Reenacting Poiesis – *More Anarchy in Technology!*

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> "After one look at this planet any visitor from outer space would say 'I WANT TO SEE THE MANAGER'."
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> (William S. Burroughs)[1]

Philosophical and human science schools of thought associate anarchy with the political utopia of a total negation of rule. In the everyday reading, anarchy has negative connotations, it is associated with a lack of leadership and lawlessness, which leads to chaos and ruin. More neutral definitions understand anarchy as a societal condition in which the use of force by institutions is minimised and the responsibility of the individual is, in turn, maximised. For Kant anarchy is "*law and freedom without force.*"[2] Freedom and law are the central pivots in this reading, state force is needed as a third in order to enforce the freedom and the laws.[3] This short characterisation should suffice as a starting point for our reflections, even if it does not do the traditional concept of anarchy justice. What follows will therefore be about: 1. analysing freedoms in poietical action, i.e. technology's potential spaces, 2. the question of laws that technological activity must be subject to, and 3. the power structures that are established in today's society in relation to technology. The call for more anarchy in technology is aimed especially at a critique of these power structures, but furthermore demands a different social awareness of technology in general. With regards to the opening quote from Burroughs, the question arises as to whether the current conditions are due to management error at all or whether it is much more to do with an aporia. Is the core of poiesis perhaps fundamental uncontrollability? To this end we must clarify what is meant by poiesis.

[1] William S. Burroughs, The Adding Machine. Collected Essays, New York: Grove Press, 2013, p. 153.
[2] Immanuel Kant's sämtliche Werke, VII 2: Anthropologie in pragmatischer Hinsicht, eds. Karl Rosenkranz, Friedrich Wilhelm Schubert, Leipzig: Leopold Voss, 1838, p. 18.
[3] If it were actually possible to establish anarchistic structures in a major way - communities in which freedom and law are ensured without force - then anarchy would certainly be the highest form of social organisation. In fact, anarchy has remained a utopia thus far. Anarchistic models put to the test in reality manage without a guiding central power, but nonetheless require not only social norms, but also powerfully means of repression - at the very least to prevent the emergence of domination and to maintain anarchy itself.

Poiesis, or: The Problem of Making

> "*Following deeply rooted habitual thinking, which Kant exposed as 'transcendental idealism,' we always naively foster the assumption that the horizon of the world in which we move and orientate ourselves is an objective reality that is predetermined. Within this horizon our theoretical reason defines the phenomena that it recognises; within this horizon practical reason controls our action. But now it emerges that this world horizon itself has the character of a draft: it must have the character of a draft, because the world is open in time, i.e. in the direction of the future.*"
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> (Georg Picht)[4]

We use poiesis (from ancient Greek ποιέω, English "to make") to describe all operations and processes that bring something into being. This "making," which does not only include human action and therefore does not have to be goal oriented, is self-contained. All poietical action has a beginning and an end, at which a product, a commodity, a piece of work, a thing exists. When the process of "making" is concluded, there is something new in the world that continues to exist by itself and can have an effect in and of itself. For Aristotle, *techne* is the general term for all kinds of generation, which comprises all crafts, the arts, the economy and every possible form of production and manufacture too. In Greek philosophy and its structuring of the sciences however it is not the technical, i.e. the external, observable, material processes of genesis that are central. Poiesis is, rather—alongside theory and praxis—a basic form of human reason. While theoretical reason reflects and analyses the existent, and practical reason creates the rules of our (political, moral, etc.) behaviour, poiesis asks: "What is the output of thought and recognition, from which all possible forms of making arise? What is the basic form of all creation, all planning and producing? What is the basic form of all human art?"[5] The answer for Georg Picht is design. "Designing is that primal faculty, which enables the human to produce and to plan, to build houses, to found cities, to form states and to create any artificial world, which makes life in the midst of a hostile nature possible in the first place. Designing is the fundamental faculty of art. Thought is an art, if it is at its core designing."[6] This designing or drafting is not to be confused with our current concept of design. What is meant is that fundamental faculty, that includes artistic/design work just as it does the activity of the engineer/craftsman, of the architect and the financial speculator.

A technical activity reduced to purpose-driven rationality has been dominant in the industrial societies of the last 250 years. This closely held link between "internal drafting and external acting," which all of our technological activity has lost sight of, was an unbelievable success story in terms of increasing the power of social productivity. Life expectancy has, for example, more than doubled within just a few generations since the beginning of industrialisation.[7] It is not material scarcity, but overproduction and fair distribution that is now the hallmark of technologically developed civilisations. But what causes us difficulties in particular is the unpredictability of our action, the unplanned and undesired side effects of our technological existence. Technology becomes more energy and resource efficient with every new generation, but in sum total nature is becoming ever more strained by growing numbers of people and simultaneously growing levels of technology and consumption. Against the backdrop of enormous

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4 Georg Picht, "Die Kunst des Denkens," in *Wahrheit, Vernunft, Verantwortung. Philosophische Studien* (Stuttgart: Klett-Cotta, 1969), p. 427–434, here on p. 434.
5 Ibid., p. 431.
6 Ibid., p. 431 f.
7 Cornelia Dick-Pfaff, „Alt werden ist relativ jung", in: *Wissenschaft aktuell,* 22.11.2016, online: https://www.wissenschaft-aktuell.de/artikel/Alt_werden_ist_relativ_jung1771015590268.html (retrieved 30. 8. 2018)

global challenges (climate change, expected resource scarcity, population growth, environmental pollution, increasing urbanisation, agricultural practises that are detrimental to soil and drinking water) it would seem not only worthwhile, but urgently necessary, to think about alternatives. In addition, a paradox of the current technical-economical model of success is becoming ever clearer. Technological advances, a growing economy and even personal material wealth do not inevitably lead to a better life.[8]

If one wishes to understand why technology has become a problem for us today, another concept comes into play, one that Picht calls *Welthorizont* (world horizon). With this he means a general condition of consciousness that underlies every era and every culture in its entirety and that pre-shapes all forms of knowledge and experience of the world.[9] The prevailing state of consciousness, which has asserted itself since the 18th century according to Picht, is progressive thought with the goal of complete autonomy and emancipation of the human. External technological progress and internal autonomous reason geared towards it are, according to this, the two driving forces that have characterised the world horizon of the previous centuries. "If reason, which is considered a subject of progress, now wishes to show itself as really autonomous, then it must take over the helm of history itself. It cannot only experience progress passively, it must take control of it. Humankind must also plan its own history. It must be able to act as master of this history. Technological-industrial civilisation produced this fundamental conviction. In this civilisation, humankind understands itself not only as the ruler over nature, but simultaneously also as master of its own history."[10] It follows, inter alia, that technological systems must be constructed dependably. There must be assurance that the intended functions are safe under all imaginable circumstances, only thus are we not at the mercy of a random future. As technology simultaneously permeates all areas of life and not only technology itself, but also its production and thus enormous flows of raw materials, energy, goods, information and labour must be realised under these safety conditions, rational planning intervenes in ever larger areas of everyday life. Nevertheless, obvious cracks have appeared in the ideal image of a predictable and controllable future and technological progress as a means improving human life increasing loses in persuasiveness. Only now, after the problems of the uncontrollable side effects and the general unpredictability of the future have become unmissable, do we begin to seriously think about which structures we move in, if we not only wish to improve our living conditions, but rather wish to technologically control our own future. The finding formulated by Picht serves as a starting point for our reflections: poiesis is the most primal faculty of humanity and the horizon of the world in which we live is not always a given, rather has the character of a draft itself, whose structures and possibilities should be examined and identified. One of the biggest misconceptions in relation to technology is the notion that technical devices and machines are only there to ensure an easier life. The core of technological fascination is not in delegating unpleasant work to the machines and providing the essentials, but rather in expanding the possibilities of human action and thus creating new experience potentials and another future. Here, beyond capitalist dynamism, for which innovation represents a fundamental requirement, lies the

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[8] See Robert & Edward Skidelsky, *Wieviel ist genug? Vom Wachstumswahn zu einer Ökonomie des guten Lebens*, Munich: Verlag Antje Kunstmann, 2013; Eugen Pissarskoi et al., "Diskurse zum guten Leben: Analyse ihrer Begriffe, ihrer Akteure und damit verbundener politischer Strategien", UBA-Texte 17/2018, Dessau-Roßlau: Umweltbundesamt, 2018, Umweltforschungsplan des Bundesministeriums für Umwelt, Naturschutz, Bau und Reaktorsicherheit, Forschungskennzahl 3714 11 100 0; Eugen Pissarskoi et al., "Was kann Nachhaltigkeitspolitik vom guten Leben lernen?", UBA-Texte 18/2018, Dessau-Roßlau: Umweltbundesamt, 2018, Umweltforschungsplan des Bundesministeriums für Umwelt, Naturschutz, Bau und Reaktorsicherheit, Forschungskennzahl 3714 11 100 0

[9] On world horizon and progress see Georg Picht, *Geschichte und Gegenwart: Vorlesungen zur Philosophie der Geschichte*, Stuttgart: Kett-Cotta, 1993, p. 179ff.

[10] Picht, *Geschichte und Gegenwart*, p. 181.

original human drive of technology. The current organisational forms of economy and technological developments are, on the other hand, not irrefutable necessities.

Freedoms: The potential space of design

> "*If there is such a thing as a sense of reality - and no one will doubt that it has its raison d'être - then there must also be something that one can call a sense of possibility. [...] It is reality that awakens possibilities, and nothing could be more wrong than to deny this.*"
>
> (Robert Musil)[11]

Picht puts design at the centre of poiesis, but doesn't name its prerequisites in detail. So we should first ask on what basis design takes place. We can define the space taken up by design using two connected positions. They are positions because they contain assumptions about our world that cannot be fundamentally proven. Put another way, the writing of this text as a drafting process is itself subject to the conditions that are described here. My current world horizon and my imagination structure the text. No matter whether I consider the positions represented here, and especially these two positions, right and justifiable, they, like all other drafts, are subject to temporality in their claims and scope. The first position postulates the existence of a physical reality, which is in a sense manipulable and open in regards to the future, but at the same time is subject to unalterable laws of nature. This reality exists independently of humanity. For this we imagine, to some extent, a world without humans, i.e. we remove ourselves intellectually from the world, with all of our ideas, feelings, desires and perceptions. What then remains as a notion we call physical reality. This reality is not structureless and, in a poietic sense, has always been active. It constantly creates new things and has in the course of the history of the earth spawned all life, including humankind. Once this abstract formation of a physical reality independent of humans is constructed, we have no problem reinstating humans and all other forms of life. Jakob von Uexküll[12] is to be credited with showing that living beings do not all live in a singular objective world, rather that every living being is always also its own *surrounding-world*, due to their differing perceptions and activities. Every animal thus has its own subjective space and subjective time. Therein lies the first position: we assume a singular abstract, physical reality, in which living beings each create their own realities and operate within them. The human, likewise a result of the autopoietical actions of nature, with a world objective to it alone, now in turn intervenes in this external reality through its thought and action.

Here the second position comes into play. This postulates the existence of a internal notion of the world, on the basis of which we as humans plan and carry out actions and thus change physical reality according to our goals. This inner power of imagination, that we also call fantasy (which is discussed particularly often in connection with art), is closely related to a series of other terms, for example representation, fiction, rationality, creativity, language, memory. This is also a position because "the power of imagination" as a clearly definable mental ability does not exist, just as human reason cannot be split into three separate parts. There is only one reason, which can engage with different questions as theoretical, practical and poietical reason. As with all other mental activities, when we speak of the power of imagination it is much more about a certain form of operating with so-called mental contents, with that which shows itself to us if we ask ourselves what is going on in our minds. We can formulate

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[11] Robert Musil, *The Man Without Qualities Vol. 1*, trans. Eithne Wilkins and Ernst Kaiser (London: Secker & Warburg, 1953).
[12] See Jakob Johann von Uexküll, *Umwelt und Innenwelt der Tiere,* Berlin: Springer, 1909.

these contents of the mind, to which we only have direct access through self-observation, linguistically, discussing them or—in turn by the means of thought—reflecting on them. This exposes not only the whole self-referentiality of the undertaking, but also the special role of language. How thought, language and imagination are linked is neither definitely resolved nor is it the central issue here. But as is easy to see using the example of language, the potential space of imagination is on one hand something private, but at the same time also always something collective. Pierre Bourdieu introduced the term "habitus" as the link between individual thought and behaviour and social integration, which "is considered a subjective, but not individual system of internalised structures, as schemata of perception, of thought and action that are common to all members of the same group or class."[13]

Human poiesis is therefore about the meeting of two potential spaces, which we can now name more clearly. Firstly, the potential space of physical reality and the different realities of living beings embedded within it. With all that we know scientifically about physical reality, we can assume that it is structured, simultaneously contingent, in a state of constant change and open towards the future. Decisive for our context is that we find here an open action space in which we can formatively intervene. Secondly there is the potential space of human thought, language and imagination, which has both private as well as collective features. This second potential space is characterised by a surplus with respect to the real. Andreas Kablitz has formulated this aptly for the case of language. "Because language always allows for more possibilities than the real ever utilises, for the sake of the definition of its task, in other words: for the sake of its representative power. Because each given is subject to changes, because it is unpredictable, language has to be equipped for such changes, put bluntly: it must allow for more possibilities than the real can ever offer, in order to be equipped for all of the real. Musil's phrase about reality stimulating possibilities fits perfectly here. The possible always defines itself here in the horizon of the real and at the same time exceeds it. But due to this excess of the possible compared to the (given) real, the possible, for its part, becomes a source of the real, or even of the new."[14] In this it is apparent for Kablitz that everything real is also possible, but not the other way round. But that is only tenable from an absolute perspective. Namely only if we assume that "the real" and "the possible" are closable categories. As both are intellectual, abstract constructions, it can in fact be assumed that in the concrete design situation not only does the idea exceed the reality, but also the reality of our power of imagination. The possibilities we can think changes with the faculty of that which we can currently do, i.e. potential space itself has a temporal structure. All design takes place at the point of contact between reality space and potential space. Poiesis is every process that transfers something from not-being into being, a movement from the potential space of that which is currently thinkable into the reality space of that which is currently doable. We place something in front of ourselves (it is brought forth) that previously only existed as an option. Thereby it is not always clear what is possible and what is not from the outset. Even for the possible and perhaps even considered easy, difficulties become particularly apparent in the detail. The idea, the plan, the intent are one thing, their realisation in a functioning and successful product is another. No matter whether it is an individual or a collaborative project, the obstacles of language, concept, of thought and communication are other than those of the materials involved.[15] A goal-oriented, purpose-driven poiesis must

[13] Quoted in Annette Treibel, *Einführung in die soziologischen Theorien der Gegenwart* (Wiesbaden: Springer, 2004), p. 227.

[14] Andreas Kablitz, "Kunst des Möglichen: Prolegomena zu einer Theorie der Fiktion," in: *Poetica*, Vol. 35, No. 3/4 (2003), p. 251-273, here on p. 268.

[15] Anyone who has ever searched for days for a mistake in a computer programme or a technological device knows of the resistance we are talking about here. However, the opposite experience is also possible. In technological activity, the desperate fight against technology and the reciprocal dance (which the psychologist Mihály Csíkszentmihályi terms "flow", i.e. the complete absorption in an activity that seems to happen without

overcome both obstacles that distinguish it from unintentional, random play. As what we produce is part of our living environment, our perceptions, experience and reflections, our poietic actions have, in turn, a very direct effect on our world horizon.

A look at other actors in poiesis may prove interesting at this point. From what we have said thus far it should already be clear that humans are not the only creators of the new—as poietic actors. What we call nature, everything that exists as inorganic and organic phenomena without human intervention and which permanently changes and develops, must likewise be called poietic. If we view nature as a unit, we speak of autopoiesis. Nature creates itself in this image. An important "strategy"[16] of nature, in order to poietically sound out the potential space of biological life, is evolution with its two intertwining mechanisms of mutation and selection. What we call autopoietic, allopoietic or sympoietic respectively, is simultaneously also a question of systematic perspective. Depending on how I define the boundaries of the system, a process can be declared autopoietic, allopoietic or sympoietic. We call the results of poietic acts, in which the creating human is the driving force, artefacts. Animals that also build dwellings and can also act intentionally to an extent occupy an interesting intermediate position between instinctive and planned action. Alongside nature and humankind, a third actor is currently rapidly gaining in importance: the mechanical poiesis of algorithms and so-called "programmable matter." As soon as we no longer understand algorithms as solutions, rather as compact descriptions of potential spaces, then the meaning of algorithms shifts. In particular, adaptive sign systems like genetic algorithms and neural networks imitate poietic strategies of nature and humanity in software and create unpredictable new experience horizons.[17]

Laws to safeguard the future: wrong!

"*Act always so as to increase the total number of choices*."
(Heinz von Foerster)[18]

We now have in our hands what Picht calls "negative control over the history of humanity," namely the technological means to destroy all human life on earth.[19] This destructive power represents a qualitative leap in the technological power of the human and an enormous increase in responsibility. So poiesis includes realisations that destroy or at least drastically reduce potential space itself. For Picht, during the time of the Cold War, this meant primarily nuclear weapons, today there are new non-military dangers too. Laws that limit technological actions therefore quite reasonably start by protecting the basis of life on our planet. Environmental protection with the goal of maintaining a functioning ecosystem and ensuring the natural basic needs of all living beings is essential. Therefore conservation that works towards the preservation and restoration of the biodiversity, variety and idiosyncrasy of nature is also

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conscious thought; vgl. Mihály Csíkszentmihályi, Das Flow-Erlebnis, Stuttgart: Klett-Cotta, 1985) often lie close to each other.

[16] Strategy is not to be taken literally here, as we cannot assume a conscious, purpose-driven process. Only if a creator of nature, who conceived of everything just as it is in advance and guides all processes, is accepted at this point would it be appropriate to talk of a strategy.

[17] See Ursula Damm and Georg Trogemann, "Algorithms rethought – zum fiktionalen Potential von Software," See Ursula Damm and Georg Trogemann, "Algorithms rethought – zum fiktionalen Potential von Software," in: Idee Inhalt Form, Beiträge zur Gestaltung der Gegenwart, eds. Prof. Dr. Winfried Speitkamp and Claudia Weinreich, Bauhaus-Universität Weimar, Weimar 2019, p. 320-331.

[18] Heinz von Foerster, Sicht und Einsicht. Versuch zu einer operativen Erkenntnistheorie, Braunschweig, Wiesbaden: Vieweg, 1985, p. 41.

[19] Picht, *Geschichte und Gegenwart,* 182.

important. Simultaneously there are a huge number of guidelines, restrictions and laws that already accompany technological developments, their rollout into market and use today, all with the aim of preventing the greatest variety of damages by technology as swiftly as possible. But what we actually strive for is not only the prevention of damage and catastrophes, but rather the positive control over the history of humanity. Responsive nature or environmental protection and legal restrictions are not enough to do justice to the fundamental problem of an open future. All these measures are characterised by the same problem of scope. The current strategy of technological development is reckless and contradictory. On one hand we want to maintain that which we call nature, we focus on preservation, conservation, care, even though we know that this has long since been a nature untouched by humankind, but is rather an artificial cultural product. At the same time we focus politically and economically on innovation, growth and dynamism—in short we invest all energy in change, which creates new possibilities, but in other places destroys the already existing variety (for example biodiversity). Positive control over the future is hardly going to be possible this way.[20] The problem is that we cannot know in advance which diversity we endanger or destroy through our actions. We are simply lacking the basis on which we can act always so as to increase the total number of choices.

The scientific way to create prognoses is to model sections of reality and subsequently compute or simulate them. For linear systems that are well demarcated and that only interact loosely with their environment, predictions actually work out very well. But for all areas for which interactions with the environment cannot be limited and whose inner mechanisms are complex, any modelling and prediction must fail. The reductive character[21] of model theory alone is enough to show the fundamental problem. It says that models do not capture all the attributes of an original, rather only those that appear relevant to the modeller with regards to the aims of the model. A model that captures everything would be the reality. Models can only ever cut out sections of reality and reduce the processes within these areas to a few parameters. But everything that is discarded and thus reduced has an influence on the entire reality beyond the question of modelling. Models simply cannot get a grip on the potential spaces of even small sections of reality. Put the other way around: if the future is open, then long-term predictions—despite all the energy that is invested by the sciences—are simply not possible for all non-trivial questions.[22] We are thus stuck in an irresolvable dilemma. The current strategy appears to be the only practicable one, that is to address problems when the effects are already evident (for example damages to the environment). The last tests of technological launches, medicinal preparations or other developments of any kind must always take place in real systems. This often happens when they are virtually fully up and running. In many cases longer-term forerunners on smaller scales would be more appropriate. As deceleration and measured progress runs contrary to the basic principles of the worldwide competitive commercial system that focuses on dynamism and growth, all that remains thus far is the repair mechanism, i.e. the attempt to smooth out mistakes a posteriori and to learn from the experience. Newer design methods (critical design, design fiction, speculative design)

[20] These undertakings already look relatively modest on a larger time scale. A glance at the past history of the earth (meteorite impacts, super volcanoes, total glaciation of the earth, etc.) and the catastrophes awaiting us in the future with ever greater probability (alongside more super volcanoes and meteorites, the destabilisation of the earth's axis due to the distance of the moon and eventually the expiration of the sun's energy, etc.) turns out pessimistic. Interestingly, these events are predictable even with high probability, only we cannot yet say anything about the exact timing. But these scenarios also show above all how valuable that which is given is and how important the efforts to preserve it are.

[21] Compare for example Herbert Stachowiak, *Allgemeine Modelltheorie*, Vienna, New York: Springer, 1973.

[22] See for example Jens Beckert, *Imaginierte Zukunft. Fiktionale Erwartungen und die Dynamik des Kapitalismus*, Berlin: Suhrkamp Verlag, 2018.

are interesting in this context. They cannot offer a way out from the prediction problem, but as they produce tangible objects of study, they can push the consideration, conceptualisation and discourse about technological innovations and their resultant phenomena in the form of a "materialised critique of knowledge" and contribute to education about technology in the sense called for here.

Inventions are, before they are made, not predictable, neither as events nor in their consequences. Only the setting and the conditions in which they take place are influenceable. The power of imagination simply functions according to other principles than reality. As the future is open and we cannot in principle know everything that will happen, laws can only be formulated as general aims. If these aims are endangered, we can react. But it is always a reaction to something that is already on the horizon of the tangible.

Power: the social structures of making

> *"Today's human, as a product of its culture, is a thinking and consuming human. Its ability to make something, its ability to design something is receding. It becomes passive, and its activities shrivel. [...] We have become children of a culture of thought that has detached thinking from doing, in order to fix it to logical precision alone."*
> *(Otl Aicher)*[23]

Artists and designers just as practising engineers and technicians, craftsmen and lab assistants, even programmers, all know the resistances of material. It is less the explicit physical, chemical or biological laws of nature that guides their action, but rather experiences with the qualities, possibilities and idiosyncrasies of the material. This material reality cannot be outwitted, experience is required to deal with it successfully. But in order to be—in Picht's sense—master of our own story and not only of general events, but also to determine our own experiences and perceptions, we must, among other things, also develop new materials that have properties that fit our notions. That is the core of the relatively young discipline of material sciences. Here we no longer subject ourselves to the autonomy of the world that we find. We no longer have to follow the grain of the wood to be a good carpenter, but rather develop new materials that have other properties that fit our notions on the basis of the laws of nature.

Those who make things nowadays do so not only within such technological possibilities and limits, but also always within given social structures, which on one hand make a lot available and thus present the individual with a solid basis for their own action, but, on the other, also prevent a lot. What also grows paradoxically in the course of increasingly complex technologies and increasing possibilities is a new form of voicelessness. The increased agency of the whole technological system is contrasted by the increasing powerlessness of the individual. Even if we accept as true the positive case of having freed ourselves from our intellectual powerlessness in the course of the Enlightenment, i.e. the Kantian incapacity to make use of one's own intellect, we are now slipping—at least in the vast majority—into a growing voicelessness with respect to our technological artefacts. On one hand we are dependent on our self-created milieu, as all of economic and social life is based on it, on the other hand the individual is largely condemned to passivity in this dependency. It does not help to rely on our own intellect, we are confronted with largely closed systems that are now accessible only to experts. And even those who are experts in one area, are laymen in all others and are confronted there by the same black boxes as the

[23] Otl Aicher, "kulturen des denkens," in *analog und digital – schriften zur philosophie des machens*, Berlin: Ernst & Sohn, 1992) p. 182-191, here p. 189.

rest of us. Our major technologies and technological infrastructures together with the unwieldy variety of small private gadgets, empower us to do things and make experiences that were still unthinkable a few generations ago. This sovereignty in action is vis a vis an equally large powerlessness in crisis situations. We face the malfunction of large technological systems such as nuclear power reactors like natural catastrophes, we are largely powerless and can only endeavour to limit the damage. For small-scale operational malfunction, the only options with are left with are visiting a specialist workshop or throwing it straight in the bin. Although things are made by us, they remain incomprehensible for the individual. The individual now no longer knows all of the skills necessary to maintain themselves and their living environment. We are industrially fed and dressed, placed in standardised residential systems, algorithmically governed and showered with mechanically manufactured objects. A changed relationship to things inevitably follows—they mostly remain valueless or act as lifestyle add-ons for a short time. What it means to make something yourself or at least to understand it to such an extent that you can repair it yourself, is being increasingly lost as an elementary experience. Today many know neither the feeling of appreciation that one develops for things made with one's own hands, nor the feeling of safety attached to such ability.[24] Namely the safety of living in a comprehensible world that one can shape and for which one must take on responsibility. However these established basic social structures are—unlike the laws of nature that the objects of our making are subject to—contingent, i.e. they don't have to be how they are, it is up to us to change them. But as they are now established, they exude great power, structuring the action space of every individual, without us always being aware of them. Some of these given social imprints of our technological world will be sketched out in the following.

The politics of artefacts

The results of poietic activity—the artefacts—become, as soon as they are produced, systems of power and order themselves. No matter whether the artefacts are politically loaded consciously or unconsciously, they are capable of changing social conditions or cementing existing ones. Langdon Winner shows this in his article "Do Artifacts have Politics?" with the example of bridge constructions over the Wantagh Parkway on Long Island.[25] The architect Robert Moses, according to Winner, built the bridges so low that busses could not use the road. "Poor people and blacks, who normally used public transit, were kept off the roads because the twelve-foot tall buses could not get through the overpasses. One consequence was to limit access of racial minorities and low-income groups to Jones Beach, Moses's widely acclaimed public park."[26] This is also the point at which the actor-network theory, largely developed by Michel Callon and Bruno Latour[27], starts, treading a middle way between technological determinism and social determinism. Here technological artefacts and things in general are also actors that contribute to the network of action. From the perspective of design we should pay attention to whether artefacts remain largely neutral in their political consequences and what kind of structure of action they establish. Artefacts can destabilise existing conditions or also stabilise and thus even counteract the general unpredictability of reality described further up. We build artefacts in such a way that they provide certain functions reliably over a long period. As these functionalities are integrated in larger general contexts, they simultaneously have a stabilising effect on the predictability and reliability of processes and routines. Software in particular can be viewed under this aspect. An algorithm always spreads out a potential space for concrete processes. Even if the concrete programme

[24] The furniture manufacturer IKEA seems to have understood this principle. Studies confirm that furniture assembled by the test person are perceived as higher in price than prefabricated pieces.

[25] Langdon Winner, "Do Artifacts Have Politics?" in *Daedalus*, Vol. 109, No. 1 (1980), p. 121–36.

[26] Ibid., p. 124.

[27] See for example: Bruno Latour, „On Actor-Network Theory. A Few Clarifications", in: Soziale Welt 47 (1996), 4, S. 369–382.

path cannot be predicted in individual cases, this potential space is itself self-contained. The runtime environment of the software is technologically realised in such a way that nothing will happen that takes place outside the space. Put another way: no matter whether it would be a decent world, the question arises as to whether the future as a whole becomes more predictable, the more technological devices and systems we establish for which we also have reliable prediction models. It is rather to be assumed that through the embedding of these, in and of themselves predictable, systems in reality and the links that then emerge, completely new potential spaces arise that cancel out the gains in prediction.

Dissection and division

An important feature of manufacturing processes is their potential to be divided up spatially and temporally. "Semi-finished products," "blanks" and "raw materials"[28] define today's manufacturing processes, they are traded in huge volumes on the free market and form the starting point for the mass fabrication processes of companies as well as for the making of individual pieces by hobbyists. Those who make things today seldom start from scratch, as Thomas Thwaites demonstrated in the famous Toaster Project,[29] but instead rely on prefabricated materials and modules. From the poietic perspective, these are interesting in-between entities. The semi-finished product and raw material is conceived and produced for a purpose, i.e. wooden beams of a certain profile and a certain length are no longer suitable for everything. But at the same time semi-finished products and raw materials still embody their own potential space that is not closed off. What becomes of them, which function they will ultimately have within a product, is not yet defined. The splitting of production into temporally and spatially separate work phases goes hand in hand with the "division of labour," i.e. the social division of work, which has already by examined in detail by Adam Smith, Karl Marx and others. Through the distribution of different tasks to members of society, for example the division of physical and mental labour (or planning and production) in Taylorism, higher total production is achieved.[30] But the gain in efficiency requires the coordination of the sections of work and also creates dependencies between the actors. In today's industrial states we can produce ever easier, ever more, while the breadth of knowledge across society increases drastically too. Semi-finished products, blanks and materials enable the individual, at least in principle, to produce even more complex products themselves. Even if "self" must always be placed in quotation marks here due to the preliminary work done by others, we have, as a whole, established a very powerful system that everyone, in principle, can use. But at the same time the possibility for the individual to produce something with their own hands or to secure their own survival autonomously within this system are clearly receding ever more. We surrender ourselves voluntarily and in great trust to the functioning of technological systems. For large technological networks (electricity, information) the question as to whether we should perhaps turn them off does not arise at all anymore, they simply must not drop out again. Most people aren't even aware of the consequences of a long outage.[31]

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[28] Semi-finished products are prefabricated raw materials and parts in simple geometric forms, for example bars, profiles, tubes, plates that are kept in stock in various materials and various versions. Pieces that have already passed through further, but not all manufacturing steps, are called blanks. Raw materials include bulk solids, pellets, gases, powders and liquids.

[29] Thomas Thwaites, *The Toaster Project. Or a Heroic Attempt to Build a Simple Electronic Appliance from Scratch,* New York: Princeton Architectural Press, 2011.

[30] For example: Karl Marx, "Division of Labour and Manufacture," in *Capital* Vol. 1, Ch. 14.

[31] See for example *Bericht des Ausschusses für Bildung, Forschung und Technikfolgenabschätzung (18. Ausschuss) gemäß § 56a der Geschäftsordnung, TA-Projekt: Gefährdung und Verletzbarkeit moderner Gesellschaften am Beispiel eines großräumigen und langandauernden Ausfalls der Stromversorgung* 27. 4. 2011. The report is published on the Bundestag website. http://dipbt.bundestag.de/doc/btd/17/056/1705672.pdf (retrieved 30. 8. 2018).
Here the war-like conditions that would arise in the case of a long power outage are described. For example p. 4: "Due to the almost complete permeation of the living and working world by electric powered devices, the

Information instead of perceiving and making

An intermediary and simultaneously dividing layer has pushed itself between the human and their things: information. The actual making is delegated ever further to the machine or the networked technological milieu. What remains for the human is the thought of making, so the organisation and provision of the information necessary for production processes. In addition the things produced mechanically are, in their use, increasingly kept at a distance from their user. For vigilant observers, the absence of an oil dipstick in new cars already counts as a beacon of a new basic attitude. It is no longer desired that the owner services their technological device themselves. Broken bulbs can no longer be changed with a few simple steps, batteries can no longer be removed from expensive mobile phones. The once simple act of measuring a car's oil and if necessary refilling it has been replaced by information on the dashboard display requesting the driver visit a garage. In increasing measures we must deal with information to which we can no longer build a connection through perception. We can understand vitamins, unsaturated fatty acids, enzymes, fibre and similar terms intellectually, but they elude direct perception. That's why we stand in the supermarket and read the labels on packaged foods. Even smelling the food is prevented by the plastic packaging. Whether we have a healthy or less healthy food in front of us is not decided in the sensuous perception of the product, but rather on the basis of the information printed on it by the manufacturer. In this context the digitality of the information becomes ever more important, in that it is, in principle, available at any place, at any time. If we stay with the image of the supermarket, this means we do not need to rely exclusively on the printed information from the manufacturer. A quick scan of a QR code provides, for example, further information from independent platforms, for example price comparisons, contaminants, customer reviews and the like. What required dealing with things in the past, is today often dealing with information.

The necessity of permanent change and the structure of capitalism

Jens Beckert[32] points out that two institutional mechanisms force the actors to focus towards the future in capitalism: competition and credit. Competition not only forces companies to become continually more efficient and to develop new products, it also transfers to employees, whose career prospects and social status depend on the market viability of their skills. And even the consumer is subject to the mechanism, as they stabilise their social status through buying consumer goods. This means that even societal structures that—as the example of capitalism shows—are completely outside the laws of technological doing, but which, as human inventions, are nevertheless poietic, have great influence on what is produced and manufactured, when and how. In general the artefact of money has an influence that can hardly be overestimated, as it is only through money in capitalism that all products become goods that can then be exchanged via the market. The societal illusion that Marx described as money fetish, that materially worthless money has a value in itself, to which the value of all goods must refer, created the socially formative power of money.

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consequences of a long-term and wide-scale power outage would add up to a particularly damaging situation. All critical infrastructures would be affected, and a collapse of society as a whole would be hard to prevent. Despite this potential for danger and catastrophe, only a rudimentary social awareness of the risks is present."

[32] Jens Beckert, *Imaginierte Zukunft. Fiktionale Erwartungen und die Dynamik des Kapitalismus* (Berlin: Suhrkamp Verlag, 2018), p. 15.

Plea for an anarchy of making

> "*As far as I'm concerned I do not believe that there is a solution to social problems, rather thousands of different and changeable solutions, just as social life is different and changeable in time and space!*"
>
> (Errico Malatesta)[33]

After what we have said thus far, a question imposes itself on us: which alternatives are there to the current purpose-driven, rational, competition-based, consumerist-capitalist poiesis and the globalised production and logistics infrastructures primed for efficiency? A global machinery, which on the technical side is based on the principles of dissection and division, of modularisation and encapsulation, of abstraction and digitalisation, which are in no way set up so that the individual remains as autonomous as possible or can even roughly understand the system. Due to the capacity of digital technologies for self-guided learning, the dangers of AI for the continued existence of humanity are already being discussed under the heading of "technological singularity." Independent of how realistic the scenario is, it is ultimately about our decision about which reality we want to live in. There cannot be a timeless binding answer to the problem of how we deal with technology and what our relationship to the world should look like. This text aims to at least make this clear. But the question as to what is to be done with respect to the situation here and now remains.

One may perhaps think that there are already unequivocal signs of changes. While in the 1990s the virtualisation of society was proclaimed, with the aim of replacing and overcoming material reality with digital information, the interest in material has, in the meantime, unmistakably returned. After workshops were radically stripped from schools and replaced by computer rooms, the next trend is once again oriented towards material: the so-called DIY or maker culture. Hackerspaces, fab labs and repair cafés are places that have emerged in recent years in which a different engagement with technology is tested. At the same time, this does not make digital technologies disappear again. On the contrary, they play the central intermediary role between user, machine and material in all phases of design, production as well as maintenance and use. These DIY initiatives are to be expressly welcomed, as they attempt to give making (yourself) a greater importance again. However, this trend is characterised by the same euphoric faith in the future as previous ones. And just like in the preceding proclamation of the information society, reflection on our technological activity remains superficial this time round too.

What is demanded here is farther reaching. It should at least have become clear by now that the current narrow version of poiesis, restricted to instrumental, techno-rational reason, is not enough to be able to cope culturally with technology. We must achieve a wider clarification of the possibilities and dangers of our poietic faculty. The Kantian tripartite anarchy ("law and freedom without force") shown at the start could at least serve as orientation in this. First we have to understand which **freedoms** we are actually talking about here. Technological developments are driven forward with great dynamism nowadays. Seen globally, there is no shortage of this. In 2016 there were 3.1 million patent applications worldwide, with an upward trend. Big data, AI, bio-engineering and nanotechnologies are not progressing too slowly, in fact they are overwhelming society. The kind of public discussions about these fields shows that we have not managed to come to terms with technology intellectually. So we must invest more time in understanding poiesis itself, expose the unused aesthetic spaces and must not confuse market strategies and socially established capitalist mechanisms of technology with its

[33] English translation from: Errico Malatesta, *Scritti scelti*, Neapel: Edizioni RL, 1947, p. 73.

potentials. We must strengthen the fields where technology has really entered into connections with humans, which seem natural and right to us. The success of books such as "Zen and the Art of Motorcycle Maintenance" by Robert Pirsig or "Shop Class as Soulcraft" by Matthew B. Crawford shows that this other perspective of technology is missing. Only the surrender of purpose-driven rationality will result in new scope that allow us to understand technology as culture and as aesthetic process. Technology should be understood as the holistic central faculty of mankind and its potentials should be considered, not in order to become even more economically successful, but rather, in Picht's sense, to grasp the importance of our poietic faculty itself. We have not yet sufficiently understood what we are actually doing when we try to take design control of our future. Secondly is the question of **laws**. With which rules can we avert or at least minimise damage to society and the individual. Here we face the problem that long-term predictions about the effects of technological developments are fundamentally not possible. Laws can also only have a very general character. One does not need to bother with the popular story of the stirrup and its influence on the history of the world in order to grasp that even seemingly small inventions can have wide-reaching consequences. 30 years ago companies like Amazon, Google and Facebook were not yet founded. No one would have been to able predict their current power. All that evidently remains is vigilant and decisive reaction as soon as undesirable developments are recognised. We have to realise that we cannot attain complete control over our future, but only react in the present to the given and prudently design the already visible. But often enough we also just simply accept the consequences. In 2013, 1.25 million people around the world lost their lives in road accidents. How do we create laws that prevent this without putting the whole system in question? And thirdly it is about becoming aware of the often invisible **power** in broad areas of technology and undermining it, in the spirit of anarchy, wherever possible. While for Kant it was still state power that was to secure freedom and laws, we must recognise in the meantime that technologies themselves also implement power. Search engines decide which information we see, automated processes decide whether we get a loan, matching algorithms decide which partner is suitable. We must uncover these technological power structures and win back a bit of freedom. At the same time we must be aware which functions within this entire technological-social system are allocated to us or which we voluntarily accept.

Georg Picht sees one of the most important reasons why European culture has not been able to cope intellectually with technology thus far in the lack of a comprehensive understanding of poiesis. The key for changes, as in all forms of dependency, lies in an awareness of the problem. We must begin with education and replace the old divisions and outdated thought patterns there. The world cannot be comprehended by dividing it into subjects. That technology can be easily separated from culture is now already trained in schools. We should conversely make it clear that all activities of production (whether filmmaking, mathematics or cooking) address a basic human faculty, which is simultaneously our cultural fate. Plurality in ways of thinking, in creative methods and in cultural access to technology and its contemplation is lacking thus far. That different access to technology via experiments, which are simultaneously theoretical, material and aesthetic, is theoretically possible, is shown by individual works in art and design. Their projects try not only to explore the thus far unused potentials of poietic practice beyond purpose-driven rational aims, but also to point out and criticise the current entanglements of the technological with the systems of economy, politics and sciences. For the individual it is about winning back responsibility and agency, dismantling dependencies and impotence in the face of technological mega-systems and instead to test new ways in their own small self-governing initiatives. The threats made by politics and economy that without innovation and growth

the current standard of living will not be tenable, must finally be sidelined by alternatives.[34] This also involves creating an awareness that technological qualities we have already achieved can also be lost again and that forms of quality of life are also always lost in this way. Perhaps in this way the narrowness of our previous poietic practice, restricting it to technological innovation, which is not only absurd but also dangerous, can be repealed and an altered awareness of a core faculty of our existence achieved in the long term.

[34] It is interesting in this context that there is by all means an awareness of the problem of the "good life" in politics too. For example, the German Environmental Agency commissioned a study on this, which can be freely accessed and compares various discourses. It sets out a convincing argument that economic growth and good life are not equivalents. Eugen Pissarskoi et al., *Diskurse zum guten Leben. Analyse ihrer Begriffe, ihrer Akteure und damit verbundener politischer Strategien,* UBA-Texte 17/2018, Dessau-Roßlau: Umweltbundesamt, 2018, Forschungskennzahl 3714 11 100 0, online: https://www.umweltbundesamt.de/publikationen/diskurse-guten-leben-analyse-ihrer-begriffe-ihrer (retrieved 20.11. 2019). However, this issue is completely blocked out in public political debate.