THE TECHNOLOGICAL CONDITION
Erich Hörl, translatd by Anthony Enns[1]

> "It is possible to imagine a world that in a gradual yet also sudden way is moving away from all of its acquired conditions of truth, sense, and value."
> Jean-Luc Nancy

THE TECHNOLOGICAL DISPLACEMENT OF SENSE

"The meaning [*Sinn*] pervading technology [*der technischen Welt*] hides itself."[2] This is how Martin Heidegger characterized the situation in 1959, twenty years after he unambiguously spoke of the "age of consummate meaninglessness" that pervades the "essence of modernity" and described "meaninglessness" as the unconditional "horizon of modernity."[3] Yet in the face of the irretrievable loss of the "old rootedness," which could no longer be maintained after industrialization, two high-tech world wars, and the beginning of the cybernetic transformation of human reality, Heidegger in the end did not mourn the passing of the old sense but rather focused on the rise of a "new autochthony"[4] and the coming of a new sense under technological conditions. With an exceptional philosophical intuition for a transformation that was to a large extent still imminent, Heidegger sought to identify "a new ground and foundation" that will "be granted again to man" so he "can flourish in a new way."[5] Heidegger was thus far from opposing technology and sense and thereby understanding sense as a fundamentally pre-, counter-, or non-technical entity derived from a pure transcendental subjectivity and interiority that was threatened by the mass production of technical objects, from the technical apparatuses and automata that permeate all areas of existence, in short from the domination of instrumental reason—namely, the dogmatic philosophical attitude that extended from Husserl to the Frankfurt School. Instead, he postulated that a "*hidden meaning* touches us everywhere in the world of technology" and therefore the point is "to remain open to the meaning hidden in technology."[6] Despite his sympathy for the sense culture of the declining world of crafts, this was Heidegger's surprisingly open-minded position in the face of the newly emerging context of technical objects.

If Heidegger's early instrument-oriented hermeneutic of Dasein first raised the question of the sense of being by placing the subject in the world of objects and explaining all sense as fundamentally a matter of artifactual referential context, then he already recognized the unavoidable historicity and dynamism of object positions, which in the end were supposed to till the field of the hermeneutic of Dasein that he himself had cultivated. His powerful reformulation of meaning and his redefinition of the sense and scope of hermeneutics in general eventually appeared, in turn, to be permeated by a specific object-historical disposition that was understood to be in decline. As early as the mid-1930s, however, Heidegger justified his suspicion regarding the traditional interpretation of the thing-question with an argument inspired by the direct observation of younger scientific-technical object cultures: "So it could be that in our natural world-view we have been dominated by a centuries-old interpretation of the thingness of the thing, while things actually encounter us quite differently."[7] When considering quantum physics and technology, it eventually becomes apparent to him that "in fact, an original reference to things is missing."[8] From today's media- and technical-philosophical perspective this statement is epoch-making and can be taken quite literally as the basic principle of a new and increasingly popular object- or thing-oriented onto-technology of genuine indeterminacy, original lack, constitutive need, unavoidable insufficiency, and fundamental fault that affects all forms of referentiality and relationality.

Although Heidegger ultimately did not have the conceptual tools necessary to develop a new and fundamentally philosophical redescription of the technical world, it is apparent today that his plea for openness with respect to the sense of the technical world, which remained hidden at the time, was extremely prescient. Although general cyberneticization has revolutionized our relations to things, to living entities, to non-human entities in general, to the earth, and lastly also to ourselves and others, in short: although the development of new information and communication technologies from the second world war until today has revolutionized the relations of subjectivity to its outside and supported concepts like "control" and "surveillance," "emergence" and "autopoiesis," "network" and "management," it nevertheless signifies neither the final expulsion nor the technical end of sense in general, much less the technical end of all subjectivity as such. However, it is the end of a prominent, persistent, dogmatic, and conventional sense of sense—namely, the representative sense of sense in terms of significance.[9]

Early on and without realizing it, Claude E. Shannon formulated the slogan for this upcoming development in the history of sense with his famous turn towards the irrelevance of semantics, and thus signification, for the engineering problem of information and communication, out of which the new "general theory" of the communication age emerged,[10] even though it was supposedly misunderstood for a long time as the manifestation of a crossing over into the non-hermeneutic realm *beyond* all sense. Under the epochal title of cybernetics, which refers not merely to a historical meta-discipline but rather to an ontological and epistemological formation in the history of power and subjectivity,[11] we are subject to a fundamental transformation in the history of sense that produces and establishes a new post-significative order of sense.[12] Ever since the arrival of cybernetics we have entered into the new territory of the technological condition, which is where the process of experiencing the world and constructing sense now takes place. The nature of this new territory gradually becomes clearer precisely through its groundlessness: as a regime of sense that exposes the originary technicity of sense, that constantly merges human and non-human actors, that operates before the difference between subject and object, that is endlessly prosthetic and supplementary, that is immanent rather than transcendental, and that is to an unheard-of degree distributed and indeed ecotechnological. This regime of sense requires a radically new description of its characteristic formative processes, which has yet to be performed.[13]

In recent years there has been no lack of skepticism concerning hermeneutics and interpretation, which already represents a reaction to this fundamental shift in the history of sense, even though these skeptics are mostly groping in the dark with regard to their own motives and backgrounds—that is to say, the epochal imperative that also applies to them. However, it seems to me that what is truly essential for a description of our current situation with regard to the history of meaning is not the constellation of "presence cultures" and "meaning cultures" or the return of an "intense desire for presence" and "presence effects,"[14] which was displaced by the long-lasting "central position in the humanities of interpretation"[15] and the dominance of sense cultures; in other

words: not a fascination with presence, which despite or perhaps because of the development of new media technologies always also involved a certain pre-technical and pre-medial demand for immediacy. What is more central for the determination of our current situation seems to be what I call (modifying Husserl's wording) the *technological displacement of sense* (*Sinnverschiebung*), which refers to the destruction and displacement of the traditional significative and hermeneutic sense culture through technology, which fundamentally changes the concept of sense and thus reorients the entire sense culture.[16] Under the technological condition, sense becomes a dimension of assemblages of coexistence that cuts through established ontological hierarchies. Under the sign of these assemblages of coexistence a fundamental "rediscovery of human reality" could take place (to use Gilbert Simondon's words). It is even possible that a new post-human humanism of the technological age is imminent, assuming that "every age creates a new humanism that corresponds in a certain way to its circumstances."[17]

The current shift in the history of sense is particularly informed by the rise of new object cultures that are more active and automatic, not to mention "smarter," more and more immersed in our environments, informing our infrastructures, processing our experiences and backgrounds, and operating in new micro-temporal regions, which are all characteristics of the face and logic of cyberneticization. These object cultures, with which we are intimately coupled, are truly techno-logical, in an eminent sense of the term, and they ultimately unhinge the sovereignty and authority of the transcendental subject. The latter was a writing and reading, an alphabetized, a grammatized subject in the strictest sense, and later a cinematographic subject, but in each case it was a subject that integrated and embodied the media-technological conditions underlying its production of experience and meaning: thus it directly adopted its basal media-technological couplings in its schematics, and this is precisely how it incorporated its media-technological conditions directly in a subjective synthesis. For reading and projecting (i.e. alphabetic and cinematographic) subjects, however, the operations of new technological object cultures have for a long time been unreadable, imperceptible, and illegible; indeed, they increasingly disappear entirely.[18] This not only reverses the transcendental operating system that is specifically shaped by each media technology and points to a new and now unavoidable "transcendental technicity"[19] that underlies all experience in today's technical world, which is based on computational networks; rather, it ultimately shatters the entire significative sense culture that is centered in the hermeneutic type of subjectivity,[20] as this type of subjectivity regarded aesthetic objects as carriers of meaning and banished, ostracized, negated, and displaced technical objects from the realm of meaning until well into the twentieth century.

In 1958—at the same time as Heidegger, but more fundamentally concerned with the evolution of technical objects and the development of cybernetics—French philosopher and mechanologist Gilbert Simondon characterized the traditional sense culture of meaning precisely according to its ancient object politics. In the introduction to his foundational work *Du mode d'existence des objets techniques* (*On the Mode of Existence of Technical Objects*), Simondon argues that the present culture, which is increasingly contrasted with a culture based on control and regulation, is "unbalanced because, while it grants recognition to certain objects, for example to things aesthetic, and gives them their due place [*droit de cité*] in the world of meanings [*monde des significations*], it banishes other objects, particularly things technical, into the unstructured world of things that have no meaning but do have a use, a utilitarian function."[21] For precisely this reason it still turns out to be "ancient culture incorporating as dynamic systems artisanal and agricultural techniques of earlier centuries," whose code "is based on the experience of man working with tools."[22]

Following Simondon, the "hermeneutic field"[23] of the modern interpretation of the world can be characterized first and foremost through the forgetting or constitutive exclusion of technical objects, which are *minorized* to instrumental and utilitarian functions that correspond to the artisanal and agricultural world of the working man rather than the already extremely mediatized, industrial, technological world, and as a result this modern hermeneutic field must be undermined precisely through the evolution and proliferation of technical objects. Simondon refers to the emergence of "technical ensembles" or machine networks as "open machines," which, unlike closed machines, constitute an entire "society of technical objects"[24] that also includes humans as interpreters. The gradual transition from "closed object" to "open object,"[25] and thus the advent of a networked

structure, involves the embedding of these actors in the digital, information- and CPU-intensive environment of new media and in automatic environmental technologies, which collectively represent the new dispositif of transformatory technologies. This ultimately transgresses the basic categorial dispositions and forms of intuition that have been controlled by the meaning-giving and meaning-carrying intentional subject, which was formerly the central actor and key protagonist of the sense culture, and it replaces this subject with a new non-intentional, distributed, technological subjectivity that is informed by machinic processes and speeds. Under the technological condition, the traditional categories of the meaning culture and its associated conceptual and intuitive regime—in other words, the pre-technological temporal and spatial relations of conscious subjects—simply forfeited their power to describe and provide evidence. It is increasingly apparent that the transcendentality expressed in these categories is limited, as it neglects all of the technology-saturated modes of production and operation of contemporary subjectivity. While Simondon still hoped to incorporate technical objects into the traditional world of meaning through his program of cultural reform, the evolution of technical objects had long since fundamentally transformed the sense culture itself and even the sense of sense. If the inferiorized and minorized technical object–which was once the degree zero of the sense culture, or let's say its infamy–now appears in the technological age to be one of the main actors at the heart of the sense culture, then this fact represents an extremely far-reaching shift in the history of the subject and the object. It is a comprehensive treatment of this shift that has to be undertaken under the title *the technological condition*.

In almost all of the diagnoses of the present, this profound transformation in the history of sense through technology is grasped, sometimes even contrary to their own intention. This occurs in a very significant way in the case of the so-called "post-hermeneutic,"[26] which Dieter Mersch plausibly described as the philosophical underground of the twentieth century and the philosophical-political order of the day; and it actually occurs precisely where it emphasizes as its own core content the indeterminable, unjustifiable, inaccessible "other of sense" (*Sinnandere*) or the "fundamental negativity" of the "eccentric, exterior, or *ecstatic*"—in short, the "emphasis of the ex-."[27] For the "oblivion of ex-istence"[28] of the hermeneutic sense culture, which Mersch rightfully assigns even to its most extreme and radical philosophical outsiders, like Heidegger, Levinas, and Derrida, only becomes recognizable, in my opinion, through the ex- of technology. The original exteriorization and "being outside oneself"—the original and unavoidable exteriority—on which the post-hermeneutic fascination with negativity and its pathos of the "discovery of an original wound"[29] depends, is first accentuated and implemented historically through technology. In any case, the prominent protagonists of post-hermeneutic thought have themselves affirmed that the ex- of existence, which for them is unavoidable, exposes precisely the "'essential' technicity of existence"[30] and the "essential technicity that makes up (the condition of) finitude";[31] a technicity that continually refers to the originary fault—the always absent, missing, faulty origin—out of which all existence is endlessly technical and given over to technical becoming.[32]

Another issue is whether technological sense can still be adequately understood using the concepts and figures of exteriority, negativity, uncertainty, lack and default, as a long tradition culminating in post-hermeneutics suggests, or whether technological means have already brought us to the post-history of negativity and its corresponding semantics, in the sense of Alexandre Kojève's statement concerning the end of history. Even though up until now technics has been undoubtedly understood most strikingly in theoretical milieus fascinated with negativity, and it has repeatedly been conceived as a form of prosthetic compensation, externalization, extension, and supplement to the insufficiently equipped, incomplete, and indeterminately finite living being—in short, as the exteriorization of the primordial negativity of the human—this seemed thoroughly plausible under instrumental relations of being. These theories were based on the working subject's relation to the world, as the working subject constantly had to negate and transform its conditions due to its own unavoidable needs. However, the technological displacement of sense could reveal a cybernetic constitution, which can hardly be described by means of a negative-anthropological or negative-ontological concept of finitude. I am thinking in particular of the immanentizing tendency, which is connected to the ecologization of being through the latest information and communication technologies, or also the interiorizing tendency resulting from nanotechnologies, biotechnologies, and the program of *converging technologies*. These are areas where technological development itself surpasses all of the established negativistic descriptions of the technical.

The reason why even radicalized negativity semantics, which are distinctive of a wide range of post-hermeneutic undertakings, lose their descriptive power and ultimately their relevance under technological conditions can be explained through the close connection between work, negativity, and meaning on the one hand and a certain antiquated image of technics on the other hand, which collectively shape the physiognomy of the disappearing sense culture. Jacques Derrida very precisely examined the extent to which work, signification, and negativity go hand in hand as a sense-historical triumvirate, so to speak, and the extent to which the meaning-giving subject is thereby only a philosophical translation of the working subject, so work is always the work of negativity, the work of meaning.[33] However, Gilbert Simondon provided the insight that this entire sense culture depends on a certain interpretation of technics and represents the most influential expression of this interpretation. He revealed the tremendous epistemological and ontological structuring power of the "paradigm of work"[34] and demonstrated the central position of the hylomorphic schema in the history of sense, which turns the centering of work into the foundation of metaphysics. The entire ontological and epistemological organization of the occidental sense culture is encapsulated in the hylomorphic juxtaposition of form and matter, which is nothing else but a representation of work and its basic object relations, which minorize technical objects. In my opinion, this is the main point of Simondon's study, and it is of central importance for an understanding of the technological displacement of sense.

For Simondon, work did not have any anthropological primordiality. In pre-cybernetic times, however, when technical object cultures were insufficiently concretized, work was a privileged action that focused on results and finality and obscured relations, mediations, and objects. Without direct dialogue, humans and the world or nature were placed in relation to the object, but only indirectly via the hierarchical structures of the community and in accordance with their purely functional organization. This notion of work and the closed work community restricted and denied any opening created by the technical activity of the individual and the autonomy of the technical object that arises from such activity—in other words, the supplementation and modification of being through individual technical labor—for at least as long as this was still somehow possible from an object-historical perspective.[35] The hylomorphic schema, which distinguishes between form and matter, thus provided an important ontological descriptive pattern formulated under the banner of work and secured its dominance in the history of sense. Yet the schema itself not only has a clearly detectable "technological origin"[36] in the world of manual labor (in the shaping process of brick production to be precise), so its relevance for forced technological relations is already very doubtful, but it also repudiates the fundamental technicity of the operation. The main point of Simondon's work on the history of sense is that a hylomorphism that obscures technics in this way has shaped the entire occidental practice of describing concrete physical, psychical, and social processes, and as a result these processes are primarily modeled as anti-technical. As Simondon writes:

> There is a gap in the hylomorphic representation that makes true mediation disappear…. The hylomorphic schema corresponds to the knowledge of a person who remains outside the workshop and only takes into consideration what goes into it and what comes out. In order to experience the true hylomorphic relationship, it is not enough to enter the workshop and work with the manufacturers: it would be necessary to enter into the model or pattern itself *in order to trace the different levels of physical reality of the shaping operation*.[37]

Against the background of the socialized representation of work and the individual inscribed in it, the hylomorphic concept also turns out to be limited to a specific and in the strict sense pre-technological sense culture, and it is therefore thoroughly historical:

> The technical operation that *form imposes on passive and undefined matter* is not only the operation abstractly envisaged by a spectator who only sees what goes into the workshop and what leaves it again without understanding the process as such. It is essentially an operation that is ordered by someone free and carried out by slaves…. The active character of form and the passive character of matter correspond to the transmission conditions of the order, which presupposes a social hierarchy…. The difference between form and matter, between soul and body, reflects a city that

consists of citizens and slaves.[38]

This is the crucial point revealed by Simondon's theory of technics and its extreme contemporaneity: in opposition to the unmediated community of the occidental fascination with work as a model of the sense culture of meaning, Simondon relies on the "collective group" (*le groupe collectif*) in the sense of a system, even a society, of psychic, technical, and collective individuals produced by technical activity: the "transindividual collective."[39] In accordance with the history of objects, this collective is participatory, like the network structure of open objects, and it consists of long chains of operations. The schema of this collective condition and the redefinition of collective relations in general, which could represent the basis of a newly emerging sense culture, is the "montage":

> The technical object, which has become separable, can be brought together with other technical objects according to one montage or another. The technical world offers an undefined number of available arrangements and connections. This enables a liberation of human reality, which is crystallized in the technical object; to construct an object is to prepare an arrangement and make it available.[40]

Years later, it is precisely this paradigm that catches on under the title "assemblages" (*agencements*) as a new post-significative schema that is no longer oriented towards the despotism of the signifier, even though its technicity is paradoxically effaced or negated. For Simondon, however, it is technical activity that *first* models the collective, creates a technical milieu of transindividuation, and thus inaugurates what I have termed a new technological sense culture. Technical activity is first and foremost a form of distributed agency, although it should be noted that this also to a certain extent contradicts Simondon's emphatic, actor-centered appeal to the technician as opposed to the worker. It is no longer attributable to the unity of an actor or subject, but rather it is an expression of a distributed "ecotechnological subjectivity,"[41] as we will soon see.

The struggle for a new description of the technical world still represents the primary task of media philosophy today. Blumenberg's question, "where is the 'problem' of technology,"[42] is in a way still unresolved with regard to the precise determination of the place of technology and the entire scope of the question. It involves an examination of not merely some regional site and aspect of the present, but rather the core of the contemporary question in general—in other words, it involves the highest virulence and urgency of contemporary thought. We are still in the process of developing a "*technological theory of existence*,"[43] as Max Bense, one of the first cybernetic enthusiasts, had in mind. "This theory," Bense clearly explained, "examines the technological condition of being and aims to provide an empirical outline of its categories and modes, which correspond to the expressions of actual existence."[44] Bense's observation at the time concerning the surrationality of technology and the discrepancy it reveals between the old language and the new things is still valid today: "We must interpret, describe, explain, depict, represent, express, evaluate, affirm, and negate the things that we are suspicious of and that should be familiar, habitable, to us—it is the only way to evade their oppression."[45]

GENERAL ECOLOGY

The term "technological condition" refers to the new situation in the history of sense, which was instigated by cybernetics as a third natural state in contrast to the previous "technical condition" that characterized both the organic and the mechanical natural states.

Serge Moscovici's theory concerning the historicity of natural states,[46] which I am using here, already explained in the 1960s the "relationship between human and non-human forces "[47] as the crucial problem area of a new science called *political technology*, whereby Moscovici, in my opinion, made Simondon's thoughts on technical objects more historically precise. The first organic natural state extends from the end of the Neolithic Age to the Renaissance, and its sense culture is informed by the central position of the tool and the craftsman, as the work of forming objects is the center stage of human activity. "In this organic natural order," Moscovici writes, "there is nothing beyond human contact, and everything is subject to it in a way. Consequently

there is no radical break between the human and the material to which he gives form."[48] The outside, to be more accurate, is thereby strictly speaking nothing but an exteriorization of the working man. The theory of exteriorization, which views objects, tools, and indeed all technics in general as an extension and projection of the human—a theory that is still or rather once again prominent today—maps precisely the situation of the organic natural state, and therefore it still defines the image of technics from this point of view. Against this backdrop, hylomorphism proves to be the ontological program of this natural state, formulated since Aristotle, which separates the active subject, who gives form and meaning, from the passive material or object, which is formless and senseless.

Under the conditions of the second mechanical natural state work is transformed into instrumental work, or rather, to be more precise, it becomes "an attribute of both living and non-living material forces."[49] The human itself is thus mechanized, as "human and non-human material forces are assimilated into one another and collectively constitute a unified, homogeneous machine."[50] Moscovici specifies that the main actor in this natural state, under the machine conditions of classical mechanics, is "the transmission mechanism, which serves as the intermediary between the machine tool and the power source and which lends the desired direction, intensity, and complexity to its movement."[51] Only the third, cybernetic natural state, which had just appeared at the time of Moscovici's reflections, abandons the hylomorphic sense culture formed by classical instrumental technics and work. On the basis of information and communication technologies, the central activity becomes transinstrumental control performance, which can no longer be described using the opposition of form and matter. Moscovici saw this clearly, even though he still appeared to hold on to the concept of work: "Regulating work thus belongs to a new genus. Its task is not the forming of objects."[52]

My thesis is that in cybernetic relations, in which the forming of objects is no longer the core activity of human and non-human actors—and that is the defining characteristic of the technological condition—there is at the same time also a shift in the status and sense of objects as such, or what an object even means, towards systemic, active, intelligent, and communicating objects. This shift implies a momentous redefinition of our entire objective condition and the place that we as subjects occupy therein. The modification of the sense culture that is technologically implemented in this way eventually leads to a fundamental ecological reorientation of the mode of cognition and being, whose contours we are only just beginning to recognize.

In the first phase of the cybernetic natural state, the emergence of the technological condition was still commonly perceived and modeled from the theoretical and historical perspective of machines rather than objects, which was most likely due to a certain fixation on machines in the mechanical age. The transition from classical to transclassical machines that Gotthard Günther has repeatedly described since the 1950s, the already mentioned distinction between closed and open machines that was developed at the same time by Gilbert Simondon, Heinz von Foerster's differentiation between trivial and non-trivial machines since the late 1960s, and Humberto Maturana and Francisco Varela's distinction between autopoietic and allopoietic machines were all to some extent reflections cast into systematic differences that simultaneously expressed the transition from the technical to the technological world.

Nevertheless, Simondon—undoubtedly in direct connection with Georges Canguilhem's organology and later especially neocybernetic systems theories—already recognized the foundational object-historical tendencies and turned to questions and concepts that increasingly describe our technological condition, like *milieu*, environment or *Umwelt*. These concepts thus first attained their full actuality and scope through younger media-technical developments and visions, which heralded the proper phase of the cybernetic natural state.[53] Since the end of the 1980s, as Katherine Hayles phrased it, computation has begun to move "out of the box and into the environment."[54] This stage of intensified and comprehensive cyberneticization can no longer be grasped in terms of the machine and its concomitant conceptual politics. It is first and foremost a matter of the military-industrial repositioning of the object and object relations, which is still not closed and which brings us first into cybernetic relations in the strict sense: namely, into the relations of a network environment, which is saturated or indeed inundated with various technological object cultures, which is characterized by

hyperconnectivity and an explosion of complexity, and which is automatically communicating and CPU-intensive. Under the technological condition, people exist in a broadband world in which they are permanently connected to and embedded in diverse objects that communicate and operate automatically and by now for the most part even bypass subjects altogether. Against the backdrop of this "environmental" ("umweltlichen") *agency* (as Heidegger would put it), which is distributed across a diverse array of objects, the concept of the machine itself is increasingly replaced by the concept of the object in theoretical descriptions of the culture.[55]

The idea of open objects linked to and extended through the existence of nets, which Simondon fundamentally apprehended as the signature of the technical-industrial world, is concretized today in the form of an infrastructural revolution. In order to name a prominent development, I am thinking in particular of the media-technical evolution of RFID chips and thus labeled objects, which is supposed to culminate in an internet of things.[56] Bruce Sterling refers to the military-hyperindustrial complex of the new object-orientation as the "RFID world,"[57] which may have initially appeared as a primarily logistical reorganization with grave implications concerning the rise of a control society; however, what actually changes in the "RFID world" is nothing less than subjectivity itself at its deepest layers. In combination with embedded sensors, mobile technologies, and relational databanks, RFID simultaneously destabilizes traditional ideas of the human construction of the world and meaning, as Hayles points out. RFID thus provokes a profound "crisis of interpretation" and once again raises the question of "meaning-making in information-intensive environments"[58] beyond all dogmatic sense-cultural truisms, which is the ongoing sense-historical dimension from which Hayles' analysis is ultimately carried out. RFID opens the possibility—and the stakes could not be greater—of "shedding the burden of long-held misconceptions about cognition and moving to a more processual, relational and accurate view of embodied human action in complex environments."[59]

In short: RFID solidifies, according to Hayles, nothing more and nothing less than the popular contemporary program of distributed cognition. It objectively transforms our image of thought.[60] The "smart dust" of minuscule interconnected objective actors reveals to a certain extent a transcendental technicity that increasingly displays the features of technological immanence. Machineness is thereby replaced by thingness. Consequently, "the emphasis shifts from the traditional triad of human/animal/machine," with which first-order cybernetics still operated, "to human/animal/thing."[61] That is, in my opinion, the strong historical-ontological eventfulness of RFID, with which a new primarity or indeed primordiality of environmentality stands out as the main feature of the technological condition—an originary environmentality that in turn is also increasingly promoted in scientific research as well as in the arts, even if only casually noted, through phantasms of a new technoanimism of wild electronic environments.[62]

British geographer Nigel Thrift, an important surveyor of the new electronic geography and a precise observer of the ecotechnological turn, points out that while RFID technology is a key aspect of a general developmental tendency it is merely one element in the collective implementation of "a new kind of technological unconscious."[63] The rise of objects that are continuously transmitting in their environment, the rise of *ubiquitous* or *pervasive computing* as well as *calm technologies* after which computation becomes context dependent and seamlessly embedded in the environment and things are connected to ubiquitous invisible computer networks, the rapid proliferation of mobile media like GPS or *smart phones*, developments like *smart clothing*—clothing with embedded electronics—and *grid computing* all bring about a complete restructuring of everyday life and a readdressing of the world in general.[64] In this new technical unconscious we will eventually be forced to recognize a *technological unconscious* in the strongest sense.

Since the mid 1980s Mark Weiser and other pioneers from *ubicomp*, ubiquitous computing, have been occupied with a new conception of the way computers exist in the world. After the age of the mainframe and the subsequent PC era and contrary to this era's reveries of virtual reality, computers were supposed to be released, distributed, and integrated into the external, physical world and ultimately to "vanish into the background" completely.[65] According to this vision, therefore, computers were supposed to occupy the "tacit dimension" and the "horizon," to sink back into the inconspicuousness of the "ready-to-hand," as Weiser formulated it in direct

connection with Michael Polanyi, Hans-Georg Gadamer und Martin Heidegger. Weiser introduces his program with these sentences: "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."[66]

While this computer-based neo-ecologization was still primarily a topic in a speculative branch of computer science in the 1980s, the great transformation of the "background" recorded by Thrift with reference to Heidegger has since been rapidly put into effect albeit on a more solid technological basis:

> All human activity depends upon an imputed background whose content is rarely questioned: it is there because it is there. It is the surface on which life floats. At one time, the bulk of this background would have consisted of entities which existed in a "natural order", all the way from the vagaries of the surface of the earth through to the touch of currents of air or the itch of various forms of clothing through to the changes in the sky. But over time, this background has been filled with more and more "artificial" components until, at the present conjuncture, much of the background of life is "second nature", the artificial equivalent of breathing. Roads, lighting, pipes, paper, screws and similar constituted the first wave of artificiality. Now a second wave of second nature is appearing, extending its fugitive presence though object frames as diverse as cables, formulae, wireless signals, screens, software, artificial fibres and so on.[67]

It is precisely these new, excessive, mostly electronic "object frameworks" that today guarantee the recursivity of the world and are to be understood as the technological unconscious. According to Thrift, they bend "bodies-with-environments to a specific set of addresses without the benefit of any cognitive inputs. The technological unconscious is therefore a pre-personal substrate of guaranteed correlations, assured encounters and therefore unconsidered anticipations."[68] Through the implementation of intelligent environments the surfaces and textures of everyday life are intensified, automated, and powered by all kinds of software-controlled devices. This results in the genesis of a "process reality" that anchors "more and more of what was regarded as 'human' in the 'environment' in the form of small cognitive assists but which are drawn on pre-cognitively," and therefore "this new technological world is working directly into our unconscious."[69]

It is significant that Thrift also surmises the profound sense-historical dimension of such developments. By examining how they reshape being-in-the-world as a whole, his project is nothing less than "a genealogy of background"[70] that is supposed to take into account the genesis of "a new sense of the world"[71] due to progressive cyberneticization. He refers to the new sense of "a radio-active world"[72] and to the sense of a multiplicity of "new generative microworlds"[73] that radically change how the world appears, manifests, and reveals itself. What he is describing is nothing other than the technological displacement of sense. Under the technological condition, this new sense of sense can be understood, in Thrift's words, as emerging from distributed, exteriorized "intelligencings" and "infovorous geographies."[74] It is no longer simply a question of hermeneutics, but rather a matter of "ecologies of intelligence."[75]

Nevertheless, there is one common denominator in the descriptions briefly mentioned here: the new sense culture of the post-significative technological age, which follows the long-lasting sense culture defined by the technology of writing, is characterized as *generally ecological*, and its description is thus the task of a general ecology.[76] The originary heterogeneity and complementarity of sense contemplated by Félix Guattari—the first general ecologist and theoretician of a technological unconscious—assumes a very clear form today: the "radical ontological reorganization" on the basis of a new and in the strongest sense exterior machine culture of "proto-subjective diagrams," which displaces "the totalising scope of the concept of the Signifier"[77] and its psychic and collective structuring power, is today the general ecological reality of an extensively cyberneticized, heterogenetic subjectivity that is techno-logically distributed in the environment. The cybernetic subjectivity, which can only be described ecologically as the integration of different psychic, collective, and technical-medial milieus of subjectivization, follows the long-lasting scriptural subjectivity of the epoch of writing. The subjective transcendentalism of the age of writing is thus superseded by the transcendental technicity

of an ecotechnological process culture, which already grounds our present-day experience. It is nevertheless the vanishing point of the "phenomenal growth of a computer-aided subjectivity"[78] already acknowledged by Guattari, with which a technological model of subjectivization and of the unconscious ultimately prevails as a result of the combination of information technologies and cognitive capitalism. In his discussion of this transformation in the history of sense Guattari emphasizes that the unconscious can be understood not in the traditional psychoanalytic framework derived from the culture of writing or as a matter of intrapsychic entities or linguistic signifiers, but rather only as assemblages of different semiotic and pragmatic dimensions that come from the most diverse, existential, media-technologically saturated territories.[79]

Nevertheless, the general ecology encompasses the intertwining of individual-mental, collective-social, and environmental processes that are consistently reconfigured in the era of the technological condition through a technical outside and thus become recognizable and readable as such for the first time in their originally integrated and metastable relationality. At its heart, the general-ecological question is about the relationship of subjectivity and exteriority, which is fundamentally renegotiated on a technological basis. Technology thereby traverses the immanence of the three interwoven ecological process cultures and integrates them into the new subjectivity and life form of ecotechnology. This constitutes the framework of the emerging concept of sense. It is basically incumbent upon us to elaborate and invent this sense more precisely as either hyperindustrially controlled or openly relational, which has already been the topic of arguments and debates for at least half a century and will be even more so in the near future. So much is certain, that the ecotechnological sense is our question and our horizon of care.

LEUPHANA UNIVERSITÄT LÜNEBURG

NOTES

1. A longer version of this text was originally published as the introduction to the anthology *Die technologische Bedingung. Beiträge zur Beschreibung der technischen Welt*, ed. Erich Hörl (Berlin: Suhrkamp, 2011), 7-53. This English translation comprises the first two sections of the longer text. The third and last section, which is not included here, contextualizes and discusses the various essays that are included in the book (original contributions by Dirk Baecker, Jean-Hugues Barthélémy, Massimo De Carolis, Alexander Galloway, Mark B. N. Hansen, N. Katherine Hayles, Nicole C. Karafyllis, Scott Lash, Jean-Luc Nancy, Frédéric Neyrat, Bernard Stiegler, Eugene Thacker and Gilbert Simondon). *Die technologische Bedingung* seeks to reformulate the (media)technical question under neocybernetic conditions at the beginning of twenty-first century. As such, it is part of a three-volume project. It follows *Die Transformation des Humanen. Beiträge zur Kulturgeschichte der Kybernetik*, ed. by Michael Hagner and Erich Hörl (Frankfurt/Main 2008: Suhrkamp) and it will be followed soon by *On General Ecology. The New Ecological Paradigm in the Neocybernetic Era*, ed. by Erich Hörl.

2. Martin Heidegger, *Discourse on Thinking*, trans. John M. Anderson and E. Hans Freund (New York: Harper & Row, 1966), 55.

3. Martin Heidegger, "The Eternal Recurrence of the Same and the Will to Power," *Nietzsche III*, ed. David Farrell Krell (New York: Harper & Row, 1987), 178, 181.

4. Heidegger, *Discourse on Thinking*, 53.

5. Ibid.

6. Ibid., 55.

7. Martin Heidegger, *What Is a Thing?*, trans. W. B. Barton Jr. and Vera Deutsch (Chicago: Henry Regnery, 1967), 40.

8. Ibid., 41.

9. This was formulated in connection with Jean-Luc Nancy's outline of the history of sense. See Jean-Luc Nancy, "The Forgetting of Philosophy," *The Gravity of Thought*, trans. François Raffoul and Gregory Recco (Atlantic Highlands, NJ: Humanities Press, 1977), 22.

10. See Claude E. Shannon, "A Mathematical Theory of Communication," *The Bell System Technical Journal* 27.3 (1948), 379.

11. Cybernetics is understood in this depth, for example, in Tiqqun, "The Cybernetic Hypothesis," *Tiqqun* 2 (2001) <cybernet. jottit.com>.

12. I have defined the concept of the history of sense more precisely in my essay "The Artificial Intelligence of Sense: The History of Sense and Technology after Jean-Luc Nancy (By Way of Gilbert Simondon)," trans. Arne De Boever, *Parrhesia* 17 (2013); 11-24.

13. The concept of "ecotechnology" was developed in connection with Nancy's speech about "écotechnie," with which he described the general "becoming-technology of the world" and the "technological-becoming of Being or its finish." Jean-Luc Nancy, "War, Right, Sovereignty—Techne," *Being Singular Plural*, trans. Robert D. Richardson and Anne E. O'Byrne (Stanford: Stanford University Press, 2000), 129-142. For object-historical reasons, which will be revealed primarily in the second part of this introduction, I use this concept to focus on the merging of ecology and technology, which Nancy does not thematize.

14. Hans Ulrich Gumbrecht, *Production of Presence: What Meaning Cannot Convey* (Stanford: Stanford University Press, 2004), 19-20. On the opposition between "meaning culture" and "presence culture," see 78-90.

15. Ibid., 21.

16. On Husserl's critique of technology and its displacement of sense as well as my revaluation of his formulation and its diagnostic background, see Erich Hörl, "Die technologische Sinnverschiebung. Über die Metamorphose des Sinns und die große Transformation der Maschine," *Medien denken. Von der Bewegung des Begrifft zu den bewegten Bildern*, ed. Lorenz Engell, Jiri Bystricky, Katerina Krtilova (Bielefeld: Transcript, 2010), 17-35.

17. Gilbert Simondon, *Du mode d'existence des objets techniques* (Paris: Aubier, 2005), 101.

18. On the alphabetical background of the transcendental subject, see Bernard Stiegler, *Taking Care of Youth and the Generations*, trans. Stephen Barker (Stanford: Stanford University Press, 2010), 23-30. In his famous essay on "The Origin of Geometry" in *The Crisis of European Sciences*, Husserl conceived of the transcendental subject as a "reading" subject who extracts living sense from dead forms and can thus "reactivate the self-evidence" that is stored in writing. See Edmund Husserl, *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy*, trans. David Carr (Evanston: Northwestern University Press, 1970), 361-362. Wolfgang Iser redefined the reading subject as thoroughly phenomenological: *Der Akt des Lesens* (Paderborn and Munich, 1984). On cinematographic transcendentalism, see Bernard Stiegler, *Technics and Time 3: Cinematic Time and the Question of Malaise*, trans. Stephen Barker (Stanford: Stanford University Press, 2011), 35-78; Lev Manovich's *Language of New Media* (Cambridge, MA, 2001) is also relevant, as it is aggressively oriented around cinematography and, by his own account, seeks to decipher the language of new media through the conceptual lens of film theory and history. On the other hand, Mark B. N. Hansen emphasizes from the perspective of newer and more CPU-intensive networked media technologies the coming "*noncinematic* principles for

experiential synthesis." Mark B. N. Hansen, "New Media," *Critical Terms for Media Studies*, ed. W. J. T. Mitchell and Mark B. N. Hansen (Chicago: University of Chicago Press, 2010), 183. For more on his more recent attempts to develop this new perspective under the heading of an original environmental condition, see Mark B. N. Hansen "Medien des 21. Jahrhunderts, technisches Empfinden und unsere originäre Umweltbedingung", *Die technologische Bedingung. Beiträge zur Beschreibung der technischen Welt*, ed. Erich Hörl (Berlin: Suhrkamp 2011), 365-409; "Engineering Pre-individual Potentiality: Technics, Transindividuation, and 21st Century Media", *SubStance* #129, Vol. 41, no. 3, 2012, 32-59.

19. Hansen, "New Media," 181.

20. Alexander Galloway's description of the "anti-hermeneutic tendency" of networks encapsulates this contemporary sense-cultural shift, as data are no longer read in the traditional cultural-technical sense of subjects, but rather they are cybernetically processed, scanned, rearranged, filtered, and interpolated. Agency is also distributed throughout the environment, so the subject is no longer the supervisory authority. See Alexander A. Galloway, "Networks," *Critical Terms for Media Studies*, ed. W. J. T. Mitchell and Mark B. N. Hansen (Chicago: University of Chicago Press, 2010), 290. See also Alexander A. Galloway and Eugene Thacker, *The Exploit: A Theory of Networks* (Minneapolis: University of Minnesota Press, 2007), 154-157.

21. Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Ninian Mellamphy (University of Western Ontario, 1980), 2. Please note that this is a non-authorized translation, as there is no authorized translation of this text.

22. Ibid., 7.

23. Gumbrecht, *Production of Presence*, 33.

24. Simondon, *On the Mode of Existence of Technical Objects*, 4.

25. Simondon already mentioned the difference between closed and open objects in 1961. See Gilbert Simondon, "Psycho-sociologie de la technicité II," *Bulletin de l'École pratique de psychologie et de pédagogie* (1961): 232-236. On the question of the network, see Simondon, *Du mode d'existence des objets techniques*, 181f.

26. Dieter Mersch, *Posthermeneutik* (Berlin: Akademie, 2010).

27. Ibid., 14.

28. Ibid., 23.

29. Ibid., 30.

30. Jean-Luc Nancy, *A Finite Thinking*, ed. Simon Sparks (Stanford: Stanford University Press, 2003), 24. On the role of technology in Nancy's concept of sense, see Hörl, "The Artificial Intelligence of Sense."

31. Bernard Stiegler, *Technics and Time 1: The Fault of Epimetheus*, trans. Richard Beardsworth and George Collins (Stanford: Stanford University Press, 1998), 186. The theme of the first volume of *Technics and Time* is first and foremost the demonstration of the "défaut d'origine," of the originary default, of the faulty, missing and lacking origin, which constitutes the foundation of Stiegler's approach to technics.

32. This is precisely what Dieter Mersch turns away from when he writes that "in the epoch of the technological" the real, which for him is one of the names for the inaccessible and the indisposable, "is subtracted out of its computations, deleted from its projects" (330) in order to make the technological appear absolutely shocking. For Mersch, therefore, this exclusion seems to be the primary characteristic of the technological, while everything disruptive—everything that thwarts the attempt to handle the "other side of meaning" (331)—is connoted as non-technical and is classified on the anti-technical side. This simplistic image of technics is dogmatic and antiquated, as it obscures the pharmacological aspect of technics emphasized by Derrida and Stiegler and it fails to recognize that the rightfully incriminated denial, reduction, or indeed eradication of the inaccessible is more likely based on a problematic and accidental convergence of technical and non-technical powers, namely *technics and industry*, rather than technicity as such.

33. Hegel's system provided the most powerful representation of this sense-cultural formation, and Derrida outlined this formation in his Hegel lectures. See Jacques Derrida, "From Restricted to General Economy: A Hegelianism without Reserve," *Writing and Difference*, trans. Alan Bass (Chicago: University of Chicago Press, 1978), 251-277. Heidegger also clearly understood the sense culture of the working world, which is shown by many of his critical remarks on Ernst Jünger's *Arbeiter*. See Martin Heidegger, *Gesamtausgabe Band 90. Zu Ernst Jünger*, ed. Peter Trawny (Frankfurt am Main: Vittorio Klostermann, 2004), 39.

34. Simondon, *Du mode d'existence des objets techniques*, 246. See also Erich Hörl, "Das Arbeitslose der Technik. Zur Destruktion der Ergontologie und Ausarbeitung einer neuen technologischen Sinnkultur bei Heidegger und Simondon", *Prometheische Kultur. Wo kommen unsere Energien her?*, ed. Claus Leggewie, Ursula Renner, and Peter Risthaus (Paderborn: Fink, 2013), 111-136.

35. On the opposition between work and technical activity, worker and technician, community and society, see Gilbert Simondon, "Note complémentaire sur les conséquences de la notion de l'individuation", Gilbert Simondon, *L'individuation à la lumière des notions de forme et d'information* (Grenoble: Millon, 2005), 503-527.

36. Gilbert Simondon, *L'individuation à la lumière des notions de forme et d'information* (Grenoble: Millon, 2005), 39.

37. Ibid., 46.

38. Ibid., 51.

39. Simondon, *Du mode d'existence des objets techniques*, 245.

40. Ibid., 246.

41. In this context, Kojève's speech about the end of history appears to be nothing more than a response to the great transformation in the history of sense. It only concerns the end of a particular sense culture of meaning that is fascinated with work and negativity, which Hegel already extensively described. If Kojève asserted the disappearance of "Man properly so-called," which supposedly also resulted in the end of work and all "action negating the given" as well as "the Subject *opposed* to the Object," then it is clearer today than ever before that all "action in the full sense of the term" is nowhere near exhausted. Alexandre Kojève, *Introduction to the Reading of Hegel: Lectures on the* Phenomenology of Spirit, ed. Allan Bloom, trans. James H. Nichols Jr. (Ithaca: Cornell University Press, 1980), 158-159. On the contrary: not only has a new form of action been approaching for quite some time—namely, technical activity, which was obscured by work for a long time and is now indelibly reshaping the sense of action or activity itself—but the opposition between subject and object, which was the guiding difference of the meaning culture (next to the difference between form and matter), is now being replaced by an ecotechnological reformulation of subjectivity.

42. Hans Blumenberg, *Wirklichkeiten, in denen wir leben* (Stuttgart: Reclam, 1996), 10.

43. Max Bense, "Literaturmetaphysik. Der Schriftsteller in der technischen Welt," *Ausgewählte Schriften Bd.3: Ästhetik und Texttheorie*, ed. Elisabeth Walther (Stuttgart: Metzler, 1998), 168.

44. Ibid.

45. Max Bense, "Technische Existenz," *Ausgewählte Schriften Bd.3: Ästhetik und Texttheorie*, ed. Elisabeth Walther (Stuttgart: Metzler, 1998), 124. There is a remarkable similarity between the theories of Bense and Simondon, which I will pursue elsewhere: he also emphasizes that the technical world is an "objectless world" that "cannot be objectively described," and therefore "classical categories of form and matter fail and functions and structures become apparent." See Bense, "Kunst in künstlicher Welt," *Ästhetik als Programm. Max Bense/Daten und Streuungen*, ed. Barbara Büscher, Hans-Christian von Herrmann, and Christoph Hoffmann (Berlin: Kaleidoskopien, 2004), 86. Twenty years after Bense, which was already deep in the cybernetic world, Hans Blumenberg clearly identified the discrepancy between the traditional language and meaning culture and the new technological world of things: "The sphere of technicity suffers from a language deficit, a category defect." See Blumenberg, "Einige Schwierigkeiten, eine Geistesgeschichte der Technik zu schreiben," *Geistesgeschichte der Technik*, ed. Alexander Schmitz and Bernd Stiegler (Frankfurt am Main: Suhrkamp, 2009), 27.

46. On the three natural states, see Serge Moscovici, *Essai sur l'histoire humaine de la nature* (Paris: Flammarion, 1977), 82-116. Xavier Guchet also proposed a new fourth nanotechnological natural state. See Guchet, "Nature and Artifact in Nanotechnologies," *HYLE–International Journal for Philosophy of Chemistry* 15.1 (2009): 5-14.

47. Moscovici, *Essai sur l'histoire humaine de la nature*, 82.

48. Ibid., 90.

49. Ibid., 97.

50. Ibid.

51. Ibid., 101.

52. Ibid., 103.

53. The central terminology of second-order cybernetics also emerged in direct connection with the ecologization of thought, which has intensified since 1968. For example, Bruce Clarke has pointed out the neo-cybernetic profiling of the concept of autopoiesis in the context of the debate over Lovelock's Gaia hypothesis in the *Whole Earth Catalog* and *CoEvolution Quarterly*. See Bruce Clarke, "Neocybernetics of Gaia: The Emergence of Second-Order Gaia Theory," *Gaia in Turmoil: Climate Change, Biodepletion, and Earth Ethics in an Age of Crisis*, ed. Eileen Christ and H. Bruce Rinker (Cambridge, MA: MIT Press, 2009), 293-314. See also Clarke, "Steps to an Ecology of Systems: *Whole Earth* and Systemic Holism," *Addressing Modernity: Social Systems Theory and U.S. Cultures*, ed. Hannes Bergthaller and Carsten Schinko (Amsterdam: Rodopi, 2011), 260-288.

54. See Nicholas Gane, Couze Venn, and Martin Hand, "Ubiquitous Surveillance: Interview with Katherine Hayles," *Theory, Culture & Society* 24.7-8 (2007): 349.

55. The object-centrism of theory construction that has become so conspicuous in recent years—the most prominent examples being Graham Harman's object-oriented philosophy, Michel Serres' quasi-objects, the agents and Dingpolitik of Bruno Latour's actor-network theory, Bernard Stiegler's theory of hyperindustrial temporal objects, and his most recently developed general pharmacology of the transitional object, all of which find their diagnostic evidence, impetus, and sometimes also the imaginary of their own theoretical efforts in the object—is presumably only a preliminary reworking and reflection of the fundamental technological reformation of our object relations under new media conditions. By now, however, there is also doubt about the descriptive power of the overloaded concept of the object at least in so far as it concerns the description of the present situation. See Mark B. N. Hansen, "Technics Beyond the Temporal Object", *New Formations*, no. 77, 2012, 44-62.

56. RFID is an acronym for *Radio Frequency Identification*. For a precise description of the technical and institutional environment in which RFID was developed, which goes back to World War II and its immediate aftermath, see Christoph Rosol, "From Radar to Reader: On the Origin of RFID," *Aether: The Journal of Media Geography* 5 (2010): 37-49.

57. Bruce Sterling, *Shaping Things* (Cambridge, MA: MIT Press, 2005), 84-91.

58. N. Katherine Hayles, "RFID: Human Agency and Meaning in Information-Intensive Environments," *Theory, Culture & Society* 26.2-3 (2009), 48.

59. Ibid.

60. This transformation was already envisaged in the brief wild moment of early cybernetics, although at the time it certainly had no concrete object-historical basis. See Erich Hörl, "Das kybernetische Bild des Denkens," *Die Transformation des Humanen. Beiträge zur Kulturgeschichte der Kybernetik*, ed. Michael Hagner and Erich Hörl (Frankfurt am Main: Suhrkamp, 2008), 163-195.

61. Hayles, "RFID," 49.

62. In her characterization of the new environmentality Hayles herself proceeds from the description of an "animate environment" to that of an "animistic environment" (Ibid., 50). Bruno Latour undoubtedly also favors an animistic reading of the contemporary technological condition. See, for example, Latour, "An Attempt at a 'Compositionist Manifesto,'" *New Literary History* 41 (2010), 471-490. In the wake of Latour, the *Animism* exhibition curated by Anselm Franke has resurrected animism for the purpose of an ethnography of contemporary technological culture. See Anselm Franke (ed.), *Animism* (Berlin: Sternberg Press, 2010). On the media-historical phantasm of animism as such, which remains entirely unquestioned in all of these positions, see Erich Hörl, *Die heiligen Kanäle. Über die archaische Illusion der Kommunikation* (Zürich: Diaphanes, 2006).

63. Nigel Thrift, "Remembering the Technological Unconscious by Foregrounding Knowledges of Position," *Environment and Planning D: Society and Space* 22.1 (2004): 175. Thrift's concept of the "technological unconscious" is directly connected to Patricia T. Clough's reflections on the "teletechnological transformation," which she develops in *Autoaffection: Unconscious Thought in the Age of Technology* (Minneapolis: University of Minnesota Press, 2000).

64. Thrift, "Remembering the Technological Unconscious by Foregrounding Knowledges of Position," 183.

65. Mark Weiser, "The Computer for the 21st Century," *Scientific American* 265 (1991): 94. Mark Weiser's idea of "spreading computers ubiquitously, but invisibly, throughout the environment," which he developed at Xerox PARC (Palo Alto Research Center) in the mid 1980s, was about "redefining the *entire* relationship of humans, work, and technology for the post-PC era." This gave rise to "a new field of computer science, one that speculated on a physical world richly and invisibly interwoven with sensors, actuators, displays, and computational elements, embedded seamlessly in the everyday objects of our lives and connected through a continuous network." Mark Weiser, Rich Gold, and John Seely Brown, "The Origins of Ubiquitous Computing Research at PARC in the Late 1980s," *IBM Systems Journal* 38.4 (1999): 693-694. See also Mark Weiser and John Seely Brown, "The Coming Age of Calm Technology," *Beyond Calculation: The Next Fifty Years*, ed. Peter J. Denning and Robert M. Metcalfe (New York: Copernicus, 1997), 75-85.

66. Weiser, "The Computer for the 21st Century," 94.

67. Nigel Thrift, "Movement-space: The Changing Domain of Thinking Resulting from the Development of New Kinds of Spatial Awareness," *Economy and Society* 33.4 (2004): 584-585.

68. Ibid., 585.

69. Nigel Thrift, "From Born to Made: Technology, Biology and Space," *Transactions of the Institute of British Geography*, New Series, 30.4 (2005): 471, 474.

70. Nigel Thrift, "Still Life in Nearly Present Time: The Object of Nature," *Body and Society* 6.3-4 (2000): 34-57.

71. Thrift, "Movement-space," 587.

72. Thrift, "From Born to Made," 470.

73. Thrift, "Movement-space," 584.

74. Thrift, "From Born to Made," 463.

75. Ibid., 469.

76. I am using the concept of *general ecology* in connection with Georges Bataille's concept of the "general economy" (*économie générale*). Under the technological condition, the question of general economy becomes a question of general ecology, and as such it is to be reformulated as the core of a new political ecology. In the work of Félix Guattari it is found under the concept of a "generalized ecology" (*écologie généralisée*). See Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (London: Athlone Press, 2000), 52. For a first description of the concept of a general ecology see Erich Hörl, "A Thousand Ecologies: The Process of Cyberneticization and General Ecology", *The Whole Earth. California and the Disappearance of the Outside*, ed. by Diedrich Diederichsen and Anselm Franke (Berlin: Sternberg Press 2013), 121-130.

77. See Félix Guattari, "Machinic Heterogenesis," *Chaosmosis: An Ethico-Aesthetic Paradigm,* trans. Paul Bains and Julian Pefanis (Bloomington: Indiana University Press, 1995), 37. On the question of the technological unconscious in Guattari, see Erich Hörl, "La prothéticité du désir," *Technologiques: La Pharmacie de Bernard Stiegler*, ed. Benoît Dillet and Alain Jugnon (Nantes: Éditions Nouvelle Cécile Defaut, 2013), 201-227.

78. Guattari, *Three Ecologies*, 38.

79. See, for example, Félix Guattari "Entering the Post-Media Era," *Soft Subversions: Texts and Interviews 1977-1985,* ed. Sylvère Lothringer, trans. Chet Wiener and Emily Wittman (Los Angeles: Semiotext(e), 2009), 301-306. Guattari also distinguishes here between pre-personal and post-personal levels, between which diverse unconscious arrangements of sense evolved. He thus situated the question of media almost exclusively on the post-personal level as a question of mass media, which desingularized, serialized, and conditioned post-personal processes of subjectivization. However, his entire hope rested on what he called the "post-medial age," which was supposed to herald a wave of resingularization and heterogenization based on the information and biotechnological revolution. In other words, Guattari supported the radical ecologization of the sense of being through the technological condition. Today the pre-personal level is also shaped by media technologies. See Luciana Parisi, "Technoecologies of Sensation", *Deleuze/Guattari & Ecology*, ed. Bernd Herzogenrath (Basingstoke: Palgrave MacMillan 2009), 182-199.