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Self-Writing Machines: Technology and the Question of the Self

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Abstract
In order to show that technology mediates between man and machine, I will discuss in this text a literally *other* or alter-knowledge system that also heavily relied on self-writing machines: spiritualism. Contrary to scientific knowledge systems, in spiritualism the unforeseen, the singular, and the disturbance is what counts as, and produces, significance. That is the reason why alter-concepts such as spiritualism, esotericism, or occultism are not typically recognized as innovative agencies in the history of knowledge. Hence, what is needed to raise the question of a non-hegemonic knowledge production is a symmetrical approach in the history of technology.

Keywords
Heidegger, technology, occult, media, history of science, history of technology, epistemology

"Tool-Being" and Coin Rubbing

It is Monday, 8:15 AM, at the Güntzelstraße underground station. The academic week starts early with an important meeting at nine o'clock. I have to buy a ticket, and because I know I will be in a rush, I have lined up my coins for the automatic ticket dispenser that awaits me on the train platform.

Everything seems to be going fine until one of the coins that I deposited in the machine unceremoniously pops out where I had expected to receive my ticket. It has been rejected. My first instinct is to try the coin once more. Maybe the machine made a mistake. Maybe I didn't throw the coin correctly into the slot. Maybe something else went wrong. So I try again. But now the situation between the machine and me has changed significantly. I am no longer an ordinary user following the path of unstated rules and non-cognitive techniques. Now I am self-consciously *subject* to human-machine calculations and projections, a kind of techno-practical setup whose very noticeability is evidence enough of a system failure. I now realize that I am always already interwoven in a network of "Tool-Being".[1] As I deposit the coin a third and fourth time, each attempt quickly followed by the sound of rattling in the tin tray beneath, I feel myself wavering between the position of a first order subject and a second order observer of this repetitive loop.

Martin Heidegger described a similar scene in a well-known passage on the hammer in the first part and first division of *Being and Time* (1927). Here, everyday Being-in-the-world is interrupted because the tool is no longer ready-to-hand. As long as everything is working well, we don't think about the hammer or the machine. Automatisms, so to speak, govern a network of action among humans, tools, and environments of everyday life. Things in our environment are ready-to-hand in the sense that they just do the job they are supposed or designed to do; we, in turn, perform as an unquestioned and unreflected part of the environment. In this context Martin Heidegger asks what philosophy can learn if something interrupts this flow:

> In our dealings with the world of our concern, the un-ready-to-hand can be encountered not only in the sense of that which is unusable or simply missing, but as something un-ready-to-hand which is *not* missing at all and *not* unusable, but which 'stands in the way' of our concern. […] Anything which is un-ready-to-hand in this way is disturbing to us, and enables us to see the *obstinacy*

1 Cf. Graham Harman, *Tool-Being. Heidegger and the Metaphysics of Objects* (Chicago/La Salle, Illinois: Open Court, 2002).

> of that with which we must concern ourselves in the first instance before we do anything else.[2]

Perhaps we should not turn this passage into the skeleton key to Heidegger's entire philosophy or view it as the secret to all phenomenological reasoning.[3] What is more interesting for the "question of the self" is the structure of transition between these two states of behavior. One might assume that the transition between the positions of *using a tool* and that of *observing the use of a tool* is instantaneous and binary: In the moment the coin falls through the ticket machine for the first time, I am thrown out of the ready-to-hand flow and forced to observe the situation.[4] This observation seems to fit perfectly to the situation I have described in the beginning. The disturbance causes an instant change of the human-machine relation. And this transition also seems to be irreversible in some way: It's impossible to quickly return to readiness-to-hand—the disturbance needs time to disappear. However, in the discussion that follows, I would like to show that automatisms in behavior (as well as their disturbance) pose a deeper and more elusive set of questions that concern not only technology, but also what's commonly termed "the occult." Moreover, this problem troubles the very distinction often assumed between supposedly rational technology and supposedly irrational occultism. In this way, the issue of tool use and automatisms also calls into question the general framework of rationality presumed to govern over modern technology (and perhaps calls into question of modern rationality insofar as it is determined in our era by technology).

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2 Martin Heidegger, *Being and Time,* transl. John Macquarrie and Edward Robinson (Oxford UK/Cambridge USA: Blackwell, 2001), 103.

3 Cf. Harman, *Tool-Being. Heidegger and the Metaphysics of Objects*, 4.

4 Cf. Jonathan Hale, "Harman on Heidegger: 'Buildings as Tool-Beings'," in: *bodyoftheory* (2013), accessed March 3, 2015, http://bodyoftheory.com/2013/05/29/harman-on-heidegger-buildings-as-tool-beings/, in reference to Graham Harman, "Objets et Architecture. Objects and Architecture," in: *Naturaliser l'Architecture. Naturalizing Architecture*, ed. Marie-Ange Brayer and Frédéric Migayro (Orléans: Editions HYX, 2013), 234–243.

Figure 1—Rubbing traces on a pay phone.

Hence let's have a look what happens next at the Güntzelstraße underground station. The more often I insert a coin into the ticket dispenser, the more disturbed the script of this human-machine interaction appears—and the more I become a kind of displaced, outside observer (who, to boot, still needs a ticket). After a handful of attempts the situation is more or less clear: The machine has classified my coin as illegitimate. The problem, however, is that I know the coin is authentic—and that, on contrary, it is the machine which is flawed. Whither the technical setup now? All routes have been tried, trial-and-error has failed, the human, machine, and the numismatic pieces at play reveal no compatible alignment. A radical move at last presents itself: I take one of the coins and rub its flat side along the surface of the machine. Why? I don't know. This is not experimental, per se, nor it is premeditated. It's done by myself and innumerable other automat users (in Germany at least) everyday. If you take a closer look on machine's surfaces you will find many scratching marks around the coin slots. I do it because they do it. They do it because I do it. Nobody taught me to behave like this and there is no book or scientific study that evaluates the pros and cons of rubbing rejected coins on a machine's surface. This is common everyday cultural practice.

Now, what is the guiding problem behind the situation I've described?

Firstly, it doesn't make sense to describe this situation in terms of functioning tool versus broken tool. The ticket vending machine functions throughout but in an ambiguous, unexpected, and unpredictable manner. In this essentially complex situation my *own* actions can't be separated from the network and cannot be described as either rational or irrational.[5] Secondly it would be misleading to define a point of rupture when a non-rational practice like coin rubbing or kicking a machine transforms the (broken) unreadiness-to-hand into a (working) readiness-to-hand. Nor does it make sense to emphasize a rational or scientific mode of observing present-at-hand that would find and isolate the moment of disturbance in order to repair the broken tool. Hence, the essence of the situation cannot be understood as a transition between two states. Rather, they are modes coexistence or complementarity.

This leads me, thirdly, to the assertion that the story of the rubbing traces is no single incident but some sort of primal scene of technology: My argument is that we can explain (using a term of Gilbert Simondon) the "Essence of Technicity" of tools as residing in the border area between ready-at-hand and present-at-hand. If, however, this is the case, than the disturbance must be regarded not as an exception, but rather as the normal condition of technology. As Gilbert Simondon puts it, automatism is not necessarily the higher form of technology.[6] In other words, the key element to understand our relation with technology, things, and tools (or, in Bruno Latour's terminology, the network of human and nonhuman agency), is not the function but rather the dysfunction that is essential. This brings me now and perhaps a bit surprisingly to the so-called "self-recording [*selbstschreibende*] machines" because in the course of the nineteenth-century this variety of apparatus genre was developed to solve these kinds of disturbances by separating the reliable measuring machine from the unreliable human operator. What happened to me at the Güntzelstraße should (or could) have been prevented by self-writing machines.

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5 John Tresch identifies this irrational dimension of technology with a whole new set of machines, the "romantic machines", which came up in the 1820s. See John Tresch, *The Romantic Machine. Utopian Science and Technology after Napoleon* (Chicago, London: The University of Chicago Press, 2012), 12. An analogue argumentation can be found in Henning Schmidgen's reconstruction of the "Donders Machine", see Henning Schmidgen, "Die Donders-Maschine. Ein Kapitel Physiologiegeschichte mit Deleuze und Guattari" in: *Lebendige Zeit: Wissenskulturen im Werden,* ed. Henning Schmidgen (Berlin: Kulturverlag Kadmos, 2005).

6 Cf. Gilbert Simondon, *Die Existenzweise technischer Objekte* (Zürich: Diaphanes Verlag, 2012), 11.

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Self-Writing Machines

To repeat my central question once more: Is the disturbance an essential or is it an accidental aspect of the "essence of technicity"? According to Heidegger, "that" something is being made or simply "that something is" disappears in its usefulness.[7] This would mean either that we have to combine Heidegger's philosophy with a broader concept of disturbance—leading perhaps to Graham Harman's reading of Heidegger—or that we have to take into account the difference between a relative simple tool like a hammer and a more complex apparatus like an ticket dispenser or a self-writing machine.[8] I will come back to this point at the end of this paper. Right now I will start with the assumption that we can reconstruct the epistemic dimension of disturbance particularly well through the historic example of self-writing machines. In German, a self-recording device is termed a *Selbstschreiber*—literally a "self-writer." This begs the question *what is the self that observes, records and writes in self-writing apparatuses?* If the self totally disappears in the apparatus, can there be any disturbance?

Following the argument of historians of science from Hebbel Hoff and Leslie Geddes up to Lorraine Daston and Peter Galision, this *Selbst* is a metaphor for the fiction of objectivity.[9] It is mainly the experimentator and his uncertain relation to the laboratory that contaminates the observation, the measuring process, and thus the production of knowledge. Hence the fiction of self-recording instruments is to extract the human body from the laboratory and to design apparatuses in which the nature transforms itself into legible traces. The self of the human experimenter is replaced by a technical object (or technical self) that is in itself part of the nature it (the machine) observes. Technology can observe nature innocently while the human body becomes increasingly uncontrollable or

7 Cf. Martin Heidegger, *Basic Writings,* ed. David Farrell Krell (San Francisco: Harper, 1993), 190.

8 In this paper, apparatus should be defined as the way in which the parts of a technical object are arranged. That means firstly that every apparatus is made up of parts having their own history and agency. An apparatus is a network of things. Secondly an apparatus genre is a stable set of (mostly institutionalized) practices to compound technical things for more or less concrete and urgent need. See: Giorgio Agamben, *What is an Apparatus? And Other Essays,* transl. David Kishik and Stefan Pedatella (Stanford, California: Standford University Press, 2006), 8, in reference to Foucault.

9 Cf. Hebbel E. Hoff and Leslie A. Geddes, "The Beginning of Graphic Recording," in: *ISIS* 53.2, no. 172 (1962), and Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007).

unreliable in the course of the nineteenth-century.[10]

The area of reality that self-writing machines are supposed to explore and measure is the human body itself. Automatic recording devices are foremost psycho-physical instruments, meaning that they apply the precise measurement of the physical world (back) onto the measuring subject. This operation can only succeed when the human self disappears i. e. when it is displaced from human to machine. Hence psychoanalysis, evolution theory, and physiology on the one side, and physics, engineering, and measuring technology on the other side, each stabilizing one another: The more we know about embodied human being, the more it is taken out of knowledge production. It is technology that mediates between man and machine. Or, to put it the other way around: We can define technology as the apparatus that mediates between man and machine.[11] This central epistemic strategy drives the rise of the natural sciences in the course of the long nineteenth-century. At the same time this strategy of delegating parts of the knowledge production to machines restabilizes human subjectivity: Technology replaces world and at the same time constitutes world.[12]

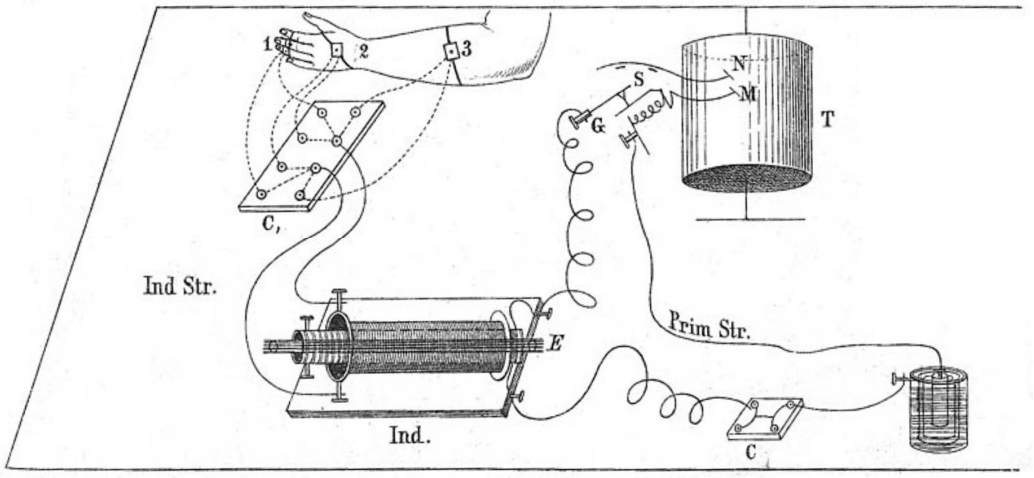

Figure 2—Measuring the duration of simply psychic processes.

To start with a well-known example: The kymograph was designed to

10 In this context, it should be noted that the likes of William James and Gertrude Stein studied "automatic writing" in the context of their psychic research.

11 Cf. this remarkably modern concept of Pierre Bertaux, "Maschine – Denkmaschine – Staatsmaschine. Entwicklungstendenzen der modernen Industriegesellschaft," in: *Protokoll 9. Bergedorfer Gesprächskreis,* (1963), 4, accessed August 18, 2014, http://www.koerber-stiftung.de/internationale-politik/bergedorfer-gespraechskreis/protokolle/protokoll-detail/BG/maschine-denkmaschine-staatsmaschine.

12 Cf. Agamben, *What is an Apparatus? And Other Essays*, 15–17.

measure the speed of mental processes. Broad interest developed in this field after Hermann von Helmholtz around 1850 demonstrated experimentally that a brainwave has nothing in common with a sudden flash but is a slow or at least unhurried propagation mechanism. This is the instrumental context in which Johannes von Kries and Felix Auerbach 1877 raised the question of the duration of simple mental processes. The epistemic background was a semiotic conception of mental communication.[13] Now the key proposition in Kries's and Auerbach's measuring setup is that one can identify the most basic sign and the shortest signal. In order to measure and to define this shortest signal, the experimenters relied on the technology of a self-writing apparatus: The amplitude of the signal was written by the machine on a rotating drum. This magnification of the signal's time-base produced a legible curve. What the experimenter could thereby ideally observe was the mental process itself, because no human interaction had disturbed the signal. Or, as Kries and Auerbach put it in their paper:

> Unser Bewusstsein aber findet, wenn es sich selbst beobachtet, dieses Material niemals im rohen Zustand, sondern in fertiger Bearbeitung vor.[14]
>
> [Our consciousness, however, when it observes itself, won't find this material in a raw state but rather in a pre-processed condition.]

This raw state could only be explored by the apparatus itself, and this technology was stable, reliable, and generally usable:

> Wiewohl wir die Versuche auf den Tast-, Gehörs- und Gesichtssinn erstreckt haben, ist doch der wesentlichste Theil des zur Anwendung kommenden Apparates allen diesen Versuchen gemeinsam […] Als zeitmessende Vorrichtung diente uns stets die rotirende Trommel des Kymographion.[15]
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> [Despite having extended the experiments to the faculties of touch, hearing, and vision, the essential aspect of the apparatus used here is identical for all these experiments. The rotating cylinder of the Kymograph served to measure the passage of time.]

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13 Cf. Johannes Kries and Felix Auerbach, "Die Zeitdauer einfachster psychischer Vorgänge," in: *Archiv für Physiologie* (1877), 297–378 (quote: 300). The analogy between the telegraphic and the nervous system has been widely discussed, see: Laura Otis, "Das Spinnennetz. Körperliche und technische Kommunikationssysteme des 19. Jahrhunderts," in: "*fülle der combination*". *Literaturforschung und Wissenschaftsgeschichte*, ed. Bernhard Dotzler and Sigrid Weigel (München: Wilhelm Fink Verlag, 2005), 35–49.

14 Kries and Auerbach, „Die Zeitdauer einfachster psychischer Vorgänge," 298.

15 Ibid., 302.

To briefly sum up: Starting around 1850 self-writing apparatuses or self-recording instruments promised an escape from an uncanny human-world relation and a release into the freedoms of scientific objectivity by automatically translating a natural phenomenon into a mathematical curve.[16] The diagramming of nature without human interference, developing traces of ever finer and more precise character, accelerating technological progress, and an increasing knowledge production, evolve simultaneously. The story of my paper hitherto seems to be one of a technological arrow of time defined by successive marginalization of the uncanny, the irrational, and disturbance. Hence, when there is an unsettling impact of technology it would (seem to) come from outside, as a social, individual, or emotional surplus that had nothing to do with the history of the machines, the devices, and the techniques in themselves. I will now try to demonstrate that such an account does not adequately grasp to the cultural dynamics of technology.

In order to show that technology mediates between human and machine in the unstable border area between readiness-to-hand and presence-at-hand, I will discuss in the following a literally *other* or alter-knowledge system that also heavily relied on self-writing machines. I am talking about spiritualism. Contrary to scientific knowledge systems, in spiritualism the unforeseen, the singular, and the disturbance is what counts as, and produces, significance. That is the reason why alter-concepts such as spiritualism, esotericism, or occultism are not typically recognized as innovative agencies in the history of knowledge. Hence, what is needed to raise the question of a non-hegemonic knowledge production is a symmetrical approach to the history of technology.

Thus what does symmetry between technical and occult apparatuses mean? Following Bruno Latour there is a first symmetry principle that permits us to legitimize truth or non-truth by reference to nature.[17] What is truth and non-truth are both defined by society—hence historically and culturally variable. If we assume for the nineteenth-century industrial societies that the natural sciences were a model for reason and truth, it becomes clear that spiritualist experiments

16 Cf. hereto in detail: Stefan Rieger, *Schall und Rauch. Eine Mediengeschichte der Kurve* (Frankfurt am Main: Suhrkamp Verlag, 2009).

17 Cf. Richard Noakes, "The Historiography of Psychical Research: Lessons from Histories of the Science," in: *Journal of the Society of Psychical Research* 72.2, no. 891 (2008), 65–85. Michel Callon, "Einige Elemente einer Soziologie der Übersetzung: Die Domestikation der Kammuscheln und der Fischer der St. Brieuc-Bucht," in: *ANThology. Ein einführendes Handbuch zur Akteur-Netzwerk-Theorie,* ed. Andréa Belliger and David J. Krieger (Bielefeld: transcript, 1986). Bruno Latour, *Wir sind nie modern gewesen. Versuch einer symmetrischen Anthropologie* (Frankfurt am Main: Fischer Taschenbuch Verlag, 1991).

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followed the rules of science in order to at least gain attention.[18] This approach produces symmetry between truth and non-truth but not between society and nature nor between different knowledge cultures. It therefore fails to describe the (scientific or occult) apparatus as human-machine relation. The scientific knowledge serves as a hegemonic discourse, stabilized by asymmetric structures and allowing the occult practices only to fail. Thus, to get a fully symmetrical perspective, one has to go a step further and assume that society and nature, or, in our case, man and machine, require the same level of explanation. Following the second symmetry principle means that machines and their concrete materiality must be given the same analytical attention and accuracy as the social. Against this methodological background, I will now discuss a spiritualistic apparatus genre in order to illustrate this "open plurality of techniques" and to get back the role of disturbance in the interrelation between readiness-to-hand and presence-at-hand.[19]

Occultism and Rational Justification

Current research suggests that the first spiritualist self-recording apparatus was filed for a patent in 1854. The German musician and inventor Adolphus Theodore Wagner filed an application for an "Apparatus for Indicating a Person's Thoughts by the Agency of Nervous Electricity," a.k.a. a *psychograph*, on January 23th, 1854, in London. In the provisional specification, Wagner writes:

> The apparatus consists of a combination of rods or pieces of wood joined so as to permit of free action in all the parts. From one of the legs of the instrument hangs a tracer; on one or more of the other extremities is fixed a disc, upon which the operator is to place his hand, and from this extremity or these extremities depends another tracer. The other parts of the apparatus consist of a glass slab or other non-conductor, and of an alphabet and set of figures or numerals. Upon a person possessing nervous electricity placing his hand upon one of the discs the instrument will immediately work, and the tracer will spell upon the alphabet what is passing in the operator's mind.[20]

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18 Cf. Johanna Bohley, "Klopfzeichen, Experiment, Apparat. Geisterbefragungen im deutschenSpiritismus der 1850er Jahre," in: *Pseudowissenschaft. Konzeptionen von Nichtwissenschaftlichkeit in der Wissenschaftsgeschichte,* ed. Dirk Rupnow et al. (Frankfurt am Main: Suhrkamp, 2008), 100–126 (quote: 101). This paper shows also the shortcomings of the first symmetry principle.

19 Simondon, *Die Existenzweise technischer Objekte*, 12.

20 Adolphus Theodore Wagner, "Apparatus for Indicating a Person's Thoughts by the Agency of Nervous Electricity," in: *Provisional Specification, Office of the*

The structural similarity with the measurements of the device of Kries and Auerbach is astonishing: Supposing that the nervous communication mechanism is sign-based, the characters can easily be detected by increasing the sensitivity of the instrument and by translating the output into a human legible form. Wagner didn't use a cylinder-based translation of the signals but (as we know from the report of Freiherr von Forstner) a cranesbill or pantograph.[21] His psychograph directly recorded the movements of the sitter's hand as they moved without the sitter's volition. In this respect Wagner's invention can be regarded as the first patented spiritualist self-recording device and, as such, the first precursor of the well-known *planchette* or ouija board.

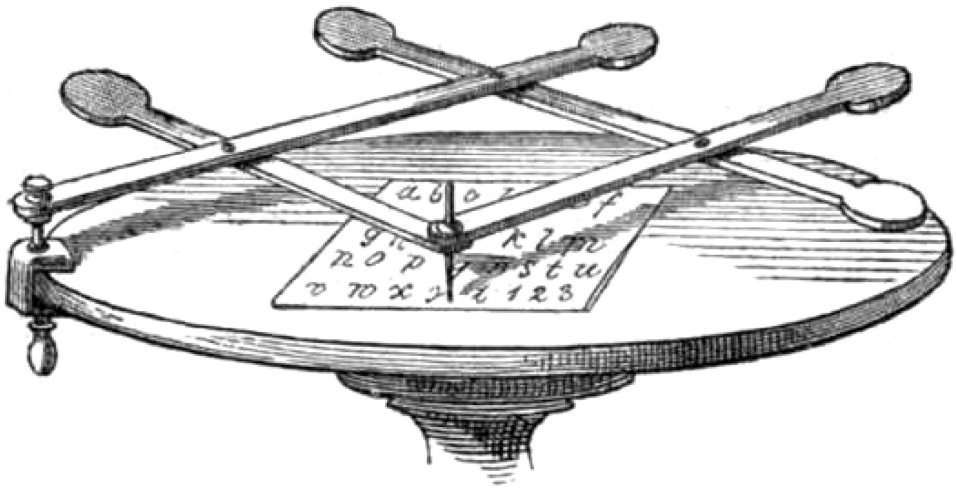

Figure 3—Wagner's cranesbill-like psychograph.

Now, what does it mean that Wagner's psychograph was officially recognized as a patented invention? First of all it should be noted that we go astray when we assume a gap between rational purpose and irrational over-determination of technology. It is by no means contradictory to gain a technical patent for a spiritualist apparatus. This apparatus *is*, in fact, technology. The dichotomy established after the fact between occult and scientific knowledge

Commissioners of Patents, no. 173 (London: Eyre and Spottiswood, January 23, 1854). It should be noted that Wagner's London patent was merely an application that he filed, and while he received provisional protection on the design, the patent was actually abandoned when he failed to proceed with the next part of the in fact very complex process.

21 Cf. Alexander Freiherr von Forstner, *Der Psychograph oder Seelenschreiber des Herrn Musikdirektors A. Wagner in Berlin. Oder: Beschreibung eines Instrumentes, welches die Erscheinungen des Tischklopfens auf eine neue, sehr vereinfachte Weise darstellt* (Berlin: A. Wagner, 1853), 5.

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(which at least is a hegemonic one and therefore requires institutionalization) does not have necessary relevance for emerging technologies. Or, to put it the other way around: Emerging technology can be described in essence by its retrospective over-determination with attributes or functions that seem to be contradictory.

This last argument has serious consequences for Heidegger's tool-analysis and for the relation between tools in action and tools in disrepair. Technology always points to an open future, to not yet stable practices, and to new forms of usage. In the realm of spiritualist apparatuses such as Wagner's psychograph this essential intersection of readiness-to-hand and unreadiness-to-hand comes into focus and marks a relevant distinction between technology and tool: Technology is always ready-to-hand *and* unready-to-hand. It oscillates between the pure, reliable but cold presence of equipmentality and the open, unstable but hot future of technology.[22] This fact has significant consequences for the question of the self, as will be discussed below.

The principal over-determination of technology becomes fully clear when we compare Wagner's psychograph with the *same* apparatus of the German psychiatrist Karl Robert Sommer. This device is just one example of the 150 apparatuses for studying the sensations and the higher psychical processes reported in Arthur MacDonald's 1898 comprehensive review of state-of-the-art technologies in the experimental study of children. Sommer's aim is to find measuring methods for previously unknown or at least unobservable psychic phenomena.[23] The psychograph in particular had been developed to investigate the "unconscious movements of the hand."[24] Certainly it is not the movement of a hand rubbing a coin over the surface of a ticket machine, what is meant by this—though coin rubbing shurely can be described as an unconscious action. Sommer's main concern is to "lessen friction as much as possible, for recording the slightest movement of the hand. This […] difficulty is overcome by employing systems of levers, reducing the friction to a minimum."[25]

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22 Cf. Heidegger, *Basic Writings*, 160–161.

23 Cf. Karl Robert Sommer, *Lehrbuch der psychopathologischen Untersuchungs-Methoden* (Berlin, Wien: Urban & Schwarzenberg, 1899), 3.

24 Arthur Macdonald, *Experimental Study of Children, Including Anthropometrical and Psycho-physical Measurements of Washington School Children* (Washington, D. C.: U. S. Government Printing Office, 1899), 1164.

25 Ibid., 1165.

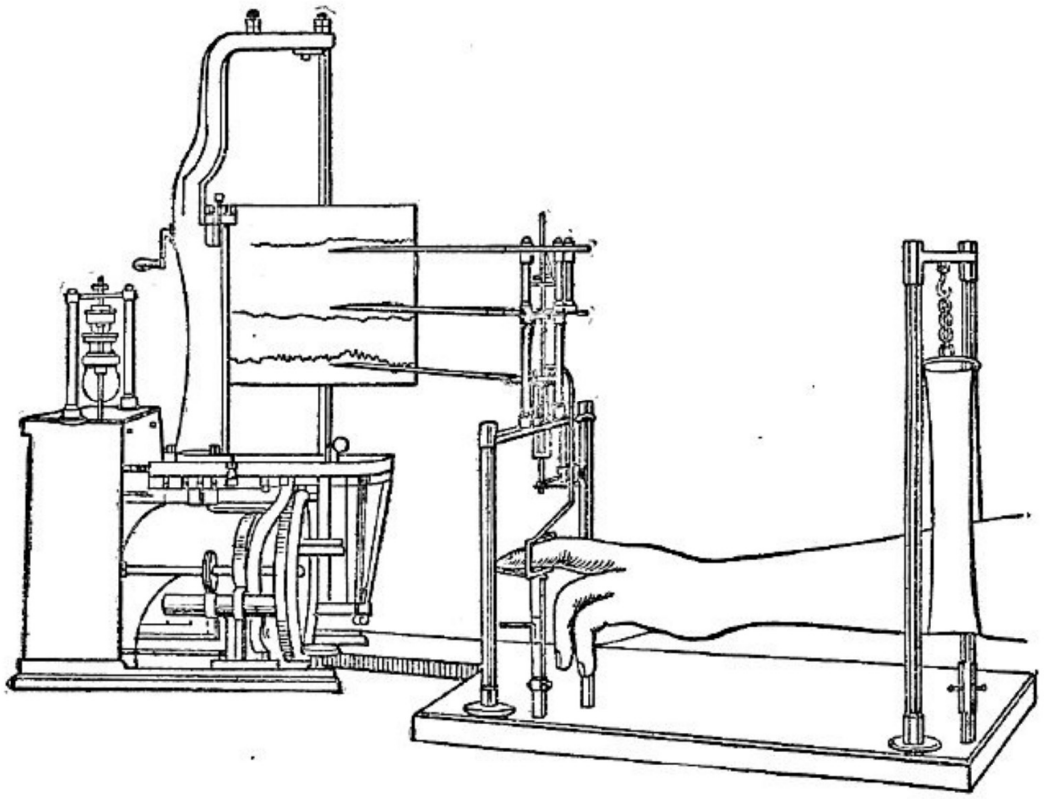

Figure 4—Sommer's psychograph.

Wagner's and Sommer's apparatuses inspired countless successors and imitators.[26] These later devices variously lessened the friction, observed more subtle signals, sought to enlarge the sphere of objectivity, and so on. Though historians in the recent decades have replaced the concept of discernible *ruptures* (often bound to outstanding persons) by models of transformation, networks, and complexity, there is general agreement that technology produces differences that distinguish older from newer things.[27] The technological object is a material distinction which creates a temporal difference, and thereby, meaning. And inevitably every technological object anticipates successors that would be even more reliable. A technological object shifts from the future to its own past at the very moment when it is used for the first time. And at the same moment it generates a new future in form of a promise for a better usability. It works *and* it will work better. It is this technological object *and* the succeeding one. It

26 The most recent patent for a psychograph is from 1983, cf. United States Patent and Trademark Office 4,371,167.

27 In recent discussions following Gilbert Simondon's approach, the concept of *ruptures* is gaining new attention. Cf. Simondon, *Die Existenzweise technischer Objekte*, 26.

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functions *and* it fails. Because we use a technological object we rely on the following, and the following, and the following technical object. Technology is a chain of objects, and we anticipate this chain with every single object we use. Although humans create these chains of technological objects they are heavily intertwined with them.

The situation of the apparatus is, in other words, essentially complex. On the one hand a great number of machines were developed and manufactured with the aim of exploring the unconscious by turning the measuring object into an experimenting subject, into a *Selbstschreiber*. On the other hand all these machines, from Heidegger's hammer up to the modern ticket vending machine, only function through the interaction with a human experimenter, user, or consumer. Machines tend to become more and more auto-matic, but at the same time they create an increasingly inextricable enmeshing of man and machine: The status of the self is always fragile. What John Tresch writes for the romantic machine, that "it involved the active participation of the observer and [that it] articulated a spontaneous, living, and constantly developing nature" counts for all technical objects, be they scientific or spiritualistic.[28] Thus disturbance is always part of technology while its social use is at the same time a promise for stability, comprehensibility, and predictability.

The Magical Dimension of Technology

Now what remains is the still uncanny practice of rubbing a coin over the surface of a ticket machine. When the ticket machine malfunctions and thus brings itself to attention, myself or any other user is trying to re-establish a state of usefulness. Or, as Heidegger puts it, "The usefulness of equipment is nevertheless only the essential consequence of reliability."[29] In this situation of lost usefulness and reliability the person performs an action that seems to have nothing to do with the preprogrammed human-machine environment. We learned from the symmetric approach to technology that we go astray if we describe this action as an irrational, occult, or premodern form of communication. So, what are the deeper epistemic roots of this action?

In order to answer this question it is worth remembering that in the course of the nineteenth-century technology became interconnected with something radically new: the enclosure (or "chassis"). As the machine became more and more complex and hazardous, engineers developed an enclosing skin to protect man and machine from one other. New, sometimes even invisible energy forms such as electricity had to be shielded from users. The complexity of the functions

28 Tresch, *The Romantic Machine*, 12.
29 Heidegger, *Basic Writings*, 160.

had to be reduced to clear and distinct ends. The widespread and even daily use of technology required both a *shielding from dangers* and *simplification in purposes*. This leads to a great paradigm shift in the "Essence of Technicity": All communication between human and machine became interface based. The interface became the enclosure, providing design, protection, and usability all at once. Enclosures rendered machines simple.[30]

What does this symbiosis mean for the foregoing discussions? Is the enclosure the area at which the intersection of the tool in action and the tool in disrepair culminates? If, however, the skin or enclosure is the main and only way to communicate with the machine, than what happens in case of malfunction? An apparatus refusing to work evokes strategies of communication beyond the interface, directly through the enclosure, disregarding all common channels and modes of the human-machine relation, such as rubbing a coin over the machine's surface. Seen in this light coin rubbing is no occult, irrational, or in other ways uncanny condition of the "Tool-Being." On the contrary this praxis is based directly on the history of technology and shows that (unlike Heidegger's hammer) technology can never fully recede from consciousness.

> There is thus a double life of equipment—tool in action, tool in disrepair. These two planes would seem never to intersect, since the visibility of the tool immediately marks its cessation as equipment. But in fact, their point of intersection provides what amounts to the central theme for Heidegger's philosophy, namely, the as-structure. Through the "as," the two worlds actually turn out to exist *only* in communion, in constant intersection with one another.[31]

Existing in communion means that there will always be a successor apparatus, because technology mediates between human and machine in the intersection of the working tool and broken tool. Technology can never be a simple tool like a hammer—it's always a promise for the future. We cannot reduce technology to its purpose and usability because technology always implies a promise, namely that of a better controllability of the future. This promise doesn't originate in real technological progress but in the firm belief that there will be an ever better human-machine relation, in any sense of the word better. Hence Being-in-the-world always means Being-in-disturbance.

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30 Cf. Latour's concept of black-boxing, in: Christian Kassung and Albert Kümmel-Schnur, "Wissensgeschichte als Malerarbeit? Ein Trialog über das Weißeln schwarzer Kisten," in: *Bruno Latours Kollektive,* ed. Georg Kneer, Markus Schroer and Erhard Schüttpelz (Frankfurt am Main: Suhrkamp Verlag, 2008), 155–179.

31 Harman, *Tool Being. Heidegger and the Metaphysics of Objects*, 45.

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Image Sources

Figure 1: Photo by author.

Figure 2: Kries, Johannes and Auerbach, Felix. “Die Zeitdauer einfachster psychischer Vorgänge.” In *Archiv für Physiologie* (1877): 297–378, plate viii, fig. 4.

Figure 3: Morgenblatt für gebildete Leser, 48 no. 6 (February 5, 1854): 125.

Figure 4: Macdonald, Arthur. *Experimental Study of Children, Including Anthropometrical and Psycho-physical Measurements of Washington School Children*. Washington, D. C.: U. S. Government Printing Office, 1899: 1165, fig. 36.