive superimposition over all the aforementioned changes. And we do not know where the journey to the next society will lead.

What is the role of design in all this? As is well known, the future can only be discussed and not predicted. Yet through experiments we can make claims about the possibilities of social and cultural change; through drafts we can represent scenarios; through models we can test potential products, services, and work processes; and through literary, cinematic, and other media permutations it is possible to consolidate all these elements poetically.

The potential of post-industrial design lies here. The design of products and service relations are not at all the central topic. Rather, self-developed design strategies highlight potentials, make images of possible developments and post-industrial states representable, and test concrete implementations in an experimental manner. At the center of this lies an elimination of the separation between the industrial stages of drafting, production, and usage (cf. Halter 2010, 228-233). Often newly emerging fields of work and career paths are found in these forms of work. A study conducted in 2015 among former students of the HyperWerk Institute could show the alumni's successes especially in this area.


MINE
THE
GAP!

The Post-industrial

A Concept In Search of its Meaning

The usage of the concept post-industrial can be traced back to the time of the First World War. The architect and writer Arthur J. Penty had used the term *Post Industrialism* since around 1917 and published a book with this title in 1922. From a socialist perspective Pentry argues for a return to a «guild society based on crafts and small businesses» (cf. Leendertz 2012). These elements – the return to the manageable dimensions of pre-industrial machinery with its economically and socially small-spaced structures, as well as a focus on small communities as opposed to the anonymity of the masses – describe a fundamental current in the usage of the concept of the post-industrial since its first occurrence. Since the mid 1950s, the concept is used in another context in the United States. It describes the social changes in the emerging service and knowledge society. The academic focus of sociologist David Riesman are the changes of the subject in its interaction with the increasingly abstract social structures (Riesman 1958). The West has developed into a human-administrating service society with more spare time and a broad range

of offers for consumption. He uses the concept of the post-industrial only in passing to describe the current state of American society. Only with the sociologist and journalist Daniel Bell, will the term be projected into the future as a forecast. Though he already used the concept in the late 1950s, he only put it to paper in his 1973 book *The Coming of Post-Industrial Society*. The rapid growth of the service sector is the starting point for Bell's conception. This development leads to a fundamental structural change, which includes the structures of society, economics, culture, and politics. It causes a higher demand in high-qualified, theoretically educated employees. Theoretical knowledge gains in importance, along with working with models, simulations, and system-analytical methods. From this a more conscious society results, one that is plan-oriented towards the future. The service society is at the same time a knowledge society. Knowledge is based on exchanges between humans: «The standard for quality of life is not anymore the sheer quantity of goods consumed, but rather the comforts and immaterial values of education, health, or culture» (quoted in Steinbicker 2011, 54). For Bell, post-industrial society is therefore also a communal society. This diagnosis of the emerging service society is compelling in its breadth and detail. Yet the conceptual form of the post-industrial is lost in the phantasmagorical image of a plannable society, founded on theoretical knowledge and with a strong system to balance social conflicts. In fact, Western societies developed in another direction, steered by a neoliberal orientation and faith in markets as the ultimate regulative instances. In his 1969 book *The Post-industrial Society*, the sociologist Alain Touraine gives a European perspective on the concept of the post-industrial. He focuses on changes in social conflicts and the ways that social actors negotiate these conflicts. The struggle between labour and capital is no longer at the centre – the conflicts broaden into various social and cultural areas. Social movements face economics and political formations. He focuses on social struggles, but simultaneously also describes the differentiation and opening of society into various social groups. In a 2006 interview, he states: «Rationality and rights are the non-social foundations of modernity, which are not socially mediated and which will continue to exist

even after the dissolution of current social institutions. The term 'socialisation' should be replaced by the term 'subjectivization' in the future. We need a paradigm in which subjects find space with the freedom and capacity to define themselves collectively, their rights, obsessions, and identities» (Die Zeit, March 23rd, 2006). These changes, which require a new paradigm, are in the end what Touraine described using the concept of the post-industrial back in 1969.

We can note three fundamental tendencies in the approximately hundred-years old discourse on the concept of the post-industrial. First, there is the search for a pre-industrial understanding of labour and life to replace the industrial *dispositif*. As the knowledge and information society has developed, including a strong service sector, there have been concurrent attempts to describe this process sociologically. And, as a range of social groups have emerged, each with a different *habitus* and values, so have new forms of social conflict, repositioning the subject's rights and opportunities.

«We shape our tools and thereafter our tools shape us» (McLuhan 1994).[5] These tendencies have great significance for a contemporary definition of the post-industrial but they do not necessarily capture its core. Outside of the mainstream, the philosopher and theologian Ivan Illich uses the term 'post-industrial' in his two polemics *Tools of Conviviality* (1973) and *Deschooling Society* (1972) almost in passing as if it was self-evident. In both texts he discusses so-called convivial tools. Illich describes conviviality as a life-affirming, «sociable»[6] interaction with technology. In *Deschooling Society* Illich writes on that point:

5 The quote is often attributed to Marshall McLuhan and his book *Understanding Media* (1994). Alas, the sentence cannot be found there. Probably it originates with his colleague John M. Culkin, printed in a 1967 article (Saturday Review 1967, 51-52, 71-72). These difficulties of attribution notwithstanding, the quote describes, in a concise manner, Marshall McLuhan's understanding of media, of tools as media, and of the dialectical process between humans and tools. Cf. www.mcluhangalaxy. wordpress.com/2013/04/01/we-shape- our-tools-and-thereafter-our-tools- shape-us/.

6 Ivan Illich himself has difficulties with a possible misunderstanding of the concept of conviviality. Sociability and joyfulness are significant but not central. Illich demands a society that emerges from social communities. He designates as conviviality an affirmation of life, which can only work in small, solidaric communities, in connection with technologies which are comprehensible and autonomously usable by

«Bildungserwägungen gestatten uns, ein zweites fundamentales Merkmal zu formulieren, das eine postindustrielle Gesellschaft aufweisen muss: nämlich eine Grundausstattung von Werkzeugen, die sich schon durch ihre blosse Beschaffenheit technokratischer Kontrolle entziehen. Nicht nur ökonomische, sondern erst recht Bildungsgesichtspunkte verlangen, dass wir auf eine Gesellschaft hinarbeiten, in der naturwissenschaftliche Erkenntnisse in Werkzeuge und Werkstoffe eingebaut werden, die sinnvoll in so kleinen Einheiten benutzt werden können, dass sie für alle verfügbar sind. Nur solche Werkzeuge können den Zugang zu Kenntnissen und Fertigkeiten sozialisieren; nur solche Werkzeuge ermöglichen den zeitweiligen Zusammenschluss von Menschen, die sie zu spezifischen Anlässen gebrauchen wollen. Nur solche Werkzeuge erlauben es, dass im Prozess ihres Gebrauchs neue spezifische Zwecke sich ergeben, wie jeder Bastler weiss. Nur das Zusammenwirken von garantiertem Zugang zu Fakten und Werkzeugen von begrenzter Kraft ermöglicht es, eine Subsistenzwirtschaft ins Auge zu fassen, die auch fähig wäre, die Früchte der modernen Wissenschaften aufzunehmen.»

Although this section refers specifically to South America, it now gains importance for all of us *avant la lettre* at the end of a polemic on the fundamental difference between *Bildung* and formation *(Erziehung)*.
For Illich *Bildung* and learning are to be understood as a constant engagement of man with himself, his environment, and nature. *Bildung* is a social, communicative, and performative activity, which is always conditional upon the free decisions of everyone involved. *Erziehung,* on the other hand, produces workers and consumers. For Illich it always has to be understood as part of a system-steering process which deliberately forms individuals.
At the end of this thundering and discussion-provoking polemic we find the cited section which describes every meaningful

these communities. According to Illich, this conviviality is necessary to protect the world from destruction (environment, democracy). Currently, the term is being used in France again. Cf. The Convivialist Manifesto: A Declaration of Independence (2014) – a collective work of over 40, mostly French, intellectuals.

tool as a tool of engagement (*Auseinandersetzung*) with oneself, one's own community, and nature. Through conviviality, Illich demands the life-sustaining, life-affirming use of technology. «Sustainability» aims at an ecological, autonomous, and humane interaction with technology. This is only possible if tools abide by human standards: they need to be able to be understood, repaired, and modified; able to be used individually or in small groups; the need to fit socially, ecologically, and economically into a social system, i.e. be sustainable in all dimensions. Illich gives the example of Chilean fishermen. The old outboard engines of the 1940s and 1950s are still being used (the book was written in 1973), the newer engines of the 1960s have long been scraped. The old engines are more convivial, i.e. one can repair them oneself. This raises the question for our times: how can an old overboard engine be brought into relation with a modern robot? The philosopher Vilém Flusser can help here. In his essay «The Factory» he distinguishes between hands, tools, machines, and apparatuses (Flusser 1993, 12f).

«In the case of the machine, it is the constant and the human being is the variable: The machine is situated in the middle of the workshop, and when the human being becomes old or ill, the owner of the machine replaces him with another. (Flusser 1999, 45). Here we see a congruence of Flusser's concept of the tool and Illich's concept of the convivial tool. Consequently, Flusser's machines cannot be understood as convivial tools in Illich's sense. What is Flusser's concept of the apparatus as a newly emerging type of tool? He writes, «machines are tools that are built according to scientific theory when science is understood as meaning chiefly physics and chemistry, and robots can additionally bring neurophysiological and biological theory and hypotheses into play. To express this in terms of the simulation of hands and bodies (pg. 46): We can count on it being possible to overcome the crazy alienation of the human being from nature and culture such as it was at the height of the machine revolution. The factory of the future will cease to be a madhouse and will become a place in which the creative potential of *homo faber* will come into its own. This structure will be changed fundamentally

by robots. Not just because robots can be turned to more uses and so are basically smaller and cheaper than machines, but because they are not constant in relation to human beings. It becomes more and more
apparent that the relationship between human being and robot is reversible and that they can only function together: the human being in effect as a function of the robot, and by the same token the
robot as a function of the human being (47).»

This provides a hint as to what factories of the future will look like: like schools in fact. They will have to be places where human beings can learn how robots function so that these robots can then relieve human beings of the task of turning nature into culture... Thus in the case of the factory of the future, we will have to think more in terms of scientific laboratories, art academies and libraries and collections of recordings than in terms of present-day factories. And we shall have to look upon the robot-man of the future more as an academic than as an artisan, worker or engineer.

The search for convivial technologies is central when we post-industrial designers imagine the coming wave of automatisation, think about the applications opportunities for robots, «smart things», and the like. It is the search for a desirable relation to technology, which will have to be carved out between the probable and the possible.

Are we capable of conviviality and radical change?

Social scientists Bernd Sommer and Harald Welzer speak of the necessity of a «reductive modernity (49)» in their co-authored book *Transformationsdesign* (Sommer und Welzer 2014), and for that presuppose the willingness to undo one's own privileges, in the areas of «the reduction of material demands, different value prioritizations, changes in economic practice, mobility, nutrition, labour, leisure time, and living – at least among those who have

so far had their share of the achievements of expansive modernity on other people's costs (be they the marginalised of today in the global south or future generations).»
Are we capable of renouncing possible technological innovations? Are we socially capable to change fundamental rules? Certainly, human history knows many periods of massive change. Yet it seems more than just doubtful whether we simply can, or want to, or ought to stop the current technological developments in IT and automatization. The next iPhone is calling! How, thus, to deal with technological developments? One possibility is the promotion of development in a convivial direction. Let us take Fab Labs, 3D printers, and maker shops as examples. They also contain a romantic and at the same time naive idea. Sommer and Welzer argue that Open Source and Open Access are not actually that new – public libraries, pools, and museums are sharing products as well (151f). Yet these institutions have been, and still are, seen as public responsibilities. All these approaches, be they in the area of production and crafts (as in the case of the Fab Labs), in the area of alternative business models (sharing economies like car sharing and couch surfing), or of distribution systems (online systems like crowdfunding and niche markets), are never already in and of themselves positive solutions. They can destroy social safety nets (drops in social security contributions due to the increase in self-employed individuals); they can even bring about increases rather than reductions through rebound effects (carsharing as a driver of mobility increases); or they can lead to the privatisation and commodification of previously public responsibilities.

Post-industrial means to treat the functional, institutional, and habitual levels of transformations in an integral manner (cf. Elias 1987: Wandlungen der Wir-Ich-Balance in Elias 2003: Die Gesellschaft der Individuen, 207-310). The desirable, the fascinating, the hopeful can only develop in a desirable direction if side effects are taken into consideration. Post-industrial design, therefore, always also has to mean process design. One's own actions have to be understood as processes and the task of design as acting within these processes. No machine is convivial

per se, no collective is manageable *per se* and forever, and no service sustainable by design can be guaranteed to be sustainable in use.

Post-democracy?

Much can be accomplished when one doesn't think of the rest of the world; at least, if the economic and infrastructure capabilities already exist. A Fab Lab could be built quite quickly. But as soon as the side effects are taken into consideration other questions quickly materialise. And in this area massive transformations are underway that impact the realms of politics and society. The concept of post-democracy best summarises these changes. It has been applied increasingly in the social sciences since the 1990s, above all through the work of Colin Crouch who popularised the concept. Crouch uses the concept of post-democracy to describe a decline in the West and views the period between the second world war until the late 1970s as a «democracy's moment» (*Augenblick der Demokratie)* induced through Keynesian economic policy and the corresponding answer to the 'social question'. As the impetus for his work Crouch takes a phenomenon observable everywhere today, which is the growing distance between citizens and politics and the passivity of voters. The feeling of powerlessness in the face of «institutional politics» increases, which in turn feeds disenchantment and atrophies the trust placed in representative democracy. The reasons for this development are manifold, where the citizens «hardly expect anything positive from politics or the parties anymore and leave their right of participation unused (Schäfer 2010, p. 40).» According to Crouch the public appearances of politicians no longer prompt discussion; instead, iconic market products are being sold. Politics has been replaced by opinion polls and image campaigns in the media, a development that is also accompanied by the de-ideologizing of particular positions of both political actors and parties. Crouch writes, «voting has become a tournament of brand names. People no longer have the opportunity to complain to politicians about the quality of public services (Crouch 2008, x).»

For the French philosopher Jacques Rancière, post-democracy means consensual democracy. Rancière's political theory places dissensus, or agonism, at the centre of politics, and posits a fundamental separation of society. For democracy a constitutive inequality between members of the social body is fundamental: between those who have a share of the distribution of visible power, and those who simply have no share and are designated as the stakeless (*la parts des sans-part*) by Rancière. He writes, «On top of this, it is through the existence of this part of those who have no part, of this nothing that is all, that the community exists as a political community that is, as divided by a fundamental dispute, by a dispute to do with the counting of the community's parts even more than of their 'rights'» (Ranciere 1999, 9).

For his analysis Rancière does not adopt a class specific division of society based solely on economic criteria. He extends the criteria in order to incorporate differences that are based upon background, age, education, access to media, economic status, et cetera. Rancière also differentiates between a kind of politics that is desirable, but only ever occurs rarely, and a «row of procedures, through which power is organised, consensus produced and places and roles inside society attributed (Marchart 2010, 179).» This second kind is defined as the «police», which is a concept that has a different meaning in Rancière's philosophy than in its ordinary use. «Emancipation» is for Rancière primarily a praxis that involves an ever-new allocation of the visible and the 'sayable', i.e. the «sensible», through which process the traditional roles redistributed. This can potentially bring spectators into the position of actors and consequently change their political status.

For the political scientists Michael Hardt and Antonio Negri the *Multitude* in *Empire* (Hardt/Negri 2000) are understood as potentialities that aspire to change by revolting against the globalised Empire. Using as an introduction the impressive metaphor of a heraldic animal, the double eagle, they depict the contemporary socio-political situation. On the one side «the legal structure and

the constituted power originating from the machinery of bio-political hegemony.» And on the opposite side «is the plural multitude of productive, creative subjectivities of globalization that have learned to sail on this enormous sea. (Hardt/Negri 2000, 60) » In the multitude Negri sees a possibility to establish «a form of democracy that is not mystified (Negri 1987, 9ff)», which means a form of collective organisation that is built upon the immanent power of «the action of a multitude of singularities (Hardt/Negri 2000, 73) Contemporaneity and the global chain linking these events are the crucial characteristics of this new form of collective organisation. The uprisings and revolts of the 1990s were occasions of a world-wide rupture *(Aufbruch)* that issued forth the new forms of organisation. These in turn led to additional forms of self-organisation of those that Rancière has designated as the stakeless *(la part des sans-part)*.

Beginning with the self-organisation of migrants Hardt and Negri pose certain demands that can be seen as a political manifesto beyond official politics: «first, the demand for a world citizenship; second, the fight for a social income with or without work; third, the reappropriation of knowledge and language, of production and reproduction, of corporality, of life in its entirety.»[7] However, the concept of the multitude is not only relevant to the discourse about the post-democratic condition and the representative system based upon political power. It is related to questions about new forms of subjectivization as well as novel developments of the concept of work in a post-fordist society, which has changed massively since the 1980s.

The Liberation from Wage Labour?

«Thus we have been expressly evolved by nature-with all our impulses and deepest instincts-for the purpose of solving the economic problem. If the economic problem is solved, mankind will be deprived of its traditional purpose.... Will this be a benefit?

7 Robert Foltin – Immaterial Work, Empire, Multitude; New Notions in the Left Discussion, on Hardt/Negri's «Empire» www.grundrisse.net/grundrisse02/2multitude.htm (in German)

If one believes at all in the real values of life, the prospect at least opens up the possibility of benefit. Yet I think with dread of the readjustment of the habits and instincts of the ordinary man, bred into him for countless generations, which he may be asked to discard within a few decades. Thus for the first time since his creation man will be faced with his real, his permanent problem - how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well.» [8]

These questions were raised by the economist John M. Keynes in the darkest years of the world economic crisis of the early 1930s. The solutions of the New Deal[9] (and the economic development towards the Second World War) had not yet been developed or had barely taken hold. Keynes's prognoses have not come true to this day, or are still to come true. Keynes's basic question remains as unanswered as it ever was: what will we do when wage labour drops sharply? Three developments in particular force us to increasingly engage with precisely this question.

1. The developments since the 1980s have led to an increasing decoupling of the financial sector and the real economy, to an extremely high capitalization of the «new» companies with comparatively low numbers of employees, as well as a reduction of the tax base in most countries. Consequently, the gap between rich and poor has constantly been widening. The middle classes, who are the social and economic foundation of the Western industrialized nations, are under increasing pressure today. Based on a plethora of statistical data, the economist Thomas Piketty recognizes in his book *Capital in the 21st Century* the systemic problem of capital growth exceeding growth of the economy at large. His theses, as well as the selection and interpretation of the data, are the subject of intense debate in economics; not, however, the widening gap between the poor and the rich.

8 Translation quoted in Daniel Bell's article *„The Post-Industrial Society«*, Die Zeit 1969, Nr. 48

9 The New Deal refers to the economic reforms which were introduced in the US under President Franklin D. Roosevelt at the beginning of the 1930s as a response to the world economic crisis (regulation of financial markets, introduction of social security measures, unemployment benefits, poverty relief, and economic stimulus packages).

2. The sociologist Wolfgang Streeck in his book *Buying Time: The Delayed Crisis of Late Capitalism* traces how social market-economies developed in several phases after World War Two and how democracy and capitalism increasingly became unbalanced. Until the 1960s economic growth was strong enough to expand the welfare state, raise incomes generally, and create the middle class as the central social pillar. This phase is described by Colin Crouch as «democracy's moment». However, in the 70s economic growth decreased. Governments tried to simultaneously sustain the profits of the economy and the prosperity of broad levels of the population. At first this happened through an inflationary monetary policy, later on through the increase in public debt, and finally through the privatization of debt through cheap mortgages and credits. Then the US real estate market collapsed under the mass of foul credits. And no solutions to the plight have emerged since. Debts cannot be postponed forever and haircuts create losers.

3. The economist and short-term Greek Minister of Finance, Yanis Varoufakis, describes the problem of credits and debts in *Time for Change* very visually. Like in the movie *The Matrix*[10], the banker puts his arm through the transparent, fluid wall of time at every credit deal. He reaches out into the future and pulls the money into the present. The industry's high demand for investment cannot be covered with present, accumulated means. Thus, one reaches through the borders of time. This creates social debts and a double necessity to grow. On the one hand, it is about investments which cannot be paid now on the basis of gained capital, and on the other hand, interest will be due, and this interest requires growth which creates an even stronger dependence from investors. Both force us to grow – a demand, which we actually cannot afford anymore. Capital is dependent only on the computing capacities of supercomputers, which from the mere speed of the money transactions alone make yet again profit. A case which makes these developments visible are the so-called 'futures', i.e. forward contracts, which trade in the present something that will take place only in an undetermined

10 *Matrix*, directors: Andy and Larry Wachowski [now Lilli and Lana Wachowski], 1999.

future. The dictum of businessman and politician Benjamin Franklin – «time is money» – speaks volumes. Our current ways of measuring time are based on the time impulses of numerous atomic clocks, coordinated via the Network Time Protocol (NTP), which are accessible online and on smartphones free for all, a time of reification which is not bound to a specific place. Yet only in the late stages of the financialized economy does capital show itself to be «self-valorizing value,» or, as Jean Baudrillard claimed, have the signifiers (value) separated themselves from the signified (production) and become «without reference» (Baudrillard 1982). Baudrillard's artificial, «simulated,» self-related reality (hyperreality), which does not map a real world, is just this digitalised accumulation of wealth, which cannot be reconciled anymore with the principles of social life.

To summarize: wealth is very inequitably distributed and this imbalance constantly increases. Social security and the prosperity of a broad middle class are bought with debts. Industrial developments are bought by virtual money from the future – which can only be paid back on the condition of further growth. At the same time we use today already in total annually 1.5 time the available resources of our Planet (Switzerland using approximately 2.4 times thereof[11]). And on top of that the promise - or threat - of the next increase in productivity with its massive decrease in jobs. Strongly simplified, the situation can be put as follows: prosperity for all is possible on a reduced level (post-growth, reductive modernity) in theory – but wage labour for all at today's extent is increasingly becoming an illusion. A social redistribution is becoming increasingly important, including for the economy itself, as it requires consumers. From this arise the questions which Keynes already posed in 1930.

Even if we assume that the economic and structural problems are solvable, these questions remain. To answer them requires

11 See http://www.footprintnetwork.org/de/. The methodology, the significance and the accuracy of these indicators is questionable. The reduction to an easily comprehensible number has a price. Yet the necessary, detailed material about the environment, resources and the climate situation needed for this estimate is available. (see for instance http://ipcc.ch/report/ar5/).

a real paradigm change – the whole social *dispositif* of identity is up for renegotiation. Labour – and with it the self-understanding of the subject in the metabolism with nature (cf. Marx 1972, 192) – needs to be found again. The significance of volunteering, social work, hobbies, handicraft work as opposed to professionalism have to be reformulated. The protestant ethics of modernity (Max Weber) and the mechanisms of disciplining and self-disciplining (Michel Foucault) largely lose their foundations. At the same time, the mechanic domesticization of nature (robots, cyber-physical systems) leads to a further dislocation of the individual and further self-disciplining perceived as optimization.

Immaterial Labour and the Dislocation of the Acting Subject

In the face of the deceleration of the global population growth and the economic growth based on consumption and wage labour, further factors have to be taken into consideration. For a long time already capitalism cannot be equated solely with industrial capitalism anymore, but also appears as bio capitalism and knowledge capitalism (Marazzi 2011). Following Hardt and Negri, this new form of labour can be described primarily in the form of de-materialized services, or as «immaterial labour» (working with information, symbols, language, affects without directly graspable, material results), and seen as an attribute of information producers and information consumers. Post-fordist immaterial labour is generally communicative, cooperative, and affective (Lazzarato 1988).

Language and communication are becoming the central productive forces of work. At the same time the acceleration of production tied to communication is becoming decisive and essential, which at the same time involves an intensification of the subjective and collective awareness of discrete, linear time. For example the sociologist Hartmut Rosa said that the history of modernity is at the same time a history of acceleration. Rosa finds that due to the time saved through technical progress a shortage and not a saving of time is constantly established, because people are

at the mercy of the unleashed ethic of acceleration in modernity and its associated temporal structures (Rosa 2005). Machines as trivial as a clock are not only the «ubiquitous *dispositif* of discipline and surveillance that constitutes subjects as the wheels of the Fordist social machine (Raunig 2008, pg 10)»; they are also the *dispositif* of the economic transformation of lifetime into capital, the *dispositif* of «reified time» (Ernst 2012, p 25). The fact that the traditional separations between work and leisure time or between private and public presence are increasingly dissolving - a fact that by now has become broad consensus in social scientific discourse - attests to the veracity of such assumptions. The diagnosed dissolution arises out of the pressure of acceleration exerted upon all divisions of social life that are closely joined to each other.

Nevertheless, the concept of immaterial work is not only deployed descriptively but also normatively, because in immaterial work concealed, but still also detectable potential for societal transformations should be present. Because growth is accompanied by a constantly rising stream of information, human capacities to deal with the «glut of information» are overtaken. The birth of semio-capitalism (Franco 'Bifo' Berardi) and the term «cognitariats» developed by him are based on the changes in the processes of production and value creation that began in the 21st century. The use of technologies interacting with concepts, symbols and signs, such as algorithms, products of finance, scientific formulas, psychological classification or juridical terminology are being capitalized upon. Multiple sorts of specialist knowledge, affective-emotional qualifications as well as social expertise are relevant features of this workforce, who frequently act as nomadic freelancers. Precarious and non-secure employment, hyper-exploitation, high mobility (that leads to the dissolution of social relationships), and hierarchical dependencies are some of the negative effects of the new modes of work. The enthusiastic affirmation given by sociologists of media to these anthropological changes, through concepts like the network-, information-, and knowledge-society, is inadequate. The change in the affective conditions of information producers and consumers must

be taken into consideration, and the manner in which this forms subjectivization and communities also must be factored in. The «Post-Alpha generation» (after the «post-alphabetical» generation of Marshall McLuhan), who are the first «video-electronic generation», portrays this emerging class of semio-capitalism (Berardi 2009).

These changes are reflected in the «dislocation of the subject» propagated by many strands of 20th-century philosophy and raised by the social-constructivist method.This dislocation makes the subject «dependent on socio-cultural structures, which are not external to it and in the frame of which it variously changes its shape: language games, symbolic orders, psycho-social constellations and media-technical structures» (Reckwitz 2007, 13). In his late work the sociologist of knowledge Michel Foucault situates the techniques of self-discipline, which underlie the generation of the subject within rational-discursive disciplinary power structures that normalize the body. This body-subject moves within prescribed biopolitical or self-disciplinary spaces of governmentality – examples would be the milieus of confinement like prison, the hospital, the barracks, and the factory[12]. The «control-societies» of the philosopher Gilles Deleuze, on the other hand, are based no longer on forms of action and fields of praxis, that are either directed by the self or others, but rather are fully automatized or even autopoietic machines. These machines connect self-interestedness and self-realisation with the routines of the body, rituals that control attention, and mediatized fantasy wishes. As a result they involve various immaterial products and digital services (computer games, pornography, etc.), as well as pharmaceuticals that primarily (but not only) produce affective reactions. Automated actions that seem fully «normal» contribute to these changes, like driving a car, getting a health check-up, or travelling to exotic locations. They function through

12 The concept of «government» (gouvernementalité) introduced by Michel Foucault can be explained as follows: «Beyond an exclusive political meaning, government refers to .... numerous and disparate forms of action and fields of *praxis,* that in diverse ways aim at the directing, control supervision of individuals and collectives and include both forms of self-management and technologies of external management.

the production of self-images that determine the relationship of subjects to themselves.[13]

Even if language, understood as an instance of wielding power, continues to plays a decisive role, it is neither as the language of authoritarian law, nor the internalised language of self-realisation, self-optimisation (and also self-exploitation), which is bound to the programme of «Care of the Self» (Foucault 1983). On the contrary, language is the automated, de-rationalized, meaningless programming language, the codification of information that floats in human-machine networks and determines spaces of action. The aim of the control society is self-optimization, to tie the bodily, mental and affective capacities more efficiently to a global network of fully- or semi-automatized procedures. The pure universal machine (computer) has advanced to the position of a universal *dispositif.* Even though we know that our mind doesn't operate like a computer, the connotations of this metaphoric use can be deployed in all realms of life and meaning.

Cultural critics rightly observe that, despite serious developments in science, concepts like soul, subjectivity, personality, or ego-development remain at their core unaltered, and still stuck in the scientism of the 19th Century (Schäfer 238). To be able to think post-industrially means to operate within conceptualizations that do not understand the human and humanity as transcendental, unchangeable concepts (Schäfer 2012, pg. 231). This is turn involves situating the human beyond the anthropocentrism which is embedded in our cultural traditions.

13 This process was equally addressed in late Foucault in the sense of the existence of normalisation in modern societies.


THIS CONTROLLER
MUST HAVE A
NEUTRAL SUPPLY

Towards a Post-Industrial Subject

Humans are particularly inventive when it comes to explaining 'the human'. Over the centuries various technological metaphors have been developed and cultural narratives have been spun to emphasize
the separation between nature and culture, or rather to explain nature through culture and, eventually, to domesticize it (Zarkadakis 2015). In the Judeo-Christian tradition of the Bible, as well as in some Greek myths, man has been created from clay – a metaphor which corresponds to its cultural epoch and was well apt for the agricultural societies of the time. With the invention of hydraulics in the third century B.C.E hydraulic metaphors became dominant (e.g. in Hippocrates), according to which our bodily and mental functions are regulated by the movements of liquids, or *humours*, in our bodies. In the course of modernity, when springs and cogwheels drove automata, thinkers like René Descartes were inspired to conceive of humans as complex machines. This metaphor stayed intact from Thomas Hobbes to Hermann von Helmholtz in the 19th century and opened the industrial age.

Since the early beginnings of computer technology in the 1940s it has been claimed that the brain works like a computer, and thinking has been compared to information processing. The mathematician and IT pioneer John von Neumann declared that the human nervous system functioned according to algorithms. At the same time, the biological metaphor from the 19th century (from Charles Darwin via Sigmund Freud to Humberto Maturana), which understands the human as an autopoietic organism, stands as a competing narration to the computational model. However, roughly speaking both developments culminate in the amalgamation of neuroscience and cognitive science, on the one hand, and the life sciences on the other. Like a guiding foundational myth (an *episteme* according to Foucault), this amalgamation determines and changes human self-understanding today. How should the human be thought? Which understanding of the human do we appeal to when we think the post-industrial? When we look for an image of the human, which supports symmetrisation,[14] connectivity, the formation of autonomous communities with convivial tools, which is at the same time progressive and not reactionary? then we are already looking in the direction of critical post-humanism.

Thinking *post*-humanist, rather than post-*human*[15]

«Humans and their humanity are historical and cultural constructs rather than transcendental concepts free from ideology and they therefore have to be placed within larger contexts like ecosystems, technics or evolution. This approach only becomes posthumanist when the human is no longer seen as the sole hero of a history of emancipation, but as a (rather improbable but important) stage within the evolution of complex life forms (Herbrechter 2013, 16).»

14 The concept of symmetrization refers to Bruno Latour's symmetrical anthropology, first developed in *We have never been modern* (Latour 2008). The central point here is a reduction of the dichotomies of modernity: the separation into nature and culture and, consequently, the subject-object-divide.
15 The distinction between posthuman and post-humanist is from Rosa Braidotti. In *The Posthuman* she presents the end of humanism as utopian and not a posthuman dystopia.

The relevant conceptualization of the human stands in opposition to already existing approaches in the cultural and natural sciences, which attest to an imminent and inevitable replacement of the species *homo sapiens* with prosthetic and cyborg transformations of biological man, as well as the digitalisation and virtualisation of current modes of life (Herbrechter 2013, 24).
This development, which is portrayed as an inevitable transition to another species caused by evolution, is often accompanied by the nightmares and fears of a social world coming apart, a dystopia. The current technology-driven overcoming of man known as trans-humanism is one variant of post-humanism. It emphasizes how technologies of innovation, like digital technologies, nano technologies, neuro-cognitive medicine, robotics, digital mechanics, genetics, change life itself.
But although Hollywood's fantasy and sci-fi blockbusters contribute decisively to the shaping of this new social imaginary, the image of the human sketched out by trans-humanism is not all that new, but merely opens up new spaces for investment for politics and the economy (Herbrechter 2009, 29). The trans-humanist commitment to progress and its disposition to see in man «a kind of prosthetic god» (Freud 1976, 229) is *nourished* by a discontent with the situation of man in a badly created and inadequate world (Sloterdijk 1991). Trans-humanism presupposes an understanding of media that is both functionalistic and decoupled from biological life, as well as an unreflected, mechanistic (precisely «humanistic») understanding of the human. In the last analysis, the discussions around «trans-humanity» often serve the human, all-too human urge for more profits and influence.

This urge to optimize humans, i.e. to replace them with a better version, is at the heart of Western thought. As philosopher and feminist theorist Rosi Braidotti has shown, from a historical point of view «humanity» has been founded upon processes of excluding the radical Other repeatedly (Braidotti 2013, 57). The «fable of the subject» , according to philosopher Jacques Derrida, reveals itself as an «anthropocentric fiction, which even in its negation or form of dissolution denies the non-human (e.g. the

animal, the machine, the object) all capacities of subjectivity» (Herbrechter 2009, x). The list of the *Other* is long - so long, that in the end the concept of man *proper* almost appears as a ridiculous caricature that has always marked the others as deviant, has discriminated against them and treated them politically and socially as second-class beings. «The dialectics of otherness is the inner engine of humanist Man's power, who assigns difference on a hierarchical scale as a tool of governance (Braidotti 2014, 68)» and elevates «man» (male, white, heterosexual, eurocentric, reasonable) to the measure of all things (Braidotti 2014, 73). It is, ultimately, the fear of the machine, which is always in the position of the tool, the slave, the worker, the buddy, or even the liberating saviour. It repeats the logic of political and social exclusion and confirms an especially fragile and languishing humanity's fear of its own history.

According to Braidotti the post-humanistic reorientation of thinking has consequences like implying «that subjectivity is not the exclusive prerogative of anthropos; secondly, that it is not linked to transcendental reason; thirdly, that it is unhinged from the dialectics of recognition; and lastly, that it is based on the immanence of relations (Braidotti 2013, 82).» Post-anthropocentrism argues for a post-humanistic project of «becoming a minority» or «becoming nomadic», inspired by the groundbreaking proposals of Deleuze and Guattari (ibid. 58 & Deleuze and Guattari 1992), and is distinguished by the emergence of the «politics of life itself.» «Life» is not the exclusive property or the inalienable right of a certain species, man, against all other species, let alone of some being who is sanctified into a given, but rather an interactive open process (Braidotti 2013, x). Against «the opportunistic political economy of biogenetic capitalism», which turns human and non-human matter into a commodity (ibid. 66, 72), post-anthropocentrism wants to declare the mode of thought «of a hierarchy of species and a special, universal human standard» invalid. A non-anthropocentric ecology and a de-hierarchisation of human-animal interaction beyond compensatory humanism requires, according to Braidotti, a reconstruction of subjectivity and community. Thus, the post-anthropocentric understanding

implies a fundamental revision of the concepts of «moral rationality, uniform identity, transcendental consciousness, or innate and universal moral values» (Braidotti 2013, 92). The end of man propagated by Nietzsche, Foucault, and Lyotard can only be understood in this way, namely as a possibility to grasp the human and their institutions as «other and beyond». Thereby, a productive attitude is taken up, rather than a defensive one.

The Post-Human is a Network

Existing approaches in cultural studies have already taken up the task of transitioning to a productive attitude. For example, through his integration of science, technology studies, and social theory, the sociologist of science and technology Bruno Latour analyses the social not in opposition to, but rather in connection with, the world of objects and non-human agents, so that sociality becomes an interaction between human and non-human agents. Instead of «society», Latour starts with the concept of social «assemblages», which are «settings» or constellations of human and non-human beings that distribute «certain competencies and performances» among themselves. Social «assemblages», which are «settings» or constellations of human and non-human beings, which distribute «certain competencies and performances» among themselves, rather than «society», are the starting point.

The central object of Latour's theory of social thought is the material-semiotic network, *réseau* – a concept which he takes from Denis Diderot – to describe matter and bodies and thereby sidestep the Cartesian gap between matter (*res extensa*) and mind (*res cogitans*). The concept of the *actor network* resembles the Deleuzian concept of the rhizome and sidesteps the dualism of subject and object (Latour 1996, 3). Such constellations appear few and far between or vanish within formed programs of action, so that one could say that Latour's semiotic theory is guided by pragmatics rather than syntax or semantics. Thereby the *agency* of things is analysed in their respective concrete situations. To ascribe agency to things is not to be understood as a form of

anthropomorphism, but follows from certain context-dependent situations. The barbed wire, for example, which is used for the construction of fences along borders between EU countries is no longer a neutral material, but is attributed its own mode of being in this context. As a non-human agent it is a kind of *bio-power* in the Foucauldian sense, which can be seen as a material-bodily adaptation and technological extension of real bodies. It is obvious that such a theory can be particularly fruitful for the purpose of a re-conceptualization of post-industrial design (cf. Schmidgen 2013, 159ff). A «becoming machine», which has highly pragmatic points of reference, permits us to rethink the structures, processes, and methods of knowledge, politics, and economics (all to be understood rather as subsystems of *téchne*).

The network is omnipresent. Contrary to Foucault's disciplinary paradigm, we encounter the form of the network everywhere today, characterised by language relations, military units, patterns of migration, social movements, companies, physiological structures, and even personal relations. To think the network systemically means to presuppose, as a characteristic of the post-human condition, that order emerges through isolated occurrences (Willke 2011, 16). This is true whether the network is conceived as a non-trivial machine (Heinz von Foerster), as a self-referential system (Luhmann 1984, x), as an acting connectivity, a pragmatically anchored praxis, an *actantisation* (Latour), or as a rhizome. The purpose of the discourse on becoming an actant and the expansion of the subject principle to include non-human agents is not «a liquidation of the subject but rather a proliferation of subjects and their responsibilities» (Herbrechter 2013, 205). The cultural studies scholar Stefan Herbrechter aptly remarks: «A critical posthumanism, therefore, is positioned in between the notions of system and subject, autopoiesis and the multiplicity of life forms *[vivants],* and thus also between deconstruction and systems theory (Herbrechter 2013, 205.)

The reception of the decentering of man was perceived narcissistically as an insult, e.g. in the theories of Marx, Darwin, Freud, and Nietzsche, as well as in Foucault, Derrida, and Lyotard. But

if we overcome this insult while still apprehending the decentering of man then it should be possible to recognize the predicted moment of technological singularity, when machines rapidly improve themselves thanks to artificial intelligence (A.I.) and become independent and autopoietic, as having already arrived. The premise of the 2014 movie *Transcendence,* with Johnny Depp as a dying AI scientist in the lead role, is not just a dystopic scenario of manipulation, slavery, and dehumanization, but also poses a very trivial question: what happens when the internet is turned off? But as the internet already functions as an existing form of self-organisation, it cannot be turned off, and so the question is revealed to be rhetorical. The internet acts as an «emergent reality» which is «similar to life and consciousness» – what sociologist Niklas Luhmann refers to as communication (Luhmann 1995, x) – and is thus ontically real, since it can always be related to the Kantian *a priori*s of time and space. In this sense, media theorist Friedrich Kittler's last sentence on his deathbed in the ICU, «... turn off *all* apparatuses,» points towards the end of the age of the *anthropos* literally and not metaphorically.

The post-human is techno-affective

The subject of critical post-humanism considers the governance of affects and drives that human beings exercise upon themselves and others. By doing so it distinguishes itself from the traditional understanding of the human. In fact, science and philosophy have largely ignored the important role which the affective disposition of our body plays in our thinking and reflection (Leys 2011). And «although the emergence of a specific version of modern, bourgeois subjectivity ... included its sexual, intimately personal, and affective structuring (Reckwitz 2007, 6f)», this fact has been denied, and the emphasis has been placed exclusively on the rational, calculative, and communicatively acting aspect of the human. Affects have long been viewed as *the other in us*, and were targeted for the purposes of social domestication, diverted in favour of socially useful achievements, sounded out for potential capitalist consumption or political propaganda. Classical psychoanalysis played a crucial role in this through its

concept of *sublimation*, i.e. a libido-transforming mental achievement and culturally recognized behaviour. Yet not only have the affective foundations of thought long since been explored, but the importance of non-intentional, body-related representations of feelings and emotions have also been analysed for understanding affective social life (Kosofsky 2003). Some of these theoretical approaches, which lead to the new epistemology of the *affective turn* in the social sciences and humanities, point to older genealogies, from Baruch Spinoza (who anticipated psychoanalysis when he described humans as beings of desire in the state of nature[16]) to Gilles Deleuze and Félix Guattari.

Philosopher of science Ruth Leys observes that all these approaches, despite their different positions in a still fledgling research area, share an anti-representationalist attitude regarding their understanding of subjectivity. One significant terminological distinction is of particular importance here for thinkers of the *affective turn* like Brian Massumi. Affects, understood as non-signifying autonomous processes which operate under the radar of conscious thought and signification – i.e. without a discursive use of the mind – that show a decidedly bodily presence, are often to be distinguished from the purely psychological phenomena of emotions (Massumi 2002, 21). Affects are pre-individual, pre-cognitive, and pre-linguistic components of subjectivity. Emotions, on the contrary, can be attributed to a conscious subject. The logic of affects is, indeed, a logic both of the decentered subject, as developed in the modern philosophy of the subject, as well as a logic of ego-identity, as developed in 20th century psychology. Thus, in a certain way, the theories assembled under the term *affective turn* complete the formulation of the decentering of the subject which Foucault began.[17]

16 cf. Ethics Part 3, Proposition 56, «But desire is the very essence, i.e. the nature, of each person»

17 Even the poststructuralist concept of «subjectivization» does not, in the last instance, go far enough with the critique of classical subject philosophy, even if it is a more precise term, since it does not understand the concept of the subject as an autonomous, self-founding instance. According to Louis Althusser, with whose thought the decentering of the modern concept of the subject began, the introduction into a social order means the subjection under rationalising norms, which are inscribed into a subject position. It has to be understood as a conscious decision bound by discursively comprehensible inferences. An individual does not constitute itself as a subject solely on the basis of the interpellative function of an ideological apparatus (the interpellation model of Althusser).

Affects illuminate both our power to influence the world around us, and our capacity to be influenced by it, as a consequence of the relation which emerges between these powers (Clough 2007, ix). In this context, one could take a slightly modified definition of the body from the sociologist Anthony Giddens as «the spatially and temporally located place of the [affectively] acting self» (Giddens 1995, 117). Yet in these conceptualizations affects are not merely theorised with regards to the human body, but also in relation to the developed technologies that allow us to perceive affects und to produce affective-bodily capacities, which go beyond the organic-physiological limits of our bodies. Because our perception of the world is increasingly technologized, our self-perception is also structured by media, especially since the introduction of visual media. This approach, which understands the subject as, among other things, a correlate to media apparatuses, has direct consequences for social research. These approaches analyse the movement in Critical Theory away from a psychoanalytically informed critique of the concepts of subject and identity, representation and trauma, towards an engagement with information and affects. Affect analyses the economies of pre-individual bodily capacities and affects in the realm of biopolitics (Clough 2007, 2).

Following the thought of Deleuze and Guattari, authors like Maurizio Lazzarato and Bernard Stiegler refine the concept of biopolitics further. The political power of the Foucauldian approach is preserved and at the same time adapted to today's circumstances, by transforming biopolitics into *noopolitics* (Lazzarato 2004) or *psychopolitics* (Stiegler 2008). Through the example of television, sociologist Maurizio Lazzarato shows in detail the powers of «machinic enslavement», which constitute the subject affectively: «Firstly, «the perceptual fascination provoked by the light grid of the apparatus,» which «can merge with the intensities, temporalities, and affects of the body, brain, or memory, which pervade me and make up my pre-individual molecular

dimension.»[18] Secondly, «the absorption sustained by the narrative content, which puts my ideas, feelings, and habits as subject (my molar dimension) into motion,» and thirdly the production of «a world of conscious and unconscious phantasms, which live inside my dreams.»
Obviously this does not set its sights upon the rational aspect of the individual, but rather primarily their pre-cognitive and pre-linguistic disposition (*Gemütslage*), their logic of affect as it is bound to the temporality of perception, and their subjectivity as it is conditioned through media technologies.

For the philosopher Bernard Stiegler self-disciplining occurs through *psycho technologies* that work primarily through directing attention and the subsequent regulation of stimuli, which manipulates one both affectively and cognitively. The *psycho powers of media* are always social technologies and technologies of the self, which also always have an existence in media. Psycho power, which completes biopower, is constituted by mnemo technologies first based on analogue and later on digital apparatuses, sustained and maintained by program industries (Stiegler 2009, 22). For Stiegler and Lazzarato the post-industrial includes wholly new areas, which drive the affect-steered production of collective subjectivities and sociality. Thus, analysis of the aforementioned affective dimensions and the exact tracing of their techno-media constitution is essential.

This great transformation of the human and human action is understood by Stiegler and Lazzarato as a power or energy transfer with nature (labour), which can lead to the next society, a society which does not yet have a name. The post-industrial denotes those processes of this transformation which stand in close relation to the industrial. How is future produced? How does the individual relation with and towards the pieces of work

18 On the basis of the theory complexes, which are bound to the thinking of Gilles Deleuze and Félix Guattari, the epoch of late capitalism is described by Maurizio Lazzarato as "a number of dispositions of the machinic enslavement and at the same time a number of *dispositifs* of social subjugation". According to Lazzarato, one can be "enslaved" by a machine (not only technical machines, but also aesthetic, economic, legal, and so on), for example by a communication machine, and/or be subjugated to it if one is a component which is necessary for its functioning (Lazzarato 2006).

change? Which social processes are designable within the affective cosmosphere? In which social fields is our way of designing fruitful? How can we shape the possibilities of the future, pictorially mark and communicate them? What kind of narratives should we invent and cultivate for this end?

The move towards a possible post-industrial subject aims to show that our post-industrial design projects always also carry possible implications for transformations of the subject. The call to «intervene in the processes of which we are ourselves a part» (Halter 2010, 233), ultimately leads us to perceive ourselves as agents in this transformation.


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Post-Industrial Design

Formulating the question

What is design and what can it do? Is design even possible? The answer to this question would probably have to be a counter-question: in which fields is design possible? If we understand «the world as design,»[19] then design is an anthropological factor, an inherent part of being human – we form ourselves and our world. The question of design is always a restriction upon changing societal fields, which in specific situations are designable and therefore also capable of being designed and modified.

However the various disciplines of design have a history and characteristics that cannot simply be written away. Design as a discipline is to be understood as an invention of industrialisation. Industrialised, serial production requires a separation of drafting and production. This separation led to today's methods of design disciplines. It led to new possibilities for production, and the materials as well as their uses were enlarged. Direct

19 «the world as design» is the title of a book by Otl Aicher (1991).

engagement with the qualities and properties of materials – craft in its entirety with all of its implied knowledge – can be traced back to it (cf. Sennett 2008). However, the separation between production and use that occurred in addition is mostly not thematized. In a pre-industrial situation the furniture of a local carpenter stays in the village, therefore the craftsman stays connected to the application of his work. Either he would utilize the products himself (like the farmer who produced his own tools), or the use of these products takes place in his immediate environment. Either way drafting, production, and use are parts of one and the same life environment.

The development of design as a separation between these stages of drafting, production, and use was one of the prerequisites of industrial society. But later designers worked on the solutions of the problems resulting from industrialisation. Designers developed their own self-conception of cultural and social power (from Russian constructivism to the Bauhaus to the Ulm School of Design). A good example for this attitude towards design is the *Frankfurt Kitchen* (Margarete Schütte-Lihotzky 1926), an elaborate, affordable kitchen in the narrowest of spaces. The kitchen was a part of the answer to the great emergency of inexpensive housing for rapidly growing cities. And it provided the opportunity to cook rapidly, cost effectively and efficiently, which is a prerequisite for a well-rested and healthy workforce.

The Struggle for the Function of Design

The industrial production conditions call for the development of a new aesthetic consciousness; only then can production be humane and mechanical. Neo-gothic furniture cannot be well-produced with industrial, serialized methods. The Crystal Palace (Joseph Paxton 1851) at the World Fair in London was constructed modularly, the cast iron and glass elements were largely manufactured industrially, and the building was erected in seventeen weeks. Although the proposed form of the greenhouse was less than ideal for an industrial construction, the proof for a

functioning, industrial, modular construction was given. Therein lies the fascination for the Crystal Palace still evident today.

The development of good form, the guiding principle of *form follows function*, is the history of reciprocal developmental processes between the drafting stage, the possibilities of industrial machines and the changing taste of the masses (which only develops slowly). The beauty of functionality had to be practiced for about a century in order to really find its audience. Then very quickly the end of the grand narrative came: first with the postmodern opening of the relation between form and function, and then with the imposition of the semantic turn (see Klaus Krippendorff 2013) – actually less a fully semantic transformation of design as a break with the notion of good form, already by then a semantic principle of design grown long in the tooth.

In the digital service and information society other themes such a social processes, interactions and systems have moved into the foreground. It appears the slightly provocative statement from the sociologist and inventor of strollology Lucius Burckhardt in the 1980s has found general consensus: «Design is invisible!» (Lucius Burckhardt 1980). One sentence from his writing is very thought provoking (Burckhardt 1980, pg. 198f): «The flea market will be the place where dwindling numbers of throwaway consumers meet the swelling ranks of post-industrial society. Progress holds sway in production for the white (official) market but black market trading, moonlighting, self-sufficiency, barter systems and informal mutual aid are on the rise too.» The concept of the post-industrial sneaks back into the original text as the «nachindustriell» the german term for the English «post-industrial» since the 1970s - and it pops up in the community of the flea market, in precarity, and informal life. And then right away the question follows: «Whether we should welcome all this wholeheartedly remains uncertain: it panders to lower middle-class aspirations, and harbours the threat of social isolation; but perhaps a retrograde step or two is the price society must pay for a springboard to new realms of experience.» This leads to a concluding sentence that works like an anticipation of Bruno

Latour's symmetrical anthropology: «Yet it might also imply the design of tomorrow – design that consciously takes into consideration the invisible overall system comprised of objects and interpersonal relationships.» Maybe design after Burckhardt is not invisible, and it only involves a rhetorical trick to draw attention to the relationship between objects and subjects as actants, as well as to the interconnections and systems that are very visible in their effects. The «transitional phenomena bound for a higher self-reliance» would then be the real theme.

What is post-industrial design, and what can it do?

The fundamental question about post-industrial design would have to be whether it is possible. And the answer would be a counter question: in which areas is post-industrial design possible?

The transformations towards the next society take place in all kinds of areas simultaneously. The foci of the developments change constantly. We need a categorization, with the knowledge that every classification will draw blurry boundaries and sweep the «dirt» on the edges under the rug (Latour 2008). Yet as long as it is helpful and we are aware of its limits the attempt will be worth it. Let us take the work on form, on structure, and on narrative as the three fundamental categories of post-industrial design.

Form: When we read three categories from left to right, i.e. form – structure – narrative, then we start from the direct creative engagement in drafting, production, and usage. We concern ourselves with our tools, which are, on the one hand, increasingly distanced from us. Think here for example of the robot arms of MX3D, which can build a bridge all by themselves. Or the tools which practically merge with our bodies, our smartphones as extensions of our eyes and ears, and the excorporation of our memory. On the other hand, we can think of the demand for convivial tools, which are life-affirming and beneficent, which we

can handle autonomously, which are repairable, and which promote and support manageable social communities. This brings us to the potential of new and old tools, which cancel out or at least reduce the old separation of drafting, production, and usage through their processes. This is not Artur J. Penty's backwards movement into a pre-industrial guild society, but rather a progression towards a highly interconnected society – yet one in which many autonomous, manageable units of operating communities exist. The development of new forms of labour and tools is the central starting point of post-industrial design.

Structure: This kind of working on form calls for new structures of organisation. From a macroeconomic and materialistic viewpoint, we shift the conceptual paradigm from a focus on the forces of production (technology and human labour) to the relations of production (property regimes and organisation). One of the achievements of David Bell is to have shown that there is no necessary correlation between the forces of production and the relations of production (Bell 1996). An industrial economy can exist in free market economies, in planned economies or other social property regimes (modern China is a paradigmatic example of a 'hybrid'). The works of economist Elinor Ostrom are of central importance on the economic meso and micro level (Ostrom 1996). Ostrom compares economic activity under conditions of scarcity in planned economies, market economies, and collective co-ops. Which form of organization is the most successful if there is too little water, land, fish, for example, or other resources? Together with a large network of colleagues she conducted case studies on a global scale and across a long time span. Ostrom was able to show that in situations of scarce resources, organisations with the form of small, local or regional co-ops with local knowledge and mutual social responsibility are the economically and ecologically most successful. The concrete forms of organisation can vary strongly in structure depending on their social background. They adapt to the real conditions through forms of self-organisation. A classical Swiss example is Alpine farming, which has been organised largely in co-ops

for around 600 years and which has eliminated erosion through overexploitation almost entirely.

We know this situation of the search for optimized forms of organisation from the varied approaches of the sharing-economy, maker shops, Fab Labs, co-working spaces, and working cooperatives, from collectives and startups, and from NGOs and social initiatives. The search for appropriate forms of organization, for ideal flat hierarchies, forms of common authorship, individual freedom, high work intensity, and excellent results, as well as a sustainable usage of resources – this whole search is part of the design process. One field of work has been deliberately given short shrift in this analysis of our current situation, at least for now, namely the question regarding space, how it should be structured and dealt with, in particular public space, third places[20], and other social spaces. In thematizing these spaces we thematize a scarce resource. Ostrom's research is on the commons, on public goods. Commonly managed land is traditionally one of the most important scarce resources.

Both cities and rural spaces can and will change fundamentally in the frame of post-industrial transformations. In the cities, the segregation of modernity is up for renegotiation.[21] Is it possible to dismantle the spatial separation of labour, living, and leisure – a separation which costs us time everyday, weakens social communities, and represents an environmental burden (mobility, usage of space)? New forms of labour support small-area relations. The sociologist and philosopher Henri Lefebvre's concept of *space production* (*Raumproduktion*) brings out the designability of space like no other term (Lefebvre 2014). We can perceive, use and appropriate spaces. Yet only when we understand all these interactions as space production will we understand the

20 The concept of Third Places was introduced by the American sociologist Ray Oldenburg. It contrasted with one's own living space (First Place) and the place of work (Second Place). Through the increasing commodification of public space, these Third Places lose their social and political functions. Third Places like cafés and libraries fill this gap.

21 At the 4th CIAM Congress (Congès International d'Architecture Moderne) in 1933 the so-called *Athens Charter* was passed. Under the strong influence of Le Corbusier, the fragmentation and car-friendliness of cities was defined as guiding principle of modernity. It exercised vast influence well into the 1980s.

potentials of design in their entirety. Social processes, usages of space, spatial changes, and the types of behaviour inscribed into the furnishing of space (actant functions) all together become a unit accessible to design in space production.

The transformations also imply a change in our relation to temporality. Humans and their digital media are beings limited in time; not because they act in the dimension of time, but rather because they know about the beginning and end of their existential time. With the establishment of «media-induced time processes» a new understanding of subjectivization develops, which takes «humans in their central mode of existence in the world (*Daseinshaftigkeit*), namely their existential, not their historical, time perception» (Ernst 2012, 15f). Yet the challenge which is posed to us is not to act *against* time but rather to co-exist *with* time and to act in it. This is one possibility for replacing the historical temporality of human existence (*Dasein*), the old paradigm of history, with the techno-mathematical temporality of machine realities. To enable new modes of living and to start social transformation means to conceptualize new paradigms for modes of time, which emerge from such machine realities, and to understand humans in relation to them.

Post-industrial design understands the structuring of space and time, the development of fitting forms for organisation and property relations as an integral part of structural design work rather than a mere sideshow. New forms of labour, of the usage of tools, and their embedding into appropriate structures go hand in hand – or not at all. The structures of time and space are a task for design.

Narrative: The concept of the *next society* brings out the dilemma clearly: it circumscribes a void. There are no, or only few, images and narratives. The concept of the post-industrial, too, lives mostly off the replacement of old pictures rather than new images and narratives. The postmodern might be history already, but the death of modernity's grand narratives is omnipresent (cf. Lyotard 2014). Signs, images, and meanings of a possible next

society need to be developed. Not, presumably, as grand societal ideals, which is neither fashionable nor the focus of design. It is rather about speculative drafts: «Design's inherent optimism leaves no alternative but it is becoming clear that many of the challenges we face today are unfixable and that the only way to overcome them is by changing our values, beliefs, attitudes, and behaviour. [...] There are other possibilities for design: one is to use design as a means of speculating how things could be – speculative design (Dunne & Raby 2013, 2).» Anthony Dunne's and Fiona Raby's book *Speculative Everything* has to be understood as a manifesto for speculative design, which calls for physical representations of desirable future scenarios. Those objects are generally connected with narratives about their usage, but «critical designs need to be made physical (Dunne & Raby 2013, 43.)» This pointed emphasis on objects seems to us a too-narrow focus. The narrative of the future, the agenda setting of this narrative (cf. Lakoff 2004) has to deal with texts, images, audio-visual media, new social projects (public rituals), initiatives and events. Clearly, post-industrial design has a responsibility towards the narratives which form and structure our actions. Only when these narratives have become proper narratives, and their self-proliferation through the media is at least actively monitored and used, will the task of design be completed.

The categorization can also be read from right to left, i.e. narrative – structure – form.
Narrative: On this reading, the narratives, rituals, and agenda settings are to be understood as the central and potentially efficacious moral, ethical, and social principles. New structures of organisation and space, and new forms of labour and tools, will become imaginable only when we start from the myths of the next society, the myths of post-industrial developments. Starting from speech acts as linguistic utterances and simultaneously as executed actions, it is almost always actions, into which narratives are inscribed, which are being processed socially through images and texts and which, as shaped processes, are the topic of post-industrial design.

Structure: Narratives break the ground, for example, with Fab Labs, which consist of machines that can reproduce themselves. All parts of the machine are reproducible by the same machines, and the necessary knowledge can be exchanged in the collective thanks to the support of digital technologies. A myth is born, which is additionally fueled by a moral-ethical imperative. Already there are more than fifty Fab Labs in sub-Saharan Africa! An approach for self-empowered development! Building on such narratives, images are created which represent other possibilities, other structures. And again it is actions, which will subsequently lead to form.
Form: Here the creative engagement with new forms of labour, with new, life-affirming tools stands as the last link of the chain. It becomes the work of implementing the narrative of a future. This movement from form to narrative and back represents, of course, the dialectical relation and shows how the different levels mutually pervade each other.

The labour of post-industrial design

Post-industrial design can be understood as an interdisciplinary discipline, which orients itself towards the changing topic areas of the post-industrial. Similarly to nanotechnology or gender studies, to take two very different academic disciplines, the focus is on a certain thematic field that ought to be approached in an inter- and transdisciplinary manner. Design as core competency stands for the methods (design strategies) and the manners of drafting relative to the chosen area of social transformation. Thus, there is no focus on a certain market (as, for example, with fashion design), a certain media-communicative area (e.g. visual communication, or media and interaction design), or a certain output (e.g. product or industrial design).

The emphasis is on the experimental development of responses to newly arising questions regarding social transformations. Those problems are never disciplinarily solvable. We already presuppose a multidisciplinary self-understanding within our own discipline. This means that we mostly work in teams with

several professional backgrounds. Studies in the discipline are often a second education. Professional backgrounds range from the crafts, to commercial disciplines, to the electronics and IT area, to university studies. Often people with special expertise are firmly integrated into the teams. This is generally combined with an interdisciplinary openness, i.e. the intense cooperation and comparison of different concepts and methods with other disciplines. The communalities with transdisciplinary approaches extend across, first, the beginning phase, where the problematic is identified and interpreted; secondly, the substantial cooperation of all actors (all people involved and concerned); thirdly, the goal of a concrete realization of value (cf. Mittelstrass 2003 and Pohl / Hirsch Hadorn 2016).
Yet there are also differences with transdisciplinary approaches. The re-interpretation of the problematic is present as an iterative routine throughout the entire project. Post-industrial design is separated clearly from common basic scientific approaches (with a few exceptions, such as participatory action research or grounded theory). This is because one's own involvement with, and integration in, the process represents a conscious breach of distance to the object of research. Under a post-industrial self-understanding, the individual and the design team are constantly forced to develop their own positions to the concrete problems at hand in and during the work process.

Which is to say that post-industrial design work strongly orients itself towards artistic strategies and barely moves within the relations of the service industry. The concept of *anticipation*, too, plays a role. The philosopher Ernst Bloch understood anticipation as a view to that-which-is-not-yet (*Noch-Nicht-Seiende*, cf. Bloch 1984). It is about utopian moments which exist already in the now. It is a view from the now, a view which plays with the aesthetics of emergence (*Vorschein*). A third is already present and appears in economic, social, and cultural surpluses. Anticipation captures this third. It is thus rather not so much about the development of future scenarios but the recognition of such elements on the not-yet in the now.

The problem solving approaches are not bound to any particular discipline. Depending on the problem the work process can lead to entirely different solutions. Correspondingly, different «classical disciplines» have to be integrated in the solution. To take the example of water scarcity: an engineer will develop wells or in any case technological solutions, a sociologist will suggest different social practices, and a graphic designer will make posters for a water campaign. As post-industrial designers we only concern ourselves with the work process and the resulting solutions, and not with any particular disciplinary problem solving approach, founded on a presupposed concept of function, service, or competency. The result might be technical, social, creative, pedagogical or other. It is just through this operational non-definition of the concrete solution that post-industrial design sets itself apart from the «established» disciplines of design.

Post-industrial design as applied cultural studies?

Post-industrial design's areas of work are experimental and exploratory. At the same time they are immediately fit for the future, entirely concrete, and lead to implementations in everyday life and particular lifeworlds. Many alumni invent new professions and occupy these new fields a few years after their graduation (HyperWerk 2016). New professions result from experiments. The origin of their work lies in an analysis of the social environment and the development of their own problem solving strategies (cf. Ch 3 «Methods of post-industrial design»). Is it possible to understand post-industrial design, or even design generally, as applied cultural studies, just as engineering is seen as applied science?
This is, of course, a conscious provocation to weave in a new thought.

The theoretician of design Bernhard E. Bürdek interestingly remarked in *Geschichte, Theorie und Praxis der Produktgestaltung*, in the context of a discussion of Yana Milev's publication *Design Kulturen*, in which the sociologist of culture Milev

describes humans as semiotic beings, as design beings: «It is remarkable that cultural theory has today arrived at the point where the theory of design has been operating for years» (Milev 2013).

The observation of the author is based on the last fifteen years of academisation of the disciplines of design. Instead of furthering theory, cultural studies, humanities, and art theory scholars have been heavily integrated into design universities. This engagement is exciting and fecund. Yet why has their own theory building in the German-speaking world not been consistently continued from out of their *praxis,* as an applied science with a clear connection to cultural studies, humanities, and art theory? Post-industrial design leads from theory to (1) speculative objects, (2) narratives, and (3) exemplary, instructive, and successful experiences and good practices. These practically implemented experiments with their theoretical foundations enable the production of action-relevant, applied concepts. They flow back into theory to further develop the approaches of cultural studies. Design research is thus understood as a dialectical production of knowledge in dialogue with cultural studies.

«We! We are ourselves the method!»[22] The Methodology of Post-Industrial Design

μέθοδος (méthodos)
Ancient Greek: «The path or course of an analysis.» The path has a premise, a question, and a goal, namely its object. The methodological path from the premise to the goal is a systematic path. The method is describable and repeatable. For Aristotle a certain course of action, an approach (*méthodos*) becomes a regulated, planned and systematic procedure to reach a goal (*méthodos*). The competencies and capacities that are not yet realised are thus, in this sense, *becoming*, which are expressed by the aristotelian concept of *dýnamis*, manifest exclusively in this activity. Only then does *téchne* become a capacity founded on factual knowledge, whereupon *méthodos*, too, advances to the level of an «inquiry» or «doctrine». The difficulty in translating these terms results from the dialectical nature of their meaning. For Aristotle, *téchne* and *méthodos* are even morally committed

[22] The origin of the yearly theme, the exclamation «We! We are ourselves the method!», is no longer completely verifiable. Was it the guest lecturer Heidrun Friese (Ethnologist and Professor for inter-cultural communication at the TU Chemnitz) in the attempt to clarify ethnological methods? or Regine Halter (former Professor for Theory and Reflection at our institute Hyperwerk) in a discussion with students and Heidrun Friese? Or someone else?

to the good (ágathon), since both are tied to the disposition of the acting subject (Nicomachean Ethics A, 1, 1094a 1-3). That is also why at first there does not exist any doctrine of politics or doctrine of art. Politics has to be done first, and, at the same time, the knowing and acting subject is constituted through this practice. This results in a rhetorical téchne (Plato), a political téchne (Aristotle), or an art-creating téchne. Only after a method has been applied can it be proven that a certain goal has been reached or that a method has worked in a particular situation. Negative experiences also help, in the long run, to gain insights (of whatever kind they may be). If method is to be understood scientifically, then the path has to be strictly verifiable, meaning that it can be followed by another person and will then lead to the same result.

Both the philosopher Jacques Derrida in his essay «Structure, Sign, and Play in the Discourse of the Human Sciences» (Derrida 2000) and ethnologist Claude Lévi-Strauss in his book «Pensée Sauvage» (Lévi-Strauss 1968) contrast the figures of the planning, rational engineer with the improvising *bricoleur*, thus prioritizing bricolage before technology. The difference between these two intellectual approaches is one of degree only and is not meant to serve, *per* Lévi-Strauss, only as metaphor for thought in the Western tradition and thought in the communities of the then so-called native peoples. Derrida argues that we are all bricoleurs, creative thinkers who have to use the tools and resources which we find in our respective surroundings. The consequences of following this logic of adaptive behaviour for the development of a genuinely post-industrial concept of design are serious and path-breaking.

The methods of design are not scientific. This is not and cannot be their goal, as it would mean to think in the wrong categories. To develop one's own understanding of methodology, however, it is helpful to have at least a basic understanding of scientific methodology. «Though this be madness, yet there is method in 't» – William Shakespeare, *Hamlet*, 1603 (Shakespeare 2011). Chief Counselor Polonius observes Hamlet's confusion and believes he

recognizes a system in it. He assumes that Hamlet is pursuing a determinate goal and systematically following a path. In the year 1603 a modern understanding of the concept of method emerges. In 1673 Descartes published his *Discours de la méthode pour bien conduire sa raison et chercher la vérité dans les sciences* (Descartes 2001), where the concept of method is closely tied to the foundation and legitimization of the rational sciences. The duality of mind and body, and subject and object, played central roles in relation to knowledge proved beyond doubt. Science was understood as the observing instance (mind) which takes itself out of 'perceptive' play (body). The methodological goal of this conception is the search for full explanation. Scientific methods have to be able to explain phenomena indisputably.

As a response to the increasing rational pressure of the natural sciences, Wilhelm Dilthey in his *Grundlagen der Wissenschaft vom Menschen, der Gesellschaft und der Geschichte* (Dilthey 1996) introduced a concept of the understanding (*Verstehen)*, i.e. the so-called hermeneutic understanding which forms the basis of the humanities and social sciences. Ever since, academic inquiry (*Wissenschaft*) moves between explanation and understanding, between proof and interpretation. Max Weber elegantly puts it in the context of the disputes about method in the social sciences at the beginning of the 20th century: sociology is a «science which wants to understand social action interpretively, and thereby explain it causally in its course and effects» (Weber 1985, 542). The dispute within the discipline continues until today, especially in sociology. Can we ever be in the position of a neutral observer? Are interpretation and understanding not always grounded in a particular standpoint and one's own value system? Is intersubjectivity, i.e. absolute repeatability through another person, at all conceivable and desirable? And if so, in which situations? Even in physics, the fundament of the natural sciences, there exists a difference between understanding and explanation. Is light a wave or does it consist of particles? Depending on the phenomenon one conception or the other explains the behaviour of light better.

We! We are ourselves the method!

In the arts, and to a degree also in the applied arts, we do not look for the repeatability of a result. We look for the individual standpoint, the solitary view on the world. All things methodological, and therefore all repeatable exercises leading to the goal of knowledge, should only extend over the drafting practices and the artisanal techniques used. That is also a reason why the annual motto «We! We are ourselves the method» sounds like individual self-emancipation from within the hyper specialization of the contemporary University. Yet already the choice of the first-person plural «spoils the broth». The plural might designate the collective, as in «only together we will reach the goal»; but that would be too simple. Rather, it is the tension between the individual solution and the similarities between the different, individual solutions that is at stake here. The point is to work out commonalities from these similarities. And, this too is contained in the title, what is at stake is the subject itself, and the question of the methodological importance of working on one's self. In Aristotle we saw that method is related to ethos. The usage of a method corresponds to an ethical attitude. Thus, it is about the relation to the object of inquiry.

Often the methods which occupy us are implicit. Methods of 'know-how', methods which cannot verbally be described, like riding a bike, i.e. the incorporation of a capacity to keep one's balance while simultaneously moving forward. The learning of this skill is related to sensory perception, to aesthetics. Only if I look at others, perceive corporeally, learn by watching and by paying attention to verbal and bodily instructions, and then incorporate these instructions myself – only then will I learn how to ride a bike. And in this process I am working out for myself a wholly individual manner of doing something – a manner which decidedly refuses verbal transmission There is something which I cannot communicate explicitly, it is irrevocably inscribed into me.
It is analogical thinking, i.e. thinking in chains of association in which we connect symbols, movements, moods, sensory

impressions, words, and colours. We connect A and B via C. The crown of a tree utilizes two terms, the tree and the crown, in order to describe a third (cf. Brandstätter 2008). The methodical cultivation of such analogical thinking leads to the classical every-day methods in the disciplines of design. Moodboards, mind-maps, collections, collages, or sketch books are used to fix problem-solving approaches in design and to follow a step by step development process.

Does post-industrial design employ its own methods? Or can we at least recognize the beginning of a development of its own methods? Under the annual motto 'We! We are ourselves the method' we have been looking for answers to these questions. We separated into six methodology groups and worked with them over the academic year. The first four of these groups – *Developing Position, Effecting Position, Describing Transformation, Implementing Transformation* – will be described in detail. The group *Applying Methods of Design* served to draw conceptual delimitations and increase our focus: which methods are known, are being employed by us, but are not specific to the Institute? The group *Teaching and Learning Methods*, finally, was an opportunity for us to rethink certain aspects of our own pedagogical work.

Developing Position

How do we develop our own position towards our subject? Here by «object» we mean projects of post-industrial transformation. This question assumes that the development of one's own position in the working process represents a methodological dimension in itself. To change the acting subject is a precondition to gain insight. This insight can be in the description, the execution, or the communication of a post-industrial transformation. Yet it is always bound up with a change of one's own person. Such change is a necessary condition for a change in the environment. The relation is to be thought of as process-like dialectic and strongly symmetrical. The project (the object as actant) and the acting persons (the subjects as actants) mutually condition

and change each other. The acting persons are embedded into the processes which they initiate and change with them. They are themselves part of the processes.

As it evinces a foundational method of creative transformation, the meaning of this method group should actually be self-evident. And yet it remains highly remarkable. An archaic image of change would correspond to the image of the explorer. He is white, he knows what he wants, he knows what is right, and he conquers new countries, which as an explorer he then categorizes, thereby forcing his own world view upon them. He changes the world. As ridiculous and self-debunking as this image might be and as outdated as the description is, it yet remains omnipresent in our heads and powerfully at work in the understanding of our actions. Therein lies the explosive power of the first methodology group. Further explosive power lies in the proximity to the so-called artistic strategies, i.e. to the self-understanding of one's own work. A transfer of this self-understanding onto the discipline of design implies a turning away from the idea of the designer as service provider. Post-industrial design is autonomous, independent, and might well be entrepreneurial. The tasks are largely self-chosen or self-found. One's own development is the method by which we do justice to the respective tasks.

Effecting Position

'Effecting position' circumscribes the challenge to opponents to develop their own position towards post-industrial transformations. The term 'challenge' seems to imply a call to a fight. What is meant is rather the acceptance of a highly demanding task. Thus, this methodology group refers neither to mediation nor to communication. That would be a confusion with campaign work in advertising, politics, or prevention. It is rather about forcing one's opponents to accept a demanding task. The 'forcing' entails the militant aspect, the call to a fight. Thus, an exhortation: risk a change in your own position! That means to understand oneself as an acting subject and risk a willingness to engage with and in the process of change. This method plays with provocation, with

surprising visualisations, with more or less easily recognizable lies, with the inclusion of the opponent, or the social event. Tools from the world of advertising, like viral marketing or campaign work, are among the topics, as well as methods of activist political work, like *détournement* of *dérive* (both concepts stem from situationism – cf. Debord 1995), or methods from design and art, like cultural hacking (cf. Düllo 2004), but also participative methods from animation work, conflict transformation, or social work. These methods share a common poignancy. The exhortation does not aim to change opinions that might move someone to make their X in a different spot on the ballot. Rather, they call one to accept a demanding task – to actively risk change.

Describing Transformation

Describing transformation means to interpret it and to understand it. There is thus a clear overlap in this methodology group with the methods of the humanities and social sciences. The descriptions might be of one's own projects or of other recognizable changes. The methods are based on the creative means of documentation, audiovisual media, text, photography, sketches, collections, and all kinds of self-developed notation systems. Often, scientific methods have to be included as well. Many post-industrial transformations require separate forms of description to make the changes recognizable, understandable, and narratable in the first place. The development of such forms of description is stand-alone dimension of post-industrial design. The development of hybrid forms between scientific and creative comprehension is necessary, especially when a claim to universalizable insights exists. The methods of ethnology, starting with participant observation and thick description, are particularly helpful reference points and resources. A number of questions are similar – from the position of the observant, the slow processes over time (ethnological field work generally captures more than just a moment), to the way social interaction is handled.

The forms of description of one's own projects need to be able to document open processes. Does this mean that a notation

system has to be able to describe *anything*, so as not to miss the decisive moments? How can the decisive moments of processes be grasped as a method and thereby made accessible for similar projects? Such transfers in particular from one project to another often prove highly difficult. That is the reason why methods of work are necessary in the first place. The results of such descriptions are to be understood as collections of comparable good practices.

Implementing Transformations

The implementation can refer to the form, the structure, or the narration of post-industrial transformations. It can focus on form, i.e. the concrete implementation of new forms of work which question the separation of drafting, production, and usage. It is important to understand that many changes in value creating interactions focus on this point, mostly enabled by digital networks, media and IT infrastructures. Facebook can also be understood as questioning this separation. The customers produce the site with their content and the usage is readily available to all at any time. All are part of the process, the social experiment, that goes by the name of Facebook. The HyperWerk Institute has focused increasingly on the fields of work in digital crafts over the last years – but changes take place in a large variety of fields. Implementations can also concern the structural dimension. Many projects focus on new, collective forms of work of participatory processes. Projects that deal with digitally expanded crafts, for example, almost always also deal with questions of structure. How do we organise our firm, our cooperation, the way we handle rights, our creation of value?
Finally, there can be implementations in the area of narration, i.e. the developments of narratives of the post-industrial. The ethical focus of the projects realized lies in the process-like nature, the concrete engagement with inter- and transdisciplinarity, and in the necessity of situational and strongly iterative action. These projects form a canon of many individual projects, which together result in systematics of action guidelines – we, we are ourselves the method!

Applying Methods of Design

Applying Methods of Design serves the purposes of demarcation and delimitation. What methods are known to us? Which ones do we apply every day? We were able to distinguish between two groups of methods. First, methods of collective drafting, like brainstorming, moodboards, or mind maps. Secondly, methods of notation, of documentation, and of description of projects and processes (see further *Describing Transformations*). These known methods of design form a resource pool, which is extended by the methods of other disciplines like social work, journalism, or ethnology. The regular interaction with the multiplicity of methods that appear in inter- and transdisciplinary project work is essential. One has to understand, question, and / or apply these methods oneself. Depending on the situation, they have to be combined with other methods. This requires conscious and responsible agency with no room for trepidation. It is better to try something new and fail at it than not to do it at all. New methods can be developed through testing, correction, and repetition.

Learning and Teaching Transformation

The last methodology group focuses on the methodological approaches to learning and teaching in times of transformations, especially for post-industrial design. The basic question here is whether teaching is possible in post-industrial times? The Institute's answer is to design studies as a collaborative learning lab. Acquiring knowledge is understood as a common and highly interconnected task. How is knowledge constituted in the next society?

According to sociologist Helmut Willke, knowledge is «a communicatively constituted and confirmed practice founded on experience», which «presupposes a [common] context of experience» (Willke 2011, 42). «In this sense, there is no 'theoretical knowledge', only practical knowledge of how to deal with theory. There is no 'abstract' knowledge, but only practical knowledge of how

to handle abstractions. And there is knowledge of how to handle non-knowledge, the unreal, the virtual or the imagined, as long as these fields are defined as relevant areas of social practice, i.e. if they have led to real experiences and contexts of experience» (ibid.). Theoreticians of systemic knowledge management like Willke also note that «forms of expression of non-verbal communication or emotive qualities like behaviors are lost as data» (38).

How can all these forms of cognitive and affective knowledge be apprehended and made fruitful? Is there a knowledge which does *not* follow the structures of temporality in the societies of time and especially the paradigm of acceleration of industry-induced modernity? Secondly, is there a kind of knowledge that does not follow the usual forms of encoding of data (e.g. numbers, texts, images) and which thus does not correspond to the logic of informational exchange and resists the info sphere? And if there would be such knowledge, would its presence indicate the existence of a new epistemological and social paradigm? And is such a social schema at all possible within the given possibilities? These questions shall be scrutinized in the following.

The one-sided and intellect-centred view of man and the world has long dominated scientific thinking, so that such questioning might at first appear legitimate. The second and directly related question that can be posed here is: how would the management of knowledge look like if it resisted the rigid logic of capital and linear time? The paradigm of a post-humanistic orientation of the humanities rises against hegemonic thought, which understands the properties of the *self* on the basis of a process of individualization and calculates knowledge only in terms of bits and bytes, i.e. as a measure unit for its informational content. According to Willke's definition of learning, understood as «an adaption of a complex system to environmental conditions», learning initially «doesn't have to do with quality or progress or perfection, and not even with survival. Instead, it has everything to do with self-controlled self-production of physical and social systems based on system-immanent perceptions.» If learning is «problem-solving from the viewpoint of the learning system»

(Willke 2011, 60) – an obvious fact on the level of people, when the personality and life strategies of each individual are taken into consideration – then the question has to be oriented towards the problem of how intelligent organisations and persons «generate and use knowledge in complementary manners, and mutually give each other access to their knowledge potentials» (Willke 2011, 66). If one follows this logic, then the internet is a resource of knowledge, not only because it corresponds to an immense database (or because, at the same time, it resembles a data graveyard – the problem of Big Data), but primarily because it enables the enormous interconnection of knowledge creators. The emphasis here is neither on the information offered, nor on the number of those who refine this information, but rather on the potential congregation, i.e. the knowledge based modes of operation of actants. Knowledge would then be bound up with the principle of resilience, because it implies the capacity to learn, competency to innovate, and anticipation of potential change, which has to be «proactively responded to, rather than met with selective crisis management» (Willke 2011, 75). To support the emergence of knowledge requires, according to Willke, the support of communication, the integration of non-knowledge into structures of knowledge management, as well as proficiency in handling uncertainties and risk. This logic of virtuality and potentiality is an antidote to the linearity of modern time, since its represents a multivariate time, a quantum time, or, in the words of Wolfgang Ernst, a «non-euclidean geometry of time», which is compatible with the temporal structures of post-industrial media economies (Ernst 2012). *Swarm intelligence*, i.e. the collective behaviour of decentralised, self-organising natural or artificial systems, which leads to efficient self-reproduction, can be seen as a mode of learning which does not necessarily follow the acceleration pressures of a mechanised modernity. Learning in *slow motion* would mean to regard the cognitive, affective, and social competencies of people and organisations as a «sensitive» resource, which «is not at all to be used and managed as neutrally and schematically as, for example, capital can be» (Willke 2011, 80).

Bildung as artistic strategy

Several question arise here regarding the conception of *Bildung* as artistic strategy and its location in the context of systemic knowledge management. Of course, the reference here is neither to art classes in the education system nor to the curricula of art education. The figure of the *paidagogos* (the notion goes back to the terms *pais*, «child,» and ágein, «to lead, guide») from Greek antiquity can function as a guide here, a term which originally did not designate the trained educator but rather a slave who supervised young boys. The concept designated a trusted member of the household, who acted as a mentor and trainer and accompanied the young man to the gymnasium, where works of classical poetry like Homer were read out. Yet the actual learning process took place on the way to and from the gymnasium, on the streets of the polis. It was based on a dialogical exchange, while the learning goals were determined by the interlocutors. Without idealising these practices, we can still call upon this figure as an emblem of post-humanistic (or post-anthro-pedagogical) learning.

Important questions are raised here. What kinds of pedagogy are open to the production of knowledge and self-organised? How can we enable collective knowledge and how do such procedures relate to alternative knowledge economies? What does it mean to have knowledge about experiences? How does this relate to socially engaged art and political activism? What does it mean to develop micro-practices of learning, either within the frame of formal education institutions (universities) or in museums, exhibition platforms, and collectives of production? What does it mean to search for this knowledge in informal, self-organised off-site projects, where questions of the political, the public, the communal and *Bildung* converge?

A preliminary typology of Bildung as artistic strategy includes the following characteristics. Obviously, this mindset rests on an inter- and transdisciplinary mode of work, which encourages the interdisciplinary development of new methods while including

several mutually independent singular disciplines. These methods result from the system-oriented integration of different partial aspects of the respective methods. Interdisciplinary modes of work are therefore always self-reflective and critical of their own epistemologies. This is especially true for epistemologies that fall distinctly within the humanities, since the manner of data collection in the humanities tends towards complexity (Braidotti, 160). Certain methodological rules of conduct, like «cartographical diligence in handling the consequences of ethical responsibility, transdisciplinarity, conjunction of critique and creative figuration,» to name just a few of Braidotti's golden rules, point the way towards the future. Ideally, such newly developed modes of work aim at the distribution of new fields of discourse, which expand on or even replace traditional patterns of thought in society and established academic disciplines (Braidotti 2014, 151f). This claim, however, dovetails with an important demand of theory in the humanities, namely to develop in tandem with and through the sciences. This way a new knowledge system can be developed, which Braidotti refers to as *matter-realist*, i.e. a system of insight founded upon the affective as well as the autopoietic or self-organising concept of matter (Braidotti 2014, 161). Basically, it is therefore better to speak of a double conjoining: on the one hand, the merging of scientific knowledge with the humanities, on the other, that of both domains with their areas of practical applications, i.e. with praxis.

At the same time, learning should depend on the corresponding will, drive and curiosity. Unknown and unexpected research initiatives, interests, and curiosities, which are shared and communicated, shall establish the place where common possibilities of knowledge, empathy, and passion can convene to unleash their creative potential. Many of these experiments focus on the temporary conjoining of scientists, citizens of the world, activists, and creative individuals which explore goal-oriented and self-determined modes of work. Common practice means, in this context, to let ephemeral and diverse collectivities emerge, which will enable unique outcomes. The learning process will then work as social medium not as apparatus, through which another

perspective on collectivity is opened. To establish a community that can assert its interests against resistance means to manage this peculiar form of creative collectivity, which Gesa Ziemer describes with the concept of *complicity*: «Complicity is thus used when handling structures creatively, when these are altered, adapted or ever reinvented. It is hence mainly the expression of creative work and in the process crops up across all fields of work and social milieus and not only in those ascribed a high level of creativity, such as art or other creative branches (Ziemer 2016, 11).»

The enabling of the aleatory and free nature of knowledge generation has to be guaranteed. «Learning» takes place in situations and places which have not necessarily dedicated themselves to such activity. The exploratory and experimental character of this form of learning and its orientation towards lived experience (*Erfahrung*) should be seen as close to the playfulness of the creative process. Yet creativity is a «risky and vulnerable state» (Ziemer 2013, 12) and therefore does not entail guaranteed results. Therefore, an element of fallibility has to be integrated into each composition of innovative contexts, and the possibility of intentional action failing has to be accounted for. This element should be put to the forefront as the central meaning and purpose of experimentation and the true nature of research. Such an approach positions itself in contradistinction to the predictable and controllable results of mainstream research and training, a form which follows the principles of achievement and efficiency with increasing rigidity. This ambition to increase efficiency has contaminated all branches of creative work and even discredits the notion of *creativity*, which by now has almost become a synonym of successful marketing. The goal is to encourage complexity in the sense of Bruno Latour's understanding of the network and to prepare the ground for insecurity and contingency, as well as for the emergence of unpredictable events. Strength, for Latour, does not come from concentration, purity, and unity, but from diffusion and heterogeneity.

Learning has to consider the diversity, specificity and uniqueness of the people involved (individual subjectivities) and therefore promote a holistic approach which takes the individuality of the participants into account. In his book *Epistemologies of the South. Justice against Epistemicide* (Santos 2014) the sociologist Boaventura de Sousa Santos exemplifies this perceptive faculty which recognizes diversity as an enrichment of the learning process. He gives a critique of existing models that ignore non-normative identities, the marginalised and the excluded: migrants, the indebted, the unemployed, and the culturally or sexually divergent. Ivan Illich (Illich 1971 & 1973) is one of the oft-cited authors who have engaged with questions of conviviality as a key characteristic of post-industrial societies. He proposes a wholly different kind of image for the creative agent, one that is characterised by delicate perception and openness through which intersubjective vulnerability and empathy vis-à-vis the beholder or collaborator are put into the foreground. *Bildung* as an artistic strategy ought to include the affective nature of the individuals who are addressed. Philosophers and critics have largely neglected the important role that our bodily and affective dispositions play for thinking and reflecting. Non-signifying, autonomous, bodily-performative processes, which take place underneath the threshold of conscious perception and signification, ought to be part of a continuous integration towards a holistic 'consciousness'. They cannot and must not be disqualified and excluded.

Bildung as artistic strategy should enable the questioning of research goals and problematiques: what are legitimate questions and under which conditions are they posed? The work of the philosopher of science Paul Feyerabend is a source of inspiration in this regard (Feyerabend 1986); in his work on so-called epistemological anarchism he questions some of the modern myths of knowledge production. He interrogated the rationalist dogmatism of the rules and limitations of scientific theory and methodology and exposed the much celebrated rational objectivity of the sciences as rather faulty. To the contrary, Feyerabend emphasizes the importance of intuition and creativity, which

includes innovation in research methods and hypotheses, as preconditions of knowledge acquisition and progress. Similarly, Latour analyses the central questions about objective insights, for example why the rise of science has such a hard time to account for other modes of understanding (*Erkennen*). The efficiency of expertise has also been questioned from the point of view of systemic complexity research, «for the scourge of ignorance concerns all, including the specialists and professionals, because while they are experts for niche topics, they are laymen on all other questions» (Willke 2014, 10). In this regard, the judgment of scientific innovation and theories should not only require the interdisciplinary cooperation of different experts, engineers, ethicists, jurists, and politicians but also, according to Feyerabend, the direct involvement of citizens and politicians, through which «they participate in the knowledge process without further administrative detours through abstract theories» (Feyerabend 1980). This is also a corrective to so-called «Big Science» and the techno-science which is responsible for the increasing globalisation, militarisation, and phramacologisation of society.

Bildung as artistic strategy presupposes a non-hierarchically structured learning environment in which there are no teachers but only participants. This is meant to reject the relations between specialists and laymen, privileged and non-privileged audiences, between those in the know and those excluded from knowledge. To establish flat hierarchies or horizontal structures, of course, do not mean that disciplinary knowledge is not being employed, but rather that this knowledge can not be equated with authoritarian and binding proclamations of truth. *Bildung* has to be understood as self-empowerment. Jacques Rancière's book *The Ignorant Schoolmaster* is paradigmatic in this regard for understanding both learning processes and the intellectual and political emancipation that goes with them (Rancière 2009). The ignorant schoolmaster Joseph Jacotot teaches what he does not know and proclaims that all humans have the same intelligence. To recognize in every other speaking being the same capacity is not only an ethical challenge but also a democratic one. This attitude towards the horizontal logic of representation

also proposes a different understanding of the political, which has to be understood as a struggle over what should politically count – including the highly political claim that something cannot be political at all (a good example here would be the disciplines of design!). The timeliness of this argumentation complements the current debate over *Bildung* and divisions in social class, which is relevant for teachers as well as students. The argumentation also concerns the recent debates on the *Exzellenzinitative* for research universities in the global *battle for brainpower* and on positions which conceive of research from the point of view of (Baecker 2007, 101). It is obvious that *Bildung* as an artistic strategy implies a critique of institutions and the questioning of the actual conditions and relations at institutions, be they universities or other educational institutions, that enable such learning processes. This also means formulating questions regarding the nature of intellectual property of an idea (copyright) or a tool (software). It also means thematizing the *sharing economy* and *open source* as alternatives, which are still taboo in the current educational system. In this context the diffusion of innovation should be seen as the surplus value of an idea, where the value of knowledge is measured rather by the degree of its diffusion, as well as its social, political, and aesthetic usefulness and resiliency.

Concepts like *bricolage*, *macgyvering*[23], *serendipity*[24], *détournement* (Debord 1995), or *cultural hacking* (Düllo 2004) are to be understood as methods which are described by the term *cognitive diversity* in systemic knowledge management (Willke 2014, 68). Collective intelligence is more efficient in finding problem-solving approaches than any authority-based top-down knowledge

23 The concept *Macgyvering* dates back to the US-American TV series *MacGyver* that was produced from 1985 to 1992. The protagonist Angus MacGyver plays a type of renegade secret service agent. In the face of technical problems (like ticking time bombs or opening safes) he devised an exceptional response: a mix between improvisation, first-rate knowledge of technologies and consistent work with the immediately available tools and materials. This approach is known today as MacGyvering.

24 The notion of serendipity was and is intensively thematized in the philosophy of science. It denotes mainly the random observation of something initially not sought-after, that unexpectedly proves to be a new discovery. But the random observation requires keeping «both eyes open» in work. Alexander Fleming paid attention to mould-contaminated petri dishes, because he was searching for bacterial substances. Chance needs to be systematised.

via procedural processes. Or, in the words of complexity scholar Dirk Helbing: «the sum of the ideas of many is better than the smartest human, even if she uses a supercomputer» (Laukenmann 2015). *Bildung* as artistic strategy could also be seen as a call to change one's excessively accelerated personal life and to de-organize it (cf. Drabble 2013, 17ff). To encourage de-organisation would amount to a critique of the «organisation of the self», which in Western societies has become the emblem of contemporary biopolitics. Lest we forget that the word «school» (Schule, école) is derived from the Greek word «skholē», which actually means free time, rest, and leisure and in this sense represents the opposite of forced, heterogeneously determined labour. De-organization enables new organic forms of self-organisation, which meet the wishes and potential of each individual. The support of this goes hand in hand with the recognition of a state of mindfulness and presence of mind, which opposes the malaise of *hyperattention* diagnosed by Stiegler (Tisseron & Stiegler 2009, 64). As Dirk Baecker remarks: «the innovative enterprises of the next society will discover that mindfulness (Weick & Sutcliffe) in the interaction with humans, machines, and ideas is the scarcest resource of all» (Baecker 2007, 21).


Danke
fürs
Teilen

Outlook

«Unter *Konvivialität verstehe ich das Gegenteil der industriellen Produktivität [...] Von der Produktivität zur Konvivialität übergehen heißt, einen ethischen Wert an die Stelle eines technischen Wertes, einen realisierten Wert an die Stelle eines materialisierten Wertes setzen. [...]*
Wenn eine Gesellschaft, ganz gleich welcher Art, die Konvivialität unter ein gewisses Niveau drückt, dann wird sie dem Mangel anheimfallen; denn keiner noch so hypertrophierten Produktivität wird es jemals gelingen, die nach Belieben geschaffenen und multiplizierten Bedürfnisse zu befriedigen.» (Ivan Illich 1973, S. 32f.)

In this text we thematized our own design practice. It is a practice that addresses social transformations and locates them between the poles of technology and society. The starting point here is the potential inscribed into new as well as old but freshly analysed technologies. The potential is manifold and can lead to entirely different developments. We look at the potential which reduces the separation of drafting, processing, and usage. We look at the potential which takes place in an autonomous, manageable, resilient context, one which strengthens local and regional cycles. We develop cultural techniques (*Kulturtechniken*) through this work,

i.e. «cultural and technological concepts to solve problems in different life situations.» The problems we recognize are situated in a social field involving tensions between a massive automatisation drive directed towards cyber-physical systems and the necessity of solving global environmental and resource problems in the light of the necessity of post-growth. Our contribution is of an anthropological nature. Actions develop in the direction of an actantisation (reduction of the separation between subject and object, between drafting, production, and usage). Our experimental set-ups, our interventions, our self-understanding as a learning lab are microscopic activities formed around the understanding of the «world as design» (*Welt als Entwurf*) (Aicher 1991). What kind of knowledge are we generating here? «The use of the word knowledge (*savoir*) … refers to all procedures and all effects of knowledge (*connaissance*) which are acceptable at a given point in time and in a specific domain» (Michel Foucault quoted in Giorgio Agamben 2009, 9).

Our knowledge builds on small building blocks. It is extremely particular. We see a movement towards a new manageability, a balance between the world as village and the village as world. This movement can blaze a path and mark out a field. Referencing Aristotle's *locus classicus*, philosopher Giorgio Agamben notes: «while induction proceeds from the particular to the universal and deduction from the universal to the particular, the paradigm is defined by a third and paradoxical type of movement, which goes from the particular to the particular» (19). Agamben sees in the paradigm, in the interpretation of Foucault's usage of the concept, not a solitary world view (*Weltanschauung)* or doctrine. The paradigm rather designates a movement, which «goes from singularity to singularity and, without ever leaving singularity, transforms every singular case into an *exemplar* of a general rule that can never be stated a priori» (22).

Following the traces of singularities unfolds a picture that sketches out new forms of labour, of design, and related structures of social organisation. The picture carries an optimism with it and presumably also a fair share of naivety. Within the

framework of this years motto, we deepened our engagement with the question of the post-human. To speak of the 'post-human', of course, always carries with it the claim that we are living in human(e) times which are just now threatened with oblivion. The post-human is alterity, is the other – and not only in a temporal sense. Geographically and socially, too, the demarcation of the post-human works rather well. For example: We who are the western industrialised cultures encounter the post-human in the increasing mingling of cultures that we perceive as a danger. We encounter the post-human in the fear of dystopian singularities[25], Frankenstein scenarios, the takeover of machine power that would make us humans rather superfluous.

Another dimension, and probably much more essential type of the post-human, takes place in a very every-day manner. We are already very well and voluntarily linked with interconnected systems and multifarious processes of self-optimizations and disciplining. Changes in the concepts of time, space, knowledge, information, and sign are at stake here, i.e. developments which will massively change our existence and our subjectivity. They are almost always embedded in the context of an intensification of the capitalization of time, space, knowledge, information, and signs. Viewed from this perspective, the anti-intentionalist subject of the post-industrial situation does not instantiate a form of self-consciousness and self-reflexion, but, to follow Latour's symmetrical anthropology, one entity in a plurality of material-semiotic networks, or different modes of existence. Similarly, Braidotti speaks of an «expanded relational self» (Braidotti 2014, 65) which emerges in the field of non-anthropological forces, elements, autopoietic matter and self-regulated flows of data and contains them all. Design should therefore move in these contexts and use their potential.

According to a luddite romanticism oriented towards holism, machines do not belong to this world. Yet «becoming machine» in

25 Singularity describes the point in time at which IT systems become capable of improving themselves fundamentally and independently. This would lead to no longer predictable and rapid developments. It properly refers to an overlap between technological futurology and science fiction literature.

the sense of a playful and sensual relation to technology, which does not rely on functionalism, means to «respect the mutual interdependence of bodies and technological others» (Braidotti 2014, 95). Non-essentialist differences have to be preserved, not to re-institute hierarchies of power (i.e. to found again identities based on difference), but rather to situate man-machine-relations within a fabric of interdependencies of environment, society, and psyche (as in Guattari's concept of *chaosmosis*).

The paradigm of conviviality means to rethink concepts of time and subjectivity, sign and capital, knowledge and affect, and to employ them pragmatically for social transformation. Design as cross-disciplinary practice and future-oriented theory building contains all these discourses and intervenes into exactly these transformative approaches and conceptualizations. Design understands itself as the redesign of a society in the process of transformation. At the same time, design also means to shape *dispositifs*, systems and possibilities of knowledge creation.

Bibliography & Further Reading

Note:

The most recent version of each text has always been provided, as this bibliography is intended for use by the reader and not as a series of entries compliant with bibliographical exactness. Quotes originally sourced in the German original text have been rendered in their English equivalent and the appropriate reference given. Where this was not possible, the quote has been translated into English and the page references for the German edition have been given.

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