NONCONSCIOUS

ANGERER

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Nonconscious: On the Affective Synching of Mind and Machine

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Foreword: Otherwise Than Conscious

Seán Cubitt

I

With *Nonconscious*, Marie-Luise Angerer, a leading figure in the international vanguard of thinkers working with affect, brings us a detailed map of the terrain traversed by affect theory since Whitehead, offering critiques and insights at every turn before presenting the vista perceivable from the heights of its convergence of feminist epistemology, science and technology studies, vitalist and actor-network ontologies, psychology and neuroscience. The way ahead lies through a wood as dark as the one Dante found himself in at the opening of the *Divina Commedia*: a prospect of intervals, intensities, and dislocations marked in the continuum of world and brain as the nonconscious. The landscape becomes a timescape, marked by the constant interweaving and dispersal of the porous, ever-changing membrane between mind and machine. The nonconscious emerges where the extension of the brain through the nervous system to the sensory organs and into the world meets the extension of the world through matter and energy, no longer distinct, into every body and every mind. Most of all, it emerges in the interface between mindbodies and digital processes.

This metaphor—of a journey toward a viewpoint from which another landscape begins to appear—melds space and time, as any journey does, because Angerer's essay is in many senses of the word *speculative*. Like the great speculative philosophers, she synthesizes from a vast range of sources, and like them she questions how parts fit, how processes link, and where false distinctions hamper understanding. Like speculative fiction, her work articulates what she calls the signs of the times, drawing on readings of where we are now for ideas of where we might be going, how we might get there, and how we could influence the destination and the route toward it. There are flows; individuals

are results of those flows; individuality is undergoing historical changes. The task of speculative thought is, as she writes, to "anticipate a future that has already begun."

In this kind of thinking, the thinking is the message, not whatever conclusion it arrives at. There can be no summary, only orientations. Among them is the pioneering sociological thought of Gabriel Tarde, who identified the felt "need for society" that humans share with other living creatures and even with the nonliving and that gives a preliminary definition of flow and a sense of what direction it moves in: toward higher and higher levels of association. This flow is effectively the "ontology of the affective," a word whose meaning expands from its everyday use as a synonym for emotion to describe the grounding flow of energies and forces that we experience as something like Freud's libido, the precursor of the familiar emotions we later learn to name anger, jealousy, admiration, or love. Angerer evokes a series of approaches to this primal connecting force that precedes and underpins sensory, emotional, and intellectual life, creating and coursing through individuals and societies and articulating them with their world. Among them is *intensity*, a concept from political philosophy describing the circulation of energies that cannot be closed or quantified. Most of all these intensive flows of affect create connections, but as political forces they also create antagonisms, interruptions, and delays. Some of these emerge as rejections of some other, human or nonhuman. Other intensities, such as auto-affection, which Angerer reworks from the writings of Catherine Malabou, who in turn derived it from Derrida, bring about "a radical integration of the other into the self."

For any form of aesthetic, political, or ecological theory, this intense mode of integration is of the utmost significance. According to Whitehead, Angerer explains, primitive humans felt the full force of storms of blind emotion, which evolved in higher stages into empathy. This notion of stages or layers recurs in the thinking of Deleuze and Guattari, in Gilbert Simondon, and in Luce Irigaray, whose feminist analysis begins with the idea that

desire is not primarily sexual but desire to connect, "to grasp nature as the basis of all life." It is only the sexualization (*sexuation*) of desire among humans that "renders their becoming hybrid and uncertain." The order of these events, historically and in the epigenetic formation of individuals, is fraught. (Does empathy come first, with the baby in the mother's arms, a matter of mirror neurons? Or must empathy be learned, abstracted from the welter of bewildering affective flows racing through the primitive or infantile body?) This is exactly where N. Katherine Hayles places the nonconscious: at the borders between layers and stages. But as Angerer notes, neither she nor other phenomenologically inspired technology critics explain how affect moves between layers—for example, from the body to the intellect. A significant aspect of Angerer's nonconscious is that it provides an explanation of how the translation between human and nonhuman works and how nonhuman actions "intervene in the dimension of human perception and action."

For media scholars, this question evokes the old chestnut of media influence: Are propaganda messages injected into a passive public (Lasswell [1927] 1938)? Do media technologies shape the sensory and political worlds of their audiences (McLuhan 1964)? Or do audiences perform complex cultural work on the segmented flows of electronic media (Morley 1987)? Inspiration from studies of schizophrenia and autism, neither well understood according to Angerer, led to impasses of either chaotic immersion in the primal soup or object relations deprived of empathy. But contemporary neuroscience offered a third alternative. Experiences of trauma that interrupt the normal evolution of brains (and their integration into bodies and worlds) indicate that the nonconscious is to be found not in a spatial organization of layers but in time and that what we experience as psyche is instead "permanent differentiation . . . and integration." The brain, the extended organ of sense experience and intelligence, "absents itself at the very site of its presence to self," as Malabou puts it.

10 This is so redolent of the experience of contemporary media that the analogy seems more than accidental. By its own reckoning, in late 2021 Instagram was receiving 95 million uploads daily from its 600 million daily users, and it is only a middling player in the top ten social media. The amount of content loaded into global databases far exceeds the time available for users to look at it. The only observers of these billions of images are databases themselves, but even the most cunning experts in artificial intelligence do not and indeed cannot know what operations a database is performing on the content at any given moment, and in many cases not even over extended periods of time. Like brains, databases absent themselves at the very moment we attempt to connect with them. And yet they are there, the evidence of their working is all around us (vast supplies of electricity and vast emissions of excess heat are two clues), and the adverts and recommendations they serve users are indeed getting smarter. There remains the troubling thought that the connection of human and artificial intelligence through the nonconscious absence of both brain and database to their own operations might be not empathy but apathy, not connection but disaffection, not an aesthetic excitation but ennui; and that the sum of all flows of difference might be indifference.

II

Intuitively, the feeling I seek out when I think of affect in Angerer's sense is aesthetic: the sense of being possessed by the night sky, lost among stars, and the very similar effect of contemplating astronomical images of distant galaxies, solar eruptions, or black holes gathered by various terrestrial and satellite-borne observatories. It is a sensation not far removed from Kant's sublime, which he distinguished from beauty because beauty attached itself to an object, whereas the sublime was formless. But Angerer's explorations of the nonconscious are formal in the sense that they address thresholds between stages and layers, and through the connection between intensities and antagonism,

between flow and its interruptions, indicate the possibility of an affective understanding of politics as well as the relation between human and nonhuman, which she tellingly rewrites in the form *non+human*, replacing the minus sign (of the hyphen in non-human) with a plus to indicate once again the continuum of the two phyla. Indeed, it might well be said that history and politics both begin in that moment when humans begin to distinguish themselves from a world that, nonetheless, they are intimately connected to.

The mediating factor carrying forces and flows between the human and its estranged ecology is technology, machines that sense on our behalf, but that also impact "not only on organic life but also, of course, on social and economic life." The impact goes both ways and is not exclusively physical, as in the environmental impacts of digital media from mining to high-tech trash. At this juncture Angerer cites Bernard Stiegler's assessment that the work of "viral strategies of advertising and infotainment" is no longer (if it ever was) ideological but rather a process of defining felt realities: the famed look-and-feel test, but in this case the realist struggle to make the image conform to the world is turned around, conforming what we perceive of the world to a particular conception of it. This process does not explain itself: Angerer pulls in Luciana Parisi's analysis of *nano-desire* to specify how exactly technologies, especially digital technologies, mediate between the world and the senses without there being any direct contact—a mobilization of desire throughout networks of mediation with no central subject to receive or control it.

The breakup of older anthropocentric and individualist psychologies of the subject and subjectivity is one of the great achievements of affect theory. After Freud, the articulation of psyche and society rested broadly on the idea that something like Weber's "spirit of capitalism," with its internal conflict between selfish accumulation and the moral imperative of the general good, produced repression in the infant child of the nuclear family in late nineteenth-century Europe. After Lacan, the

structure of repression was taken to be formed by the dominant medium of the nuclear family: language. While it is technically rather limiting to describe the Freudian unconscious as "textual," it is true that by the mid-twentieth century, most psychoanalysts had taken it as given that desire did not run free but chased its lost object along chains of linguistic signifiers.

The problem with this thesis is that, in the twenty-first century, the dominant medium of communication is no longer language but code. For Lacan, language speaks us as much as we speak it; in the twenty-first century, code speaks us, in much the way that Parisi's refinement of Stiegler suggests, but the vast majority of humans do not "speak" code (and there may be reasons to say that code is a medium without a speaker in the same way that affect is a process without a subject). The obvious upshot of this new condition is to argue that if individuality, along with its psychic traumas, was a linguistic phenomenon, then "the dividual is the subject digitized," a proposal from Cheney-Lippold that Angerer disputes as an oversimplification. Deleuze and Guattari's dividual succeeds the individual, whose name suggests it cannot be divided, with a subjectivity that is already a cloud of dispersed, communicating elements. The digital dividual would be a response to the network condition, where almost all code operates now: a dispersed subjectivity whose "desire," as Parisi argues, is no longer trapped in unidirectional flight along the signifying chain but distracted and dispersed along the endless labyrinths of digital communications, thus agreeing with the affective notion that there is no Symbolic domain defined by linguistic shifters (words like "I" and "now" that shift content depending on who is speaking and when) and thus centered on a subject position.

These new formations (no longer structures) have to be understood not as continuities on the model of the endless flow of natural languages but as an intervening "transfer/translation

of signals into data, and of data into sensory and meaningful information." This poses a challenge to classical communication theory since Claude Shannon, who opened his 1948 paper on the mathematical theory of communication, the basis of all electronic engineering today, with the clarification that communication has nothing to do with the semantic dimension of messages: its only task is to get a message from sender to receiver in top condition and with maximum efficiency. To the extent that "affect is signal," it has neither meaning nor indeed sensory data as such. Indeed, it would be possible to say that the terms "sensory" and "data" are entirely at odds: senses are material connections, whereas data is numerical abstraction, but this is precisely the point. Nonconscious operations occur in the translation between these modes, and technically therefore, like affect, the nonconscious is an artifact of engineering models of communication for which there is no content, only network functions. Thus if, on the one hand, in Massumi's phrase "skin is faster than the word," then that consequently nonverbal (and in Freudian terms therefore unconscious) sensation is content free, yet also, as signal, a work of transferring. Skin itself, as a nonverbal or preverbal medium, would then be an instance of an "a-significant dimension," but then also oddly close to Julia Kristeva's (1974) hypothesis of the semiotic *chora*, the sensory flux from which language will eventually be constructed but which, as it traverses the body of the baby, still fails to recognize inside and out, self and other, or even the skin as boundary: a *chora* that remains throughout life a lost state of wholeness.

Important in the distinction between these two understandings of what appear to be similar intuitions is Angerer's insistence on the interval. The language of language is full of flows: streams of consciousness, the ebb and flow of dialogue, the proximity of voice and melody. Code is different in that it comes far closer to written, especially printed language, which loses its continuity in the act of splitting words apart with spaces—intervals—between them. In an intriguing early discussion between pioneer

cyberneticians Warren McCulloch and Norbert Wiener this question of the interval comes up, here described by the German word *zwischen*:

> McCulloch: Let us put it this way: as long as the probability of a state between our permitted states is great and has to be taken into account, we have still a flavor of the continuous. When the probability of the Zwischen [between] state is zero or negligible, we think chiefly in other terms. That is, I think, purely a matter of practicality.
>
> Wiener: . . . I say that the whole habit of our thinking is to use the continuous where that is easiest and to use the discrete where the discrete is the easiest. . . . One thing that we cannot do is to take the full complexity of the world without simplification of methods. It is simply too complicated for us to grasp. (Gerard [1950] 2003, 197)

At any given moment in the history of science and scientific instruments, the gap between one measurement and the next may be greater or smaller. The greater the detail, as a rule, the smaller the field that can be observed (an electron microscope sees far less of the surrounds than a field microscope); and data capture occupies a measurable duration, its latency, when the incoming data is converted to numerically coded form and drained from the sensor to prepare for the next capture. The remote sensors that fascinated Parisi in her nano-desire essay need more time to process data into storable form and to transmit it to databases where it is placed in relation to other data before it can be processed by artificial or human intelligence. The *zwischen*, once we open it up, turns out to be not a single, recurrent disappearance, like the darkness that cine projection plunges a theater into between frames, but a constant evasion in every digital presence, like the pixels constantly being illuminated and constantly fading away on display screens.

Measurement, telemetry, network protocols, and video formats are among the tool sets that depend on human users ignoring the

in-between. Such instruments rely on protocols, like the universal time coordination (UTC) required to synchronize computers with network operations and the packet-switching specifications at the base of internet transmission and audiovisual codecs. Thus, it is not simply that digital technologies replicate the discrete units introduced by printing at the dawn of the modern era but also that the intervals, the *zwischen*, have been standardized. The detail underlying the principle that "all transitions are dynamic," dependent on the "magnitude of stimulus that must be attained," is especially clear in the optical chips in digital cameras, where a pixel is activated and ascribed a numerical code for color and degree of illumination only after the area of the chip corresponding to the pixel has accumulated enough incoming photons to trigger a state change. Below that threshold, the pixel remains off; above it, it switches on. There are no binary differences in physical light, nor indeed is there such a thing as zero charge on a chip: below a certain threshold, it counts as zero; above, it counts as one. It is the "counts as" that is transmitted and processed for automated reviewing (which oddly precedes human viewing).

Nowhere are the operations of nonconscious interruption and thresholds more significant than in edge computing, the zone where digital processes move further into the physical world through smart devices, the internet of things and—a technology particularly redolent of these pandemic years—QR codes. Like little pieces of abstract art, these ostensibly inert patterned surfaces pop up where we expect them—on Covid-safe applications for checking in to venues—and where we don't, when a stray gesture of a mobile phone camera picks up links left littered around the place, on public transport, on posters, in magazines. Combining GPS networks with clever anamorphic receptor correction, anonymity of the originator, and identification of the device that spots it, QR initiates dialogues that users have little idea about unless they get notified hours later that they have visited a hotspot—itself identified thorough

heavily processed records of previous QR registrations assembled with medical records. All this nonconscious activity may appear, from a paranoid perspective with regard to pandemic mitigation or a political one concerned with surveillance capital, as evidence that the digital is encroaching on human life. On the contrary, as Angerer regards it, human life is becoming more intricately involved in the digital, and neither humans nor technologies are imperial forces seeking to subsume the other.

There remains a final hurdle. Both paranoid and positive assessments of the intricate melding of human and nonhuman presume that social, technical, and erstwhile psychological systems all operate seamlessly. All the evidence we have, from scientific instrumentation to internet dropouts, from accidental typos to the deliberate production of ignorance (for which Iain Boal coined the delightful neologism *agnotology*), tells us that our systems are buggy. They produce errors of translation, interference patterns, glitches of all kinds. For a generation of glitch artists, glitches were privileged moments of breakdown in electronic networks that could be exploited to produce daring works of accidental beauty and poignant political acumen. However, it is becoming apparent that rather than symptoms of some machinic equivalent of repression, glitches are not symptoms of a technical unconscious. As Angerer notes, there is an important "relationship between 'malfunctioning' and machine learning." This is especially important in the economic domain where trading, particularly in the intensely complex derivatives, futures, and finance markets, is increasingly undertaken via algorithms, starting with the infamous Black-Scholes equation but now operated through expensive and expansive artificial intelligences. Elie Ayache (2015) was an early observer of the fact that traders use derivatives to make volatility tradable, where volatility describes not only the "sentiment" of the now thoroughly cyborg market but also any contingent event. Prediction is no longer profitable enough: markets thrive on risk and assimilate any actual or possible accident into profit making. Glitches are no longer peripheral, not

even as indicators of the materiality of the media they occur in: they have become a special class of signal, which by disrupting the normal flow make possible market interventions that siphon money from the market into the silos of financial corporations.

It is in such moments that Laclau's dislocations and Angerer's interruptions show their ubiquity and agnostic and amoral aptitudes. Unbelieving and severed from moral considerations, they operate equally in the disruption of the sexing and gendering machinery of patriarchy and the wreckage of the last attempts to rein in the savagery of the market, red in tooth and claw. Angerer's citations from Parisi indicate the stakes here: "dynamic automation is central to the capitalization of intelligible functions," she writes, adding that the dominant viewpoint is that of the machines—in this instance, machines of massive complexity designed for the purpose of extracting profit. No assemblage is as vast as or has as much impact on ecologies, societies, and the evolution of their technological interchange as the now massively electronic market.

The role of speculation, not least in the final paragraph of the essay, is to ask whether the nonconscious and unconscious might have some kind of relation. Rather than try to answer, it seems appropriate to return to one of the epigraphs that opens the essay, where Simondon is quoted writing that "the machine is the stranger; it is the stranger in which something human is locked up." The idea of humans locked inside machines is a thought that goes back to Marx's (1973) writings on the general intellect, where he argues that machines coagulate in their workings ancestral skills of weaving, knitting, molding . . . Like language, and indeed like code, technologies are places where we keep our ancestors, but unlike language, and perhaps code, we allow them to evolve not in their own way but only in accordance with the designs and desires that frame them. Those desires, as Angerer has demonstrated so keenly, are no longer human or exclusively human. I have suggested that they are concerned with extracting profit, but it would be equally possible to argue that their goal is control,

and in either case ancestral technologies have become both prisons and instruments of oppression.

The speculative dimension then comes into play. Is it possible to liberate the ancestors from their black-box prisons? Is it wise, given that, after their centuries-long imprisonment, the ancestors may be mad? Have they internalized the ecocidal and genocidal ways of colonial capital? In his visionary theses "On the Concept of History," Walter Benjamin (2003, 392) wrote that the great interruption he described as "weak messianic power" had as a central task not to heal the world but to redeem it. We do not know what redemption might mean today, or how to achieve it, but it is clear that the history that began with the division of humans from natural process and the instauration of technology as both barrier and bridge between them is now coming to crisis. Perhaps only in an alliance with those imprisoned ancestors can we achieve the redemption that lies curled up, a sleeping giant, in Angerer's intuition that "the timing of the machine organizes the membrane between inside and outside by means of the movement of the affective." The movement of affect, interventions in machine timing, and the thresholds of inside and outside are the sites of an emergent cultural aesthetic, a new aesthetic politics. The nonconscious—and *The Nonconscious*—are major signposts on the road to new vistas.

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Psyche is extended; knows nothing about it.
— Sigmund Freud

The machine is the stranger; it is the stranger in which something human is locked up.
— Gilbert Simondon

Introduction

The process of digitization is advancing steadily, and with it the realignment of our mental and social universe. Social media, networked infrastructures, and autonomous technical artifacts shape the image of a society operating within increasingly complex structures. I want to argue that the increasing presence of nonhuman agents (not just in movies and novels), the development and widespread use of smart objects, and the equipping of both the human body and its surroundings with sensor technology lead to a coming together of human and nonhuman agency that happens not unconsciously but nonconsciously. The unconscious of psychoanalysis is coupled with a human subject (organized around words and signs), whereas the notion of the nonconscious links technical, mental, and physical processes, meaning it can no longer be attributed solely to the human. But how is this "nonconscious" to be imagined? Is it something additional? Is it a new zone inserting itself between unconscious and conscious? Or does this new concept call the whole distinction between unconscious and conscious into question?

There are signs pointing to the latter. Since the advent of cybernetics, if not before, thinkers have been treating technical and neural processes as one: Gilbert Simondon conceived of technical and human development as a single process; Catherine Malabou speaks of a "cerebral unconscious" in order to shift from the psychoanalytic unconscious to a nonconscious brain; and N.

22 Katherine Hayles refers to the interplay of neural and technical processes as "nonconscious cognition." Crucially, however, all these attempts at grasping the new (intense) relations between brain and machine lack a connective mechanism. Hence my use here of "affective," a technical term denoting the movements of connecting, interrupting, and translating between human and nonhuman. This focus on affect brings to light the potential existence of psycho-technological encounters acting as nonconscious formations of touching and not touching in movement and time.

Life as Technology

Speculation about the growing together of human and machine did not start with the figure of the cyborg (Haraway [1985] 1990). In his *Physicist's Conception of Nature*, for example, Werner Heisenberg (1958) uses the images of the snail and its shell and the spider and its web, saying that a time may come when "the many technical instruments will become as inescapable a part of ourselves" (18). He also stresses that the natural sciences must question their implicit primacy of the human, citing Niels Bohr's insistence that we are "not merely observers, but actors on the stage of life" (16). Today, Bohr is present above all in the work of Karen Barad, one of the main proponents of new materialism. Drawing on Bohr's principles of correspondence and complementarity, she establishes her program of "agential realism," in which being and knowing, and thus ontology and epistemology, are not treated as separate realms. A second key concept of Barad's that plays a role here is that of "intra-action," (see Barad 2003, 801-31) which calls the fundamental assumption of all interaction into question since in this view, entities, rather than preexisting their interaction, are the outcomes of intra-active

processes. This worldview, then, is based on relationalities as founding movements, with intra-active processes leading to the emergence of poles (in our case human and nonhuman as the poles of a nonconscious agency).

In *The Human Condition*, Hannah Arendt ([1965] 1998), refers to Heisenberg and his linking of technical and vital processes as technology increasingly becomes a biological development "in which the innate structures of the human organism are transplanted in an ever-increasing measure into the environment of man" (153). Although this hints at interplay, it clearly privileges the human, whose organic and biological structures are transferred to the technologized environment. Immediately after World War II, in his lecture "Machine and Organism," Georges Canguilhem referred to experiments at MIT exploring biological models and structures that could be transferred to the technological world (see Canguilhem 1992, 45-69). At this point, biology and technology began to converge, with organic and technical processes viewed less and less as separate fields. Under the shock of nuclear technology, this development culminated, in the work of Günther Anders (Arendt's first husband), in a vision of humankind rendered obsolete by technology (Anders 1956; 1980).

For all their perceptiveness concerning the inexorability of technological development, these thinkers were unable at the time to look beyond the horizon of the human, which they placed at the center of their analyses, failing to take the environment, animals, or plants into account. Moreover, rather than understanding technology as active in its own right, they view it as a development driven forward (sometimes beyond all measure) by humans that also has the potential, ultimately, to destroy humankind. In the 1980s, this began to shift. With media and communications technologies playing an ever more prominent role in everyday routines and contexts, the global networks organizing politics, the economy, resources, and the climate—the life of humankind in and with this world—came more and more clearly into view. This development is strikingly embodied in the advent

of personal computers, the launch of the worldwide web, and finally, in 2007, the arrival of smartphones.

In "A Manifesto for Cyborgs," Donna Haraway (1990) summed up what was in store for the Global North and South in the near future: having learned to control and correct themselves since the beginnings of cybernetics, machines would intervene as active agents not only in mechanical workflows but also in organic processes. Life would become a technically controllable process. As well as experiencing this development, however, the twentieth century also paved the way for it in epistemological terms. From psychoanalysis through poststructuralism, there is the operative notion of a void "inside" the subject. Of course, Sigmund Freud did not conceive of the unconscious in psychoanalysis as a technical inscription, but it did localize a void within the human subject, opening it up for "grammatization" (Bernard Stiegler) by media technology. For Friedrich Kittler (1990), it was no problem to rewrite or translate unconscious processes into technical ones. Besides psychoanalysis, it was above all poststructuralist theories that identified an "originary deferral" (Jacques Derrida). Although some now blithely claim thus divide has been bridged by technology, only via a shift to different, *non-human* agents can technologies be grasped and taken seriously as coactive agents. In addition to Haraway's figure of the cyborg, initial steps in this direction were also taken by Bruno Latour and his actor-network theory (ANT) (2004), moving the human subject away from its privileged position. Meanwhile, animals and plants, Gaia, and other significant Others have become cohabitants and companion species (Latour 2018; Haraway 2003).

Although there are many examples of technological developments being equated with concepts like the Freudian unconscious with reference to a "digital or technological unconscious," (Thrift 2004) in my view this is indicative more than anything else of an ongoing search for concepts capable of articulating the media-technological transformations and instances of human-machine coupling that are unmistakably reorganizing

26 human “nature.” A digital unconscious has little to do with psychoanalytic-poststructuralist models, pointing instead to other material-discursive entanglements, such as those Isabelle Stengers sees emerging in the interlocking of nano-, bio-, and information technologies, a process that is no longer geared toward expanding knowledge and that has long since triggered far-reaching transformations (see Stengers 2011).

Affective *Dispositif*

In my book *Desire after Affect* (Angerer 2014a), I introduced the notion of an affective *dispositif* (as opposed to Michel Foucault's (1979) *dispositif* of sex as a way of countering the affective turn (Clough and Halley 2007) that had been restructuring the humanities since the 1990s; the book brought into play a concept of affect that points (in a Foucauldian sense) to a new shift in the structures of power. In my view, rather than bringing to an end a prolonged suppression and repression of emotions, the euphoric embrace of the concept of affect represents an alignment of the human body with its technical environment and with its non-human *companions*. New zones of contact and touching emerged, new interfaces that no longer act as connections between human and machine, designed instead to facilitate a snug fit between the corporeal and the machinic.

Well-known examples include nudging (Thaler and Sunstein 2008) and self-tracking. Nudging implies gently pushing someone's decisions, thoughts, or perceptions in a specific direction without the person in question noticing that this manipulation is taking place. Today, people are being nudged by increasing numbers

of systems: the advertisements that constantly pop up online, messenger notifications with their ringtones, and status updates for postal deliveries, among many others. For their nudge theory (in politics), Richard Thaler and Cass R. Sunstein (both former advisors to Barack Obama) drew inspiration from the work of Daniel Kahneman and Amos Tversky, who have published many studies on how decisions are made. In 2011 Kahneman published *Thinking, Fast and Slow*, in which he presents his theory of two systems of perception. In his view, humans live irrationally, meaning not the opposite of rationally but pointing instead to distinct systems of thought that act in different ways and respond at different speeds. System 1 acts in a way that is fast and uncontrolled, meaning that things are perceived without being registered consciously; processes of recognition and translation take place without drawing particular attention to themselves. System 2 is slower, drawing abstract conclusions and developing complicated models of thought. According to Kahneman, people live primarily with System 1. Nothing proves this theory more clearly than the torrents of hate speech and the shitstorms on social media (with their huge impact on politics and the public sphere). In the following sections, I will return to this "automatic" System 1 (albeit with a decisive affective twist). External nudging is accompanied by self-tracking, and talk of a "quantified self" movement (see Lupton 2016) highlights the degree of acceptance such self-monitoring now enjoys. Armbands, subcutaneous chip implants, smartphone apps that count, measure, evaluate, and pass on data to insurers and others—all range from the voluntary to the unavoidable since in the vast majority of cases users are unable to either find out or determine who has access to which data. In spite of skepticism and warnings from within society, developments aimed at dovetailing brain and machine, pursued by people like Mark Zuckerberg and Elon Musk, continue unabated. Although neurosurgery is able to announce the occasional success—like prostheses moved by mental effort (meaning brain processes are driving technical processes)—most such techno-organic linkups remain in the realm of the speculative.

What the affective turn has made clear, however, is the possibility of expanding technological intervention into a dimension that was previously inaccessible, hard to control or predict. While Foucault identified sexuality as a powerful tool for the control of populations in the last third of the eighteenth century, a role it played into the middle of the twentieth, since that time a shift toward an affective repertoire of intervention has been observable.

In the early 1960s, Silvan Tomkins positioned his affect model (1961; 1962; 1991; 1992) explicitly in opposition to psychoanalysis and its theory of drives (life and death drives). But his work was not to receive significant attention until several decades later, especially within two groups. The first was the circle around Eve Kosofsky Sedgwick, who based her thinking about queer desire on Tomkins's model, recommending it to cultural studies on account of its openness and freedom (see Sedgwick and Frank 1995). The affect model, she argued, could be equated with the computer in its quality as a universal machine (capable of processing images, texts, and sounds, breaking them all down into zeros and ones, and then reassembling them), whereas psychoanalysis with its drive model was like a typewriter, enabling only a single translation. How far this critique of psychoanalysis falls short is something I have written about elsewhere (see Angerer 2014a, 55-58). The second group had links to Tomkins himself via his student Paul Ekman, whose universal facial action coding system (FACS) formed the basis for research and development on affective computing (see Angerer and Bösel 2016).

Thanks to its adaptation of systems theory, Tomkins's affect model became one of the axes of discourse around affect within cognitive science. In this field, cognition is now viewed as *embodied*, *embedded*, *enactive*, and *extended*—as a process between brain, body, and environment (see Newen, de Bruin and Gallagher 2018). As well as being defined in extensive terms (to include consciousness), cognition is understood here as a

process that may involve machines: computing and the resulting decisions, pattern recognition, and high-volume data processing allow cognitive operations previously performed exclusively by the human brain to be delegated to machine processes. This view of cognition is advocated, among others, by N. Katherine Hayles (2017), who speaks in this context of nonconscious cognition, a concept I will return to later.

Besides cognitive science, it is neuroscience in particular that has undergone a reorientation toward a special role for affect-based brain activity, stressing that it is not so much cognitive processes that guide our thoughts and actions but above all deep-seated, ancient affects. In the early 1990s, Jaak Panksepp coined the term "affective neuroscience" (2003) as a way of underlining the need to distinguish between affective emotions and cognitive processes. This is also addressed by Catherine Malabou, whose work I will also return to below. Her definition of neuroplasticity introduced an auto-cerebral nonconscious that she contrasts with the Freudian unconscious.

In the light of the various developments outlined above, the affective *dispositif* can be said to have prevailed, now shaping scientific discourse, technologies, and everyday life. Consequently, we need to reexamine a notion like that of the nonconscious, asking whether, in a technological context with nonhuman players, it performs different kinds of tasks and functions. In the new affective zones of contact and transition, what takes place is not repression in the psychoanalytic sense but rather a transfer/translation of signals into data and of data into sensory and meaningful information.

It is, however, not only in the abovementioned fields of cognitive science and neuroscience that the concept of the nonconscious is being used. Process and relationality are also being placed at the center of approaches in new materialism and in media theories. In addition, interactions are often described as intra-active

processes, stressing that the actors and agents emerge after the fact.

As a focus within the affective *dispositif*, the concept of the nonconscious highlights a zone in which a double movement takes place: on the one hand, a technical intervention in sensory perception and sensation and, on the other, new potential connections between bodies and environments—a new level of organic and technical synching. This double movement means not withdrawal/renunciation (as in the case of the psychoanalytic unconscious) but coupling: digital technologies enter the sphere of somatic/organic sensation, and at the same time, the somatic-sensory apparatus snuggles up to environments augmented with media technology. The fact that these processes do not always run smoothly, that the synching can get out of synch, is one I will return to below.

Another key question here is whether intelligence, consciousness, and cognition can still be understood as purely human faculties, or whether "smart" technological companions (Alexa, self-driving cars, networked cities, robots in hospitals and old people's homes) should be taken seriously as relevant factors. In 2000, Zoë Sofia coined the term "container technologies," exploring the then still unusual-sounding notion of a subjectivization that is at once mental and technical as technologies encase the human mind. In my view, this idea extends that of a nonconscious coupling of human and nonhuman agency.

Psychophysical Threshold and Affective Subconscious

Today's coupling of human and nonhuman agency was preceded by that of physiology and psyche in the nineteenth century, leading to many experiments on physical reactions and their translation from the sensory apparatus to the mind. How does light falling on the retina become an object before the eyes? How does a signal become a sound? How does a body navigate its environment without conscious control, placing one foot in front of the other without stumbling? And finally, where and how is all this organized? How much time passes before the brain responds? Is this interval the same in all humans, or are there differences allowing significant and discriminatory conclusions?

Synching Body Time

This development was sparked by Johannes Müller's discovery, via physiological experiments conducted in the first third of the nineteenth century, that the entire body is involved in the process of perception. In *Techniques of the Observer*, Jonathan Crary (1990) describes this turning point and shows how the focus has since

shifted to the body as the center of perception. Further studies followed Müller's, dissecting the body's inner timing under the microscope and recording it using complex apparatus.

In 1849, Hermann von Helmholtz conducted experiments on reaction times, becoming the first to record the tiny amount of time taken by a signal from the skin, for instance, to reach the brain. He presented his findings to the Parisian Academy of Science, an event recounted by Henning Schmidgen in his book *The Helmholtz Curves* (2004). The notion of a "missing half second" (Angerer 2011)—popularized among others by Brian Massumi's works on affect from the mid-1990s—began its career here, spreading to all fields of science, the arts, and the media in the decades that followed (Canales 2009). The discussion of this significant interval continued in the twentieth century in cybernetics and is now referred to in neuroscience as the "short delay."[1] Against the backdrop of the debate between Henri Bergson and Albert Einstein about subjective time as duration and a measurable objective time, Norbert Wiener and Max Bense claimed Bergson's subjective duration for their cybernetic machines, bringing a kind of mechanical subjectivity into play, thus also equating the human sense of time with that of a machine. This is where we first hear of a synching of psyche and technology, described by Wiener in 1948 as follows:

> Thus the modern automaton exists in the same sort of Bergsonian time as the living organism; and hence there is no reason in Bergson's considerations why the essential mode of functioning of the living organism should not be the same as that of the automaton of this type. (Wiener 1965, 44)

In the 1950s, Max Bense returned to this comparison, claiming that the time interval forms the basis for the commensurability of machine and human. Unlike humans, however, machines can compute at unhuman speeds. The interval that remains "open"

1 www.consciousentities.com/libet.htm (accessed June 30, 2021).

in the human organism is "closed" by cybernetic computing machines thanks to a speed that is beyond human comprehension. "The cybernetic machines exhaust the tiniest interval. One addition takes a five-millionth of a second; ten million additions or subtractions of ten-figure numbers can be done in five minutes" (Bense 1998, 440, translated by Nicholas Grindell).

Digitality and temporality are intrinsically interrelated, as media studies in recent decades has underlined with an increased emphasis on the artificiality of any sense of time. This quality of time and its encroachment on the structures of society is especially clear in the global networking of the internet and the use of smartphones in all everyday situations. Time becomes indistinguishable—neither purely technical-empirical nor purely human-subjective. In *Prozess und Zeitordnung*, Isabell Otto describes human experiences of time as being "shaped by micro-processes of media objects in the digital sphere" (2020) in a reality outside of time that take place. The impact of digital media on our sense of time is predicated to the following: digital processes are the condition of today's temporality, and the human experience of time is shaped in important ways by autonomous (nonhuman) processes that play out beneath the threshold of perception. Using the concept of "prehension"—a term I will be using often below—Otto transfers Alfred North Whitehead's process philosophy to today's media of grammatization (as Bernard Stiegler has called them). Whitehead conceives of time as fundamentally discontinuous and not, like Bergson, as continuous duration. In his view, life begins in the interstices, between cells, between times. These interstices—the cracks between discrete packets of data, the gap between input and output spanned by the relations between actual entities, data packets, and network nodes—weave a web of time that may appear continual and real to users. If subject and object status (user position and technical environment) are not conceived of as fixed entities preexisting an interaction, and if "asynchronous practices" or "co-presence" are viewed as processes that bring

forth actors, then this new situation necessarily calls for new formulations. And instead of speaking here of an interface, it is more appropriate, as Otto stresses, to refer to "interfacing" (127-134) as a process that not only causes its poles to emerge but is in itself permeable.

Liminal Experience and Intensity

The timing of the body extends to its interactions with its surroundings, a relationship discussed differently by the various sciences in accordance with their specific traditions of thought. In his history of the concept of milieu, Georges Canguilhem shows how nineteenth-century biologists borrowed it from mechanics, using a very one-sided definition. Auguste Comte, for example, viewed the living organism as being influenced (and kept alive) by its milieu (via the variables of air, water, and light), while ignoring the influence of the organism on its milieu. In Comte's view, only humans actively intervened in their milieu (see Canguilhem [1952] 2008, 98-120). During the first half of the twentieth century, this model of the thermodynamic body increasingly forfeited its validity, giving way to other (conceptual) models, like that of dissipative structures (as studied by Alan Turing and Ilya Prigogine).[2] Around the turn of the century, however, another view of the relationship between organism and environment had begun to emerge, as the biologist Johann Jakob von Uexküll presented his theory of *Umwelt*, emphasizing the specific realities of different living beings. In his view, the specific apparatus of each individual organism—its operational and perceptual organs, as Uexküll puts it—defines its distinctive *umwelt*: how it perceives and intervenes in the world it inhabits. At the same time, each organism is nourished and kept alive by its *Umwelt* in a specific way (Uexküll 1930, 130). Later, this theory was to play a prominent role in the work of Gilles Deleuze and Félix Guattari, who used Uexküll's theory as the basis for their notion of "melodic compounds"

2 https://de.wikipedia.org/wiki/Dissipative_Struktur (accessed June 30, 2021).

(Deleuze and Guattari 1994, 185) that blend nature and culture. This concept in turn connects with Patricia Clough's (2010) concept of a "bio-mediated body", a processual view in which the affective body becomes part, via its technologically augmented surroundings, of self-organizing dynamic structures.

As it has evolved since the early nineteenth century, the threshold between body and environment runs parallel to a threshold between psyche and organism: the living organism is structured by a delay in time, while its rhythm is determined by the intensity of its sensory inputs.

Intensity is a notion that emerged in the eighteenth century in the context of the Enlightenment. Alongside quality, quantity, and extensivity, it was part of a terminology that was both philosophical and mathematical (see Kleinschmidt 2004, 36ff). Rather being merely a scalar variable, however, intensity always also contains a potential for processual development (in an anthropological sense). From the outset it oscillated between nature and culture, between sentience and effect. It names what is always already holistic, marking something akin to a zero point. In the nineteenth century this philosophical discourse, centered on Kant and his distinction between extensive and intensive magnitudes, was transferred in the natural sciences into a psychophysical parallelism. Gustav Theodor Fechner defined intensity in terms of stimuli, the magnitude of stimulus that must be attained in order to cross a "psychophysical threshold" and in particular an aesthetic threshold. But Fechner himself also marks a threshold, introducing a new approach that promised to connect mind and body in a way that could be grasped in mathematical terms (see Wegener 2005). Freud repeatedly stressed how much he owed to Fechner's thinking, including him in *The Interpretation of Dreams* (Freud [1900] 2010) as the originator of the notion that "the scene of action of dreams is different from that of waking ideational life" (538).

Intensity is also one of the central concepts marking opposition to modernity and its figures of knowledge in the twentieth century. Right at the start of his book *Intensities*, Francois Lyotard strongly rejects the system of representation:

> Inasmuch as we proceed to *speak here*, we remain within representation . . . The walls of this castle are the walls of the museum, i.e., the setting aside of affects and the concepts' privilege of extraterritoriality, the storing away of intensities, their quiescence, and thus their "mise-en-scène." (1977, 44)[3]

Intensity also plays a central role in the works of Gilles Deleuze and Félix Guattari. In *A Thousand Plateaus* ([1972] 2002, 232f) they define "becoming-intense" as a moment inscribed in becoming, a moment of sensory experience without which mental development is inconceivable. And in *Difference and Repetition* Deleuze ([1968] 1992) writes:

> Between the intensive and thought, it is always by means of an intensity that thought comes to us. The privilege of sensibility as origin appears in the fact that, in an encounter, what forces sensation and that which can only be sensed are one and the same thing. . . . In effect, the intensive or difference in intensity is at once both the object of the encounter and the object to which the encounter raises sensibility. (145)

In *A Thousand Plateaus,* Deleuze and Guattari describe series and structures that are present simultaneously, constantly changing, switching, connecting, exchanging, and redistributing intensities. For this, they refer to Spinoza and his conception of bodies as determined by stillness and motion, by speed and slowness. Affects appear here as "becomings," described as the latitudes of a body: "*Latitude is made up of intensive parts falling under a capacity, and longitude of extensive parts falling under a relation*" (Deleuze and Guattari [1972] 2002, 257, italics in original). This

3 The English standard version has been modified by Nicholas Grindell.

means that affects dwell at the transitions, they guard the interval—guarding against closure.

At this point I would like to refer back briefly to the time interval, which figures here as the location of affect and which, besides the abovementioned definition of affect as signal (Tomkins), relates to the other important family of definitions (beginning with Deleuze, drawing on Spinoza's affections, and brought into the debate by Brian Massumi) which define affect as something that appears and vanishes again too quickly to be perceived. In the "Autonomy of Affect," Massumi (1996) presents what still reads as a remarkably condensed theory of affect: affect is intensity, points to the pre-individual (as described by Simondon), and belongs to a different order of knowledge; the missing half-second is not empty but overfull; and all transitions are dynamic.

Today it is abundantly clear how fundamental a role is played here (alongside Simondon) by Whitehead's process philosophy. What in Deleuze and Guattari's work takes place between latitudes and longitudes on the plateau of the senses is attributed by Whitehead to the dense texture of reality that oscillates between subject and object to establish "how order in the objective data provides intensity in the subjective satisfaction" (Whitehead [1929] 1978, 88). For Whitehead, intensity is directly connected with the question of survival. To organize this survival, nature must produce societies that "are 'structured' with a high 'complexity' but which are at the same time 'unspecialized'" (101). This means that the question of intensity is a question of the "ordered complexity of contrasts." (100) In one extremely vivid passage, Whitehead describes how humans, as "enduring objects with personal order" (161), experience their lives, their surroundings, their existence. Half awake, sleeping, dreaming, remembering, concentrating on feelings—"a torrent of passion" (161) —the human individual is oblivious to all else. What stands out in our consciousness, then, is not "basic facts" but rather the "derivative modifications which arise in the process" (162). The consequences of neglecting this basic distinction,

as Whitehead stresses, are "fatal to the proper analysis of an experient occasion" (162). The most primitive form of experience is emotional, a "blind emotion" (162), and in the higher stages of experience this corresponds to "sympathy, that is, feeling the feeling in another and feeling conformally with another" (162). With reference to primitive feeling, Whitehead speaks of "vector feelings" and "pulses of emotion" (163) that are partly responsible for providing contrast. Here again, then, we have contrasts that are responsible for an intensity that has little in common with feelings, as we are used to calling them. Whitehead is very clear on this: feeling in human and animal experience is not merely emotion but has always already been "interpreted, integrated, and transformed into higher categories of feeling" (163). The vector system used by Deleuze and Guattari with reference to Spinoza appears in Whitehead's work as "dimension of narrowness and dimension of width" (166). The dimension of narrowness is that of the "intensities of individual emotions," while the dimension of width results from the higher stages of complexity. The "ocean of feeling" (166) permitted by "savoring the complexity of the universe" is due to the dimension of width, while the "emotional depths at the low levels have their limits" (166). Here, Whitehead defines consciousness as "supplementary feeling" (165), which does not necessarily contain a "conceptual feeling" (165) where contrasts are allowed or rejected.

In recent years, most prominently in the context of media studies, theories of affect have also used Whitehead's concept of prehension to describe perceptual processes that take place prior to any subjective perception. What Whitehead referred to as "blind emotion" (emotion should be understood here as a technical term) is the primitive form of physical experience, a "blind emotion—received as felt elsewhere in another occasion and conformally appropriated as a subjective passion" (162). In this "theory of feeling" the subject (as a "superject") becomes "the purpose of the process originating the feelings" (22). In Whitehead's view, conventional theories of feeling were marked

by a fundamental misunderstanding that lay in their privileging of visual perception. He criticized this assumption—"I see something, therefore I perceive it"—by pointing out that this seeing must always already have been preceded by an appropriating process of abstraction ("prehension"), as a result of which "the feeling is subjectively rooted in the immediacy of the present situation" (163). Whitehead thus uses the term prehension to denote a non-sensory, sympathetic earlier experience that renders the current one abstract (see 116-121).

Intensities and Media Technology

In his book *The Life Intense: A Modern Obsession*, Tristan Garcia brings the theme of intensity up to date (Garcia 2018). He locates intensity in the development and spread of electricity in the nineteenth century. In his view, the age of enlightenment was an electrified age: the invention of the lightbulb, attempts to measure bolts of lightning, and the hysterical fad of mesmerism all point to an irreducible moment, point zero. Garcia's theory can be summed up as follows: the new technology is transposed onto nature, and then nature is fed back into society. Despite the electronic augmentation of humans and the world they live in, he argues, what we are seeing today is the opposite: exhausted people and fatigued societies. The exhaustion of humanity is a familiar talking point that needs no repeating here. Such analyses usually blame "the media" for somehow exceeding the human brain's receptive capacities with their flood of images and sounds. Garcia is more specific, blaming the end of intensity on electronics (rather than electricity as a natural phenomenon that affected/electrified humankind). "In the electronic age," he argues, "data is transmitted by electric current, but electricity no longer excites our imagination" (134). Instead, intensity is surrendered to the flow of data, which no longer demands intensity, merely breaking down and reassembling information.

42 Coming to a similar conclusion, although in an entirely different context, Oliver Marchart calls for an "affectology" capable of dealing theoretically with processes of intensification with and via amalgamations of media technology. That is because, as he writes, "the feeling of outrage" and "the affect of outrage" are miles apart (Marchart 2013, 443, footnote 18, translated by Nicholas Grindell). What makes him so sure, and what is this distinction based on? The difference lies in the antagonism that Marchart equates with intensity. Recalling Massumi's definition of affect as intensity, it now becomes clear that affect-equals-intensity-equals-antagonism forms the basis for a theoretical short circuit. In Ernesto Laclau's poststructuralist analysis of democracy, antagonism acts as a kind of flexible joint. And it does so in three ways, in line with Slavoj Žižek's model of inner segregation as ontological difference: the unresolvable and indissoluble difference between nature and culture (what Žižek calls the "vanishing mediator"); the unbridgeable gap of the real, which precedes all difference; and a "minimal difference" resulting from the fact that the subject is never full, its gap never filled (with itself) (see Žižek 2006, 44). Laclau posits this social antagonism as the foundation of every societal organization, as that which necessarily escapes closure, being tacitly presupposed. But Marchart (2013, 437) now defines it as that which cannot be quantified, experienceable as intensity only in its intensity.

Marchart's concept attributes no antagonism to media technology, however, granting it not a co-constitutive role but only an amplifying, transmitting one that connects the bodies on the street with the bodies in virtual spaces, in front of screens, and mobile devices. What remains unclear is how this encounter with the real (of affect), the switching or tipping associated by Garcia with electrification, actually takes place, how it inscribes itself into bodies and what happens next. Because it is not, as Marchart writes, an unfolding (in the sense of the Deleuzian fold) of the "quivering self" (437) into the social but a movement toward a specific egoless state, a nonconscious (un)folding in the body.

Today, it has become very clear to what degree digital operations intervene in perception, decision making, surveillance, and prediction, in some cases even taking control. To date, however, little attention has been paid to the ways these externalizations (which in many respects can also be understood as internalizations) affect human beings. Detailed descriptions now exist of how numerous operations are controlled by (sensor) technologies and the algorithms of artificial intelligence, but how they operate and how this shapes experience as a whole remains unexplored. And this is not resolved by Garcia naming the resulting ethical dilemma an "ontological antagonism" consisting in the radical separation of thinking and living: "Living makes us intense," he writes, "but thought makes us equal" (2018, 142). Although he doesn't make it explicit, this dilemma unmistakably aligns him with Jacques Lacan's divided subject, split along the line between being and thinking (see Lacan 1998). But what if, instead, there was a third term in the form of a technological agency linking the psychoanalytically divided areas? If Lacan's famous "suture" (Miller [1966] 1978)—joining psyche and body— took a different route, leaving behind the threshold inserted by Freud between soma and psyche?

Subconsciousness

Besides Whitehead, Gilbert Simondon has also helped to shape my thinking on media theory, and I would like to outline his analysis of collective, psychic, and technical individuation, which adds a further dimension to the notion of the nonconscious. Simondon published *On the Mode of Existence of Technical Objects* (2017) in French in 1958, but the book did not become known to readers of German and English until many years later, while many of his other works are only now being translated. This current interest in them is no coincidence, however, as his conceptual framework appears to have anticipated many of today's developments and debates. Simondon sets himself apart from both psychoanalysis and cybernetics, opposing both the equation

of machine and human postulated by Norbert Wiener and the special status of the psyche advocated by Freudian psychoanalysis. Instead, he takes his cues from gestalt theory and, if at all, from a collective subconscious (with reference to C. G. Jung). He is interested primarily not in what technology is but in how it is implemented, in where and how it creates locations (technical milieus such as factories). This dynamic, relational theory of technical objects is conceived of in conjunction with the human individual, whose process of individuation takes place with and via these technical "gestalts." Of central importance for my argument here is the fact that in his critique of psychoanalysis, Simondon postulates a subconscious that he localizes as a distinct layer or level between the unconscious and consciousness without it being accessible to consciousness (unlike Freud's preconscious). In addition, Simondon explicitly equates this subconscious with affect:

> At the limit between consciousness and the unconscious . . . there is the layer of subconsciousness, which is essentially affectivity and emotivity. This relational layer constitutes the center of individuality. The modifications of this layer are the modifications of the individual. (2020, 273)

He goes on to describe the activity of this affective-emotive center as "quantum reorganization," meaning that modifications take place across thresholds. Simondon thus positions himself between Silvan Tomkins and C. G. Jung, positing a collective-mythical subconscious that modulates mental individuality depending on signal strength. Tomkins established his affect model against the backdrop of information theory, distinguishing between negative, neutral, and positive affects. Ultimately, this distinction stems from a very old understanding of passions (pathos): the less the body is moved, the calmer and more depressive the person; the stronger a signal is, the more lively, alert, and aggressive they become. But this model can also be linked with Fechner's psychophysical threshold, a notion centering on a movement between positive (conscious) and

negative (unconscious) feelings. Finally, Jung thought individuals were connected by shared mythical symbols that manifest in the subconscious. Interestingly, there is currently an astonishing level of interest in Jung's collective subconscious, partly due to a misunderstanding of Jungian theory but also seemingly in keeping with a way of thinking for which reference to the brain's "ancient layers of affect" is a sufficient explanation. Simondon argues firmly in the spirit of his time: referencing gestalt theory and Merleau-Ponty's concept of corporeity as well as criticizing psychoanalysis (like many since the 1970s, especially against the hegemony of Lacanian psychoanalysis) for failing to account for affect and instead subsuming all materiality under a purely textual dimension. Simondon posits the affective-emotive subconscious as the layer that connects the human individual as an organism to all other living organisms. But his subconscious can certainly also be linked to the research into schizophrenia that was being conducted at the time. Inspired by cybernetics with its focus on feedback, Gregory Bateson proposed an explanation of psychosis in terms of disrupted communication. What Simondon refers to as a subconscious layer now corresponds with the relational aspect, as distinct from the content aspect. In cybernetics, when the question of an unconscious (in the human brain) arose, it was defined as a neuronal network. Bateson advocated this comparison, arguing among others that the human unconscious (if such a thing exists) can only be perceived from outside, that it is not accessible to self-reflection. This assigned the unconscious the status of a zone both intimate and extraneous—the position it now occupies in neuroscience and in discussions around neuroplasticity.

But to return to the relational aspect: Bateson attributes this unconscious dimension to the double coding of language ("it is that doubleness which gives this conscious-unconscious quality to it" [Pias 2003, 319]). That is because the person who speaks has no control over either aspect; the speaker is spoken both by language (as a system) and by the body. The relational aspect

is the tonal-mimetic-gestural packaging of the content (facial expression, voice pitch, body posture, eye contact). Where content and relationality are at odds (the so-called double bind), a psychotic collapse takes place. This definition is now outdated in therapeutic terms, added to which it presumes that sender and receiver are both capable of distinguishing what must be communicated and how the speech act is done correctly to avoid provoking a psychotic collapse. What strikes me as important here, however, is that this relational aspect resonates with a layer that Simondon frames as the pre-individual and that Massumi includes in his definition of affect—a dimension that goes beyond or cannot be localized within the individual.

A Non+human Phase: From Pre-individual to More-Than-Human

At the end of an interview with the editors of *Gilbert Simondon: Being and Technology*, Brian Massumi refers to a nonhuman phase as the way forward, saying he prefers this viewpoint to any posthumanist discourse. He defines this nonhuman as "the 'dephased' heart of every individuation, human and otherwise" (Boever et al. 2012, 36) that catapults the pre-individual into a becoming. I want to deal in more detail with this prior nonhuman as it forms a bridge, possibly an intra-active link, between the digital and the organic. In my remarks, however, I prefer to speak of a *non+human* phase in which these dimensions, previously conceived of as separate, are joined.

I referred above to the equation of antagonism and intensity as a surprising turn—surprising not least because it seems incompatible with Laclau's theory, according to which antagonism operates in the discursive register. In Laclau's model, however, antagonism is accompanied by the dimension of dislocation as a prior shift that is "beyond representation as well as . . . both traumatic/disruptive and productive" (Stavrakakis 1998, 185). With the notion of dislocation, Laclau bridges the gap between

the real (Lacan 1992), introduced by Lacan as a category distinct from the imaginary and the symbolic, and the originary deferral of Derrida's *différance* (Derrida 1978). Both concepts refer to a psychoanalytic-poststructuralist void, the zero-movement required for life to unfold. In today's discourse, such an inner void is not only called into question but "filled out" in technological terms. Originary deferral has thus long since been translated into a (neurological) short delay. This also means that referring to something beyond the subject no longer necessarily opens up a mental or spiritual/mythic dimension; instead, the focus is on organic-technical processes that take place outside the range of our perceptions. In other words, neither a collective unconscious nor a cosmological explanation of the world is necessary to recognize material-technical movements as a dimension that plays a part in what Heisenberg called the drama of life. One might also say that the new materialist theories developed by Haraway, Barad, and many others since the 1990s articulate a critique that gained strength at the end of the last century: refusing the hegemony of the text and of language, and of a subject "split" by lack and, ultimately, the predominance of the human in general. In the following section, I will connect Massumi's "dephased nonhuman" with this notion of dislocation.

Natureculture+

During an important early phase in fundamental debate on feminism (from the mid-1980s through the 1990s), language on the one hand and body/nature on the other were the two sides in a fraught dialogue between rejection and affirmation, (natural) basis and (sociohistorical) construction, and "body as text" (Judith Butler) and corporeal experience rooted in phenomenology (Barbara Duden). During this period, language and body marked "stopping points." I now want to discuss the shifting of these markers, prompted by theories that question established assumptions. For language is not the house of the world, nor is the body a singularity within it.

Some years ago, Luce Irigaray and Michael Marder, author of *Plant-Thinking* (2013), conducted a dialogue that was published under the title *Through Vegetal Being* (Irigaray and Marder 2016). The book contains a remarkable passage by Irigaray that closely resembles Haraway's (2016) "making kin" (but in a different theoretical context): "our desires do not first aim to procreate but to create links between us" (Irigaray and Marder 2016, 66). She then articulates something already included in *Speculum of the Other Woman* (Irigaray 1985) in 1974: the need to grasp nature as the basis of all life in order to become fully human. What amounts to a radical deconstruction of Western metaphysics continues here. But unlike many other writers who articulate a critique of the special status of humankind and its irrevocably negative interventions in the world, Irigaray insists on the necessarily "sexuated nature" of humans. Her main argument is a psychoanalytic one: unlike plants and animals, humans have a sexuated desire that drives them to constant further development and that also gives them greater responsibility. This should be understood not as a process of individuation, however, but as one of double growth,

> which makes their becoming more complex and largely still to come. . . . Not only are their roots never one but at least two, but their growing also intertwines with that of others, especially others who are different; which renders their becoming hybrid and uncertain in its motion and direction. (Irigaray and Marder 2016, 80)

Irigaray views this desire as that which permits humans to engage (at all) with the world that surrounds and shapes them. I would like to think this double process of individuation together with Simondon's pre-individual. But one can also recall Barad's concept of intra-action—as a facilitator of relations between human und nonhuman. In both cases, becoming is central, with gradual transitions that shape indeterminacy into actual entities. Here, as in Whitehead's "prehension," the exclusion of the material surplus, described by psychoanalysis in terms of the irruption of the

real, is involved as a constitutive element in order to grasp the individual as entangled und dividuated (see Ott 2015).

Milieu and Membrane

For Simondon, this double individuation is psychic and collective, with each half itself already double due to an inherent and radical open-endedness. And Simondon's concept of the pre-individual shows how important he was for Deleuze and especially for Massumi's definition of affect, which accords a central role to the virtual as a potentiality that becomes—partially—actual. To introduce a psychic dimension, Simondon develops an ontology of the affective that can be viewed as an operation of translation as the affective translates intensive sensations and transforms them into its "associated milieu," where they become accessible to experience. Individuation process and milieu belong together, which is best explained as intra-action—not in the sense of an environment (or *umwelt*, as in Uexküll) but as a process of permanent exchange (Barthélémy 2012, 207). Elsewhere, rather than using Simondon's term "associated milieu," I have spoken of an affective milieu. My use of this term also refers to the work of Daniel Stern, who presented his theory of vital affects long before the affect hype, distinguishing between different affective phases that (unlike Freud's phases of sexual development, which follow one from the other) all remain in place, merely moving more or less into the foreground depending on a person's specific life situation. Stern, too, speaks of a process of becoming, of an increasingly integrated network out of which a trans-subjective position develops (see Stern 1985). For Stern, it is the skin that plays a central role in these processes as the vehicle for the first and all subsequent experiences of "self." Whereas for Freud the self develops out of the sack of skin (see Anzieu 1989), here the skin forms the basis for the affective dimension of touch throughout a human life. I recall once more Massumi's claim that the skin is faster than the word—that it always "knows" more, receives more input, and processes it quicker than cognitive

operations ever could. For Simondon, it is the membrane that is marked as the central "hub": "it maintains the milieu of interiority in relation to the milieu of exteriority" (Boucher et al. 2012, 98). In his view, the membrane defines life—"the living lives at the limit, on the borders" (Sauvagnargues 2012, 68)—which emerges from inside but always remains within its confines (Boucher et al. 2012, 99). The membrane generates opposing inner and outer milieus as lived time—a living "relay" as a protective layer regulating passage.

Organo-technical process of perception and sensation

If, as sensualism claims, sensory experience is all that renders the world accessible to experience and hence to understanding, what does it mean if this sensory apparatus can now be not only technically expanded but also technically substituted so that sensor technologies take the place of human senses?

> Today, machines observe, record, sense the world—not just for us, but sometimes instead of us (in our stead), and even indifferently to us humans. . . . These machines are helping enact a human-machine communication network wherein self-measurement is not just a discrete activity, but an environmental or background process. (Hong 2016, 2)

But how should this machine-human relationship be imagined on the sensory level alluded to here? As Sun-Ha Hong continues in the text quoted above, rather than being instruments or mere extensions as described by McLuhan, these machines communicate with one another and parametrize the world for us.[1] Hong claims that digital technologies enter into an actual

1 "The nature of that encounter is not instrumentality, or even McLuhanian extension, but a full-blown 'relationship' where the terms by which machines 'experience' the world, and communicate with each other, parametrises the conditions for our own experience." (Hong 2016, 1)

relationship with humans—a full-blown relationship that means not an extension or amplification of existing sensations but distinct activities that interlock with the human sensory apparatus without conscious control. Attempts to analyze this human-machine relationship usually assume some form of adaptation (of the one to the other), commonly suggesting that machines impose their "grammar" on humans and that human actions become increasingly "mechanized." But Hong's position is slightly different: in his eyes, we remain human, while the machines provide added options for perception and experience.

A specific example would be the development of hearing technology. Using terms such as *noise cancelling* and *environmental hearing*, so-called assistive technologies intervene in the human auditory apparatus and connect it with its surroundings (Ochsner, Spöhrer and Stock 2021). Both the surroundings and the sensory apparatus acquire a new artificiality of hearing and sound. In this way, hearing-impaired people can organize a subjective soundscape, filtering the ambient acoustics accordingly.

What is being technically implemented and tested here is what in cognitive science is referred to as nonconscious cognition, a dimension that includes digital and technical operations or outsources functions to them. To describe this form of nonconscious cognition, N. Katherine Hayles has developed a model in which human and machine are crossed, neither remaining distinct nor coming to resemble one another but with human and nonhuman areas overlapping and supplementing each other.

Hayles localizes the interlocking/entanglement of media infrastructure and human and nonhuman agency in a "cognitive nonconscious" and stresses that cognition should be understood as a process with an added nonconscious dimension that comprises capacities such as flexibility and the ability to adapt and evolve. It is the zone where technology and biology meet and where the distinction between human and nonhuman actors shifts to one between "cognizers" and "non-cognizers"—the

former being actors and the latter agents. Cognizers include human beings, biological life forms, and technical systems, while non-cognizers are material processes and inorganic objects. As Hayles also stresses, however, this is not a binary arrangement, but an interpenetration that is continual and pervasive, "that flow[s] through, within, and beyond the humans, nonhumans, cognizers, noncognizers, and material processes" (Hayles 2017, 32f). The nonconscious cognition that Hayles locates on the level of neuronal processes and defines as inaccessible to consciousness can now be empirically demonstrated, proving to be neither a purely human matter nor a purely a matter of media technology. Instead, this zone is currently being divided up afresh: using a three-level pyramid, Hayles declares the human/nonhuman dichotomy to have been overcome once and for all. The top level (the tip of the iceberg!) is consciousness; then comes a slightly broader layer of noncognitive processes (shared by humans and others) and finally a very broad bottom level of material processes in which neither humans nor machines do not act as entities but precede or permeate the other levels (inorganic material processes that could be defined as the site of the psychoanalytic Real or the pre-individual). This reorganized model, whose elements of translation and linking Hayles does not discuss, points clearly to affect, as Armin Beverungen notes, because nonconscious cognition as Hayles defines it takes place "inside the human body in the neuronal processing of information, on a level to which contemporary media theory has assigned the term 'affect'" (Beverungen 2018, 42f). In her view, then, nonconscious cognition takes place in an intermediate zone between human body and media-technological environment to which specific human cognitive faculties are delegated. However persuasive Hayles's model of a redistribution between human and nonhuman agency may be at first glance, it ultimately fails to explain how this reallocation happens and what it implies. It neither accounts for the link between technology and biology nor explores the physical and mental consequences of it. For Hayles, all that matters is a comprehensive machine logic driving

nonconscious cognition. As one of the few media theorists Hayles takes seriously, Luciana Parisi plays an important role here. Parisi deals mainly with the question of how machine and human logics grow together and how computing operations increasingly "learn" from trial, error, and unforeseeable detours, thus generating a kind of "algorithmic self-reflection." Using the concept of prehension (Whitehead), she understands mathematical calculation and information processing in humans and machines alike as open and reversible systems of rules,

> not only because they are responsive to the physical environment which they seek to simulate, but more importantly because their discrete operations become infected and changed by informational randomness. The apparent opposition between affect and computation is here dissolved to reveal that dynamic automation is central to the capitalization of intelligible functions. (Parisi 2014, 164)

Affect is unquestioningly defined here in simple opposition to computation, implicitly pointing to the complex of interventions generally known as cognitive capitalism: the manipulation and exploitation of emotional resources by big data and its "little sisters."[2] *Cold Intimacies: The Making of Emotional Capitalism* and *The Age of Surveillance Capitalism* (Illouz 2007; Zuboff 2019) can be cited here as representative of this field of research that seeks to describe techno-economic interventions that act on humans below or beyond consciousness—that address them on the level of affect.

2 Rosalind Picard introduced the concept of the "little sisters" in order, as she stresses, to diminish the fear of big data, allowing pleasing female helpers like Alexa and Siri to be accepted as new, if different, type of companions. (see Angerer and Bösel 2016, 54)

More-Than-Human

While the pre-individual points to a pre-subjective morphological stage, the more-than-human forms the opposite pole—a future of the no-longer-purely-human that has already begun.

In her foreword to *The User Unconscious*, Patricia Clough (2018) presents an overview of current approaches dealing in one way or another with the notion of a technical/digital unconscious, taking the concept of an "originary technicity" as her basis: *other-than-humans* or *more-than-humans*. The technical unconscious, then, is framed exclusively as nonhuman or more-than-human. But none of these approaches explicitly examine the connection between humans and the technologies operating beneath the radar of consciousness, nor do they address the ways people adapt to these technologies in terms of changes in perceptions of oneself and others. As in the work of Mark B. Hansen, they bring into play a kind of ambient datafication, describing a "self-sensing world" or "worldly sensibility" (2013, 70) that lacks any operations of translation between the human and the nonhuman. Instead, it recalls the transhumanist idea of an artificial intelligence, a "technological singularity" (Shanahan 2015) operating in ways comparable to a collective superego.

Far into the twentieth century, the relationship between humans and machines was conceived of from a human viewpoint, whereas today we are seeing a reversal, with the dominant viewpoint being that of the machines (even if it often remains decidedly anthropocentric). Either the human capacity for thought and perception is combined with that of machines or the latter is privileged on the grounds of the superior quality and speed of its calculations, which more and more often relieve humans of cognitive operations. Viewing the situation from both sides, by contrast, and inquiring into the symmetries and new (old) asymmetries have rarely happened to date.

The Psyche in the Machine

Empathetic Machines

In recent decades, while the human body (within the affective *dispositif*) has opened itself up to machines, enabling them to connect, machines have learned to read humans, to measure and scan them, and to draw conclusions accordingly. Empathetic machines, as Andrew McStay calls them, thus constitute another step in human-nonhuman development. McStay is interested not in whether the machines themselves are empathetic but in the ways they measure, classify, or parametrize emotions, feelings, and affects; what machines reflect back at us can then be referred to as "simulated empathy" (2018, 12), giving humans the impression of interacting with a para-human being. Feedback from machines certainly makes an impact—be it fitness tracking (step count, pulse, etc.), biofeedback (blood sugar levels, heart rhythm, etc.), the prompts and responses of Alexa, or the notifications arriving every second via Twitter, Facebook, and other social media. It is a matter not so much of whether machine agents appear as artificial friends, smartphones, or robots

but of how their actions intervene in the dimension of human perception and action—a dimension that, as noted above, is nonconscious to a significant degree.

But the interconnection of mind and technology took place long before its cybernetic iteration. William Stern, father of Günther Anders and founder of applied psychology, understood this new field as being very much distinct from psychoanalysis. It is no coincidence that the proponents of this theory also included Hugo Münsterberg, who considered cinema to be a perfect arena for psychology: in his view, cinema and mental apparatus form the basis for any film theory (see Bösel 2021, 169f). Freud is known to have been strictly opposed to film, considering it of no worth to psychoanalysis. Instead of seeing cinema as a dream laboratory (like Münsterberg), Freud deciphered the writing of the unconscious letter by letter. Friedrich Kittler (1990) studied writing as one of the pillars of the discourse networks that gripped the souls of readers and listeners around 1800 before breaking down a century later (coincidently with the emergence of psychoanalysis) into a set of unconscious, measurable mental processes. In Kittler's view, the gramophone and the cinema became the unconscious of the unconscious, inaccessible to psychoanalysis, implanting a purely technical perception into the human mind as a phantasm. Hence the strong appeal of (moving) images and sound. Hence the strong appeal—one might further speculate—of zapping, tracking, pinching, clicking, and of the ceaseless checking of data and messages. Such activity is a mechanical reflex that barely responds, if at all, to semantic coding, but is stimulated instead, as studied in gamblers at Las Vegas casinos, by an addiction to specific, learned gestures, by a desire for nonconscious movements. In *Addiction by Design*, Natasha Schüll (2014) presents the results of this study, concluding that those who engage in machine gambling are less interested in winning that in just playing—repeatedly and endlessly. In the development of game design away from the traditional casino layout and toward individual slot machines, a specific, new, trancelike

human-machine constellation takes shape in which the dividing line between machine and human—between compulsion and control, risk and reward—becomes blurred. Bernd Bösel has described the development of affect-sensitive and affect-responsive technologies as a logical step within the process of digitization and as closely linked with the rise of neuroscience in the last third of the twentieth century (see Bösel 2019). Empathetic machines (to stick with this general term) thus constitute one of the basic strategies of the affective *dispositif*, within which they exert their specific influence.

Affective Plasticity

In neuroscience, the term "synaptic plasticity" was prominently introduced by Donald Olding Hebb in 1949. According to Hebb, the plasticity of synapses is apparent in the fact that one neuron can support another. Jean-Pierre Changeux speaks in this context of the "*coactivation* of . . . two cells" that "creates *cooperation* at the level of their contacts" (Changeux 1997, 142). As early as 1890, in *The Principles of Psychology*, William James had already spoken of the plasticity of the brain, stating that organic material like nerve tissue is clearly equipped with a high degree of plasticity and concluding that "*the phenomena of habit in living beings are due to the plasticity of the organic materials of which their bodies are composed*" (James n.d., 64, italics in the original). The constant performance of life reinforces existing pathways in the brain (neural facilitation, memory traces) and causes new ones to develop. But this view was long overlooked, and far into the twentieth century scientists believed that the brain ceased to grow and change at birth or, at the latest, with the onset of adulthood. In their historical overview of notions of neuroplasticity, Nikolas Rose and Joelle Abi-Rached stress that radical changes occurred at the end of the twentieth century. Today, the brain is viewed as an organ that changes throughout its life and that can be shaped and modulated (see Rose and Abi-Rached 2013).

Catherine Malabou introduces the concept of plasticity as a way of inviting neuroscience and cultural studies (primarily psychoanalysis) to engage in a new philosophical debate on the nature of the brain—and thus on the question of mental health and illness. Malabou distinguishes between three forms of plasticity: one of development, one of modulation, and one of recovery (now discussed under the term "resilience") (2009, 68f). Taking these changes as her point of departure, she examines the work of the brain (as Freud examined the work of the psyche) to understand why and how the brain changes. And she finds that the activity of the brain (like that of the unconscious before it) leads a life of its own, whose movements the subject can neither feel nor situate within its self-image—a paradoxical blindness of the subject with regard to its own brain: "*An inability of the subject to feel anything as far as it is concerned. . . . The brain absents itself at the very site of its presence to self. It is only accessible by means of cerebral imaging technology*" (Malabou 2012, 42f, italics in original). Of course, the unconscious as psychoanalysis defines it can be neither felt nor integrated into a body image—revealing itself instead in the famous Freudian slips. And Freud, too, used a technical example to demonstrate these autonomous activities of the unconscious—that of the mystic writing pad (not as a simulation but as a translation aid): every trace ever inscribed into the pad's layer of wax is preserved, even long after it has been wiped from the surface. With this image, however, Freud described the unconscious as something atemporal, beyond the dimension of time. By contrast, the new unconscious entity, the "cerebral unconscious," or rather nonconscious, operates quite differently: in time—as a temporal sequence. And this is where affect comes into play, introduced by Malabou as the originary movement of auto-affection, a notion she borrows from Jacques Derrida, who defines auto-affection as a radical integration of the other into the self, or as the insurmountable difference between self and other. Interestingly, however, in Malabou's adaptation affect overrides this difference by, as she writes, not being robbed of its energy in the brain, but by coming into its own there as a kind of

"core self" (44). This should be understood not as self or as consciousness but as temporally sequenced hetero-affection. This view of the brain in its cerebral nonconsciousness leads Malabou to a different understanding of mental illnesses, disorders, and suffering, which she now grasps as affective interruptions. In *Self and Emotional Life*, Adrian Johnston and Malabou (2013) conduct a dialogue on the difference between psychoanalytic unconscious and cerebral nonconscious: as noted above, the unconscious of psychoanalysis ignores time, while the cerebral nonconscious takes place as time, in time. Another difference relates to death and immortality: whereas the Freudian unconscious negates death and mortality, the cerebral nonconscious introduces an experience of finitude. In Malabou's view, this calls for the writing of a new chapter in the history of the death drive.

As a way into such a new approach, I would like to quote Malabou's question in the beginning of her dialogue with Johnston: "Can we think of affects outside autoaffection, affects without subjects, affects that do not affect 'me'?" (6). This links the neurobiological view of the brain with a philosophical definition of affect as something that always already precedes the subject, never meeting the I. In other words, she brings together two views of affect that address a void in the subject (and in the subject's brain), a gap I have written about elsewhere as a potential gateway for techno-sensory couplings.

In *Morphing Intelligence*, Malabou (2019) speaks of the protective shield between intelligence and intellect becoming porous (a model evoked by Freud with regard to mental stability). In addition to the biological immune system, Freud assumed the existence of a psychic immune system that guaranteed the psychic system a certain stability. Today, Malabou argues, this protective shield is being torn down; in the cognitive era, intelligence is becoming a key theoretical issue, proving once more the fragility of the lines between intelligence and intellect, brain and intellect, machines and intellect, and natural intelligence and artificial intelligence. "The cognitive era names

a new economy of scientific reason that grants the empirical and biological data of thought a central position even as every day it further erases the difference between the brain and its cybernetic replica" (9). Against this backdrop, Malabou offers a historical and diagnostic analysis of the concept of intelligence, including the views of Jean Piaget and John Dewey, who saw intelligence not as an innate quality of human and animal behavior but as a skill developed via processes of action. For Piaget, "intelligence is an ultimate goal" (10). Malabou charts the development of the concept, in the course of which intelligence "mutates" from a genetic predisposition to an epigenetic result of environment and history to the most recent position, in which the difference between automatic, artificial, and natural is abolished. This history reflects a process of opening up, a shifting of differences, and a displacement of the human from its privileged central position. But it also shows how connected the concept of intelligence has always been with ideological notions that have far-reaching implications and consequences (e.g., eugenics). Today, we are confronted with a machine intelligence that is superior to that of humans in many cases. But what are the implications for intelligence—and for humans?

When the first IQ test (developed by Alfred Binet) was introduced at the beginning of the twentieth century to measure "the score" or the "G factor," an opposition was established that was to cement the subsequent discussion as Henri Bergson countered this measurable intelligence with his concept of intuition—which is essentially intensity and thus not measurable. Intelligence research was to remain in a spiral of quantification versus nonmeasurability, culminating, as Malabou remarks, in Derrida's equating of intelligence and stupidity. But this could be the start of a significant turn, a starting point for thinking about intelligence "*along with* its stupidity" (55). At this point, Malabou discusses Bourdieu's concept of habitus, linking it with her definition of neuroplasticity to bring the body into the debate—at last as she says, after it was constantly ignored by intelligence

research, now returning in studies of embodiment. What is now at stake, as Malabou succinctly states, is this: thinking about the materiality of thinking! And this materiality will clearly include links to technology.

In the epigenetic version, intelligence is linked with intellect, body, and brain. Here, the shared growth of organism and cognitive processes means not only that these processes communicate constructively with their inner and outer surroundings but also that the higher functions of intelligence and affectivity continue to develop over time. "This mobile equilibrium is constantly in process because its temporal horizon is undefined" (69). Intelligence (as defined by Piaget) leads directly to creative evolution (as described by Bergson), bringing forth added quality in opposition to the quantifying tendency of its times. The discussions around social, emotional, and artificial intelligence presented here, around plasticity and nonconscious cognition, anticipate a future that has already begun, where plasticity is programmed via neuro-chips and where body and environment are factored in via sensor technology, more or less in real time.

Around halfway through *Morphing Intelligence*, Malabou writes that she could stop, that she has said all there is to say; unfortunately, however, everything she wrote thirteen years before in *What Should We Do with Our Brain?* must now be turned on its head. *Morphing Intelligence* must thus be read as a U-turn, taking seriously the current augmenting of brains, bodies, and environments with media technology. Malabou performs this volte-face with the help of TrueNorth, a synaptic chip that, as she writes, does not imitate neural processes but is itself a synapse:

> It is a synapse. Named 'TrueNorth' and manufactured by Samsung Electronics on a scale of 28nm, the chip has 5.4 billion reticulated transistors that allow it to reproduce the equivalent of 1 million programmable neurons (for computation) and 256 million synapses (for memory). (83)

As a result, plasticity is no longer what sets brain and machine apart, as Malabou had previously argued, but now constitutes the connection between them. This new understanding of her also demands a rewriting of Simondon's view of plasticity (the machine as distinct from human memory): whereas in the machine, plasticity involves the carrier, in the brain it relates to content (the plasticity of memory) while the form remains stable, as Simondon stresses: "The memory of the machine triumphs in the multiple and the disordered: human memory triumphs in the unity of forms and in order" ([1958] 1989, 122, translation by Nicholas Grindell). In Simondon's view, this is due to the machine's lack of integrative plasticity, a vital aspect of the human. Here, then, there is still a very clear distinction between a fixed form of the machine and the brain's capacity for flexible integration—a distinction that, as we have seen, can no longer be fully upheld, as today's machines display a high degree of plasticity that makes them adaptable, durable, and resilient in comparison to humans. As a consequence, in specific situations one can now speak of a coupling that is better described as an intra-action since the elements involved cannot necessarily be understood as actors but rather as processes of synchronization.

Vacant Psyche

In Bernard Stiegler's philosophy of technology, a special role is played by timing in the sense of grammatization. This notion, borrowed from Derrida, of an inscription of the technical into the living is introduced by Stiegler as crucial to the relationship between technology and time. Grammatization can be understood as a process "by which the currents and continuities that form an existence are rendered discrete. Grammatization breaks down the flow, sections and fragments the currents, smashes the continual using techniques of discretization" (Stiegler 2009, 93 footnote 27, editor's note). Stiegler has written that psychoanalysis lacks one crucial thing: a theory of tertiary retention as a "theory of the materialization of spatialized time and . . .

of hypermatter." This hypermateriality, he argues, developed with quantum mechanics and denotes "a complex of energy and information in which matter can no longer be distinguished from its form" (Stiegler 2008, 111, translated by Nicholas Grindell). A process can be described as hypermaterial if the form (as embodied information) is an actual sequence of material states resulting from an overall set of devices and programs. But at the precise moment when the distinction between form and matter becomes meaningless, what Stiegler calls a psycho-*power* (as opposed to psycho*analysis*) comes into play. The stage of economic development he refers to as libidinal capitalism alters the capacity for sublimation, the production of knowledge, and the operation of the mind as a whole. Whereas the twentieth century saw science undergoing a process of becoming techno-scientific—making it a kind of science fiction, a producer of illusions—the media industries have driven desire out of the libidinal economy or perhaps introduced a different form of desire. It is interesting to recall the central role of the libido, as formulated by Deleuze and Guattari (as a critique of psychoanalysis and of capitalism), as Stiegler presents us with a very different reading of desire. In his view, society is built on libidinal cathexes, but the developments of the past century go far beyond what Marxist theory once referred to as commodity fetishism. The critique of the Frankfurt School, according to which mass media manipulate citizens, turning them into dependent and uncritical couch potatoes willing to be bombarded with advertising and propaganda, is also no longer tenable. First, that is because rather than classical mass media, like radio and television, the key roles are now played by the viral strategies of advertising and infotainment as well as social media. Second, now it is about not ideological monopolization but the definition of "felt" realities.

Stiegler sees (media) technologies as a constitutive, disciplinary, formative power exerting a key influence on the relationships between individual and society, body and environment. How these connections might be imagined has been shown by Luciana

Parisi in her reformulation of sexuality and desire: in her model, the use of digital technologies turns desire into nano-desire, resulting in a different form of bodily perception that has nothing more to do with a subjective experience of the self:

> It is a touch at a distance, a contactedness in matter prior to sensory contact. This feeling indeed is not directly translatable via sensory perception or mental recognition. It is not the feeling of actual phenomena—a transparent intra-action between phenomena . . . but of an affective involvement in the virtual, the physical resonances of the abstract capacities of matter to change, vibrating across bodies of all sorts. (2008, 290)

Going a step further than Stiegler, Parisi sees media technologies as "prehensive machines of the un-articulable and un-representable" (Parisi 2019, 89-121). Nano-desire operates at a level of bio-digital development, where a direct link takes place between bios and technology, bypassing a singular entity. Dismissed as a provocative speculation when it was first published two decades ago, this new concept of desire now appears in a different light thanks to the intervening technological developments. But it is less a matter of whether these scenarios actually take place in this form; far more important is the fact that such rewritings subtly implement themselves so that certain paths of communication are suddenly no longer possible, while the new options not only point in an entirely different direction but also operate with entirely different connections. But this also allows us to read older concepts and theories in new ways, updating their semantic charges accordingly. This applies, among others, to Simondon's concept of a vacant psyche. David Scott has described Simondon's psychism as a psychism without a psyche, as a "vacant psyche" or "empty form." This psyche is neither pure interiority nor pure exteriority, but "a permanent differentiation . . . and integration" (Scott 2014, 68). This definition of the psychic is at odds with that offered by Freud and, more generally, with key aspects of the psychoanalytic model—above

all with regard to its embeddedness in an oedipal family narrative or in a structure of the symbolic with its linguistic shifters. In recent times, there have been increased efforts on the part of psychoanalysis to grasp and explain digitality (especially artificial intelligence) (PSYCHE 2019).[1] Unlike those made by philosophies of technology, these attempts focus on the question of the psyche while arguing—and this is my objection—exclusively from the point of the subject. In this approach, Lacan's *objet petit a* becomes, to put it bluntly, an "artificial object" (Millar 2021, 49-83).

Neither Object nor Subject

But what if "smart" objects were of a different kind—more radical than the "quasi-objects" Bruno Latour (1993, 51-54) introduced with reference to Michel Serres to break open the duality of the social and nature? These quasi-objects represent a coming together of the social and the natural, involving a translation of the active and the passive, of energy and control. They are objects as well as quasi-subjects that constantly switch positions, between active and passive, controlling and being controlled. Latour traces the intellectual history of the subject-object relationship and ends with their hyper-incommensurability in postmodernism. While phenomenology attempted to save the subject, equipping it with intention and thus an awareness of the subject-object relationship, Latour sees the end of this relationship as having been heralded by Jean-Francois Lyotard with "a-human processes" (62) taking over and the dichotomy comes to an end.

In the last quarter of the twentieth century, however, something starts to change on the side of the objects: rather than merely returning, as Latour writes (see Balke et al. 2011), they return as other objects, passing beneath the threshold of consciousness and control. Hayles has written of nonconscious cognition as the

1 Special issue on digitization and its impact on mind and culture.

dimension where human and nonhuman actors and agents meet. But what her model conspicuously lacks is the encounter—the intra-actions that lead to and facilitate the emergence of agency.

This is a good place to mention the stories compiled by Steven Shaviro in *Discognition* (2016) as they deal with precisely this missing encounter—with thinking that cannot think itself, machines that don't know they are machines, and people who are unable to relate to themselves. Each of these episodes is arranged around a sci-fi story. In "Thinking Like a Human Being" (103-134), for example, it is Scott Bakker's *Neuropath* (2008), in which a psychology professor, Thomas Bible, has written a book about the way the brain works. The grand theory Bible pursues under the title *Through the Brain Darkly* is referred to in passing as an argument and can be summed up in a single sentence: we are not what we think we are. At first, this may sound familiar enough: as if reality were an illusion, with humans using their fantasies to render a meaningless reality bearable (as Slavoj Žižek has often put it in psychoanalytic terms); or, to quote an even older example, as if humans were capable of perceiving nothing but the shadows in Plato's cave. But the story being told here is crueler because we discover that there won't even be illusions to make us believe that we are feeling, perceiving, or deciding. Instead, the story soon makes clear that we can no longer even rely on "I think, therefore I am," which must now be altered to "*It* thinks, therefore I *was*" (Shaviro 2016, 113). Up to this point, *Neuropath* follows current debates on mind and brain, but it then turns to a technical application in prisons that Shaviro hopes has not already been put into practice somewhere in the world. What makes these *fic-fact stories*, as I would like to call them, such a good fit for *Unthought* (Hayles) and *Morphing Intelligence* (Malabou) is the discussion woven into them about what is currently at stake: technology no longer operates merely as a metaphor for brain processes, because rather than chips imitating brain processes, what we are experiencing today are "technologies that themselves literally act upon the mind, by

measuring the flow of blood in the brain, and by stimulating or inhibiting particular neurons in determinate ways" (Shaviro 2016, 115). Those familiar with Shaviro's work know that he is interested not in science fiction's small head start on developments in technology and neuroscience but above all in the question of epistemological thinking and its possible limitations, transformations, and manipulations. To this end, he passes through every register in a polarized debate between algorithmic and biological processes: consciousness is either a highly complex program that can ultimately be replicated, or a troublesome, inexplicable remnant that can eventually be disposed of (cast into the ontological dustbin).

Affective Nonconscious: A Short Circuit?

Interval, intensity, plasticity, membrane, quasi-objects, intra-action, prehension, dislocation, and various models of the nonconscious—from Simondon's subconscious to Hayles's noncognition to Malabou's cerebral un- and nonconscious. With this conceptual repertoire, I have outlined an affective nonconscious and posited it as a synching between psyche and machine. How does this affective nonconscious relate, if at all, to the unconscious?

In his appeal for a new sociology for a new society, Latour (2005) also indirectly addresses the sciences of the subjective, psychology and psychoanalysis, asking how to deal with this inner world if it is just as volatile as the social—not to mention the fact that what shapes this inner world must have originally come from "outside." Although he doesn't explicitly mention the self-learning technologies that are my focus here, Latour insists on a viewpoint that can be applied to them when he writes, "We know that mediators are not causes and that without transformations or translations no vehicles can transport any effect. Something

happens along the strings that allow the marionettes to move" (214).

The social is not created by structures, then, and the mind is not a tangle of neurons. Instead, both the social and the mental move between these structures, along strings—and, I would add, these strings may be made of different materials, including technical materials. If, as Latour suggests, the outside world is dissolving into a "circulation of plug-ins," then even if they have no determining power, they can "*make* someone *do* something" (214-215, italics in original). This definition in turn resonates with my description of nudging above. And although (or precisely because) Latour was writing about social structures and the mental states they help to organize, the idea can be transferred directly to the question of the nonconscious. He even goes on to speak, with reference to Gabriel Tarde, of an "intra-psyche" (216). In Latour's view, Tarde was the sociologist who, at the end of the nineteenth century, had already overcome the dichotomy between society and individual, between living and nonliving, and who spoke about a desire that does without any reference to a (human subjective) unconscious.

In his afterword to the German edition of Tarde's *Monadology and Sociology*, Michael Schillmeier argues that Tarde's work is well-suited to helping us understand nano-research. For Tarde's monads are not windowless like those of Leibniz, but rather performative and open, differing from but also resembling one another in their belief and their desire (Schillmeier 2009, 109). The renewed interest in Tarde's model of society in various fields of discourse is due in part to the fact that it helps to explain how mechanisms of human and animal mimetic behavior can be transferred to machines. Tarde himself speaks of a "need for society" that is common to humans, trees, and stars (2012, 14ff). This need reflects a "tendency of monads to assemble" (34). And this assembly takes place via the movement of imitation that occurs on both the micro and the macro levels. Deleuze and

Guattari refer to this Tardian concept of imitation as a "flow" that is moved by belief and desire.

> What, according to Tarde, is a flow? It is belief or desire (the two aspects of every assemblage); a flow is always of belief and of desire. Beliefs and desires are the basis of every society, because they are flows and as such are "quantifiable"; they are veritable social Quantities, whereas sensations are qualitative and representations are simple resultants. Infinitesimal imitation, opposition, and invention are therefore like flow quanta marking a propagation, binarization, or conjugation of beliefs and desires. (Deleuze and Guattari [1972] 2002, 219)

Such a conception raises the question of whether the monad with its inherent psycho-morphism is a model that might now be transferred to a media-technological morphism organized around affective mimesis (or mimetic desire)—and if so, what this might look like.

When Timing Meets Coupling . . .

On the one hand, then, we have the machine—digital technologies—whose algorithmic programming corrects operations in a manner that is adaptive, assistive, and, increasingly, self-modified. The way it does this could be described as mimetic: using the "experience" it gathers, this nonhuman (machine) agency corrects itself at every iteration, adjusting for any divergence or change, constantly linking this repertoire of "experience" back to its surroundings. On the other hand, individuals and groups organize themselves within what Simondon calls "associated milieus," their bodies, brains, and sensory apparatus organizing their sense of inside and outside with the help of membranes (nerves, skin, cells, neurons, etc.). This may sound absurd, but a look at early discussions around cybernetics reveals similarly unbelievable notions and expectations regarding machines and their souls (Gregory

74 Bateson, for example, redefined the Freudian unconscious as "algorithms of the heart", Halpern [2014, 172]). Orit Halpern has described the close ties between the development of cybernetic machines and theories of psychosis, based on the imitation of mental "aberrations" that were subsequently turned against psychoanalysis itself, above all by Deleuze and Guattari. *Anti-Oedipus*, their polemic deploying schizophrenia against capitalism (Deleuze and Guattari 1977), launched a movement of psychiatric reform in which the schizophrenic was for several years understood (and, one must add today, misunderstood) as a figure of defiance and freedom. But it was Guattari who, building on these ideas, introduced the concept of the "machinic unconscious," using the term to refer to technologies in a broad sense, including language with its chains of signifiers. But whereas Lacan's signifiers, for all their mathematical references, remain in the difference of the symbolic, Guattari's semiotics of the psyche also includes an a-significant dimension—the "primary process of signs" (Schmidgen 1997, 145-148) that precedes the emergence of linguistic signs. If psychotic "operations" provided the model for cybernetic control processes, then it comes as no surprise when Louise Amoore speaks of "the madness of algorithms" (2020, 108-132). There seems to be a long-standing relationship between "malfunctioning" and machine learning, a connection that can also be observed in other fields. From the outset, for example, researchers in the field of affective computing have worked with autistic people in order to incorporate their "deficits" into specific algorithms. In recent years, people with autism have often been the focus of attention, particularly regarding their usefulness for the IT industry on account of their special skills—their ability for sustained concentration and pattern recognition now being openly exploited by software companies. At the same time as they are recognized as skilled debuggers, however, people with autism are also much in demand as test persons for studies on affective stimulus and response (Picard 2015, 11-37). The combination of mental peculiarity and mastery of digital procedures has brought forth iconic figures in literature and

cinema. Toward the end of Stieg Larsson's *The Girl with the Dragon Tattoo* (2008), Mikael Blomkvist expresses his suspicion that Lisbeth Salander, the titular girl with whom he has collaborated so successfully, must be on the autism spectrum: autistic in her dealings with people and her environment, she exhibits great talent for recognizing patterns and structures, an equally great talent for hacking into networks and computers, and greater talent still for tracking things down. In her appearance and behavior, however, Lisbeth Salander has much in common with the way young women are portrayed today in film and literature: androgynous, work fixated, experienced with drugs, a computer specialist, a hacker—and equipped with a sculpted body that can master any physical challenge. There are also young female CIA agents: Maya, played by Jessica Chastain, in *Zero Dark Thirty* (Bigelow 2012), for example, who supposedly resembles a real female CIA agent quite closely; and Claire Danes's character, Carrie Mathison, in the television series *Homeland* (2011–2020), a CIA officer suffering from bipolar disorder who hunts an American soldier allegedly brainwashed by al-Qaeda. There are two significant peculiarities here: first, a strong tendency to associate female protagonists with such mental, physical, and social qualities; and second, a strategy of recasting mental otherness in terms of neurodiversity, no longer classifying medical diagnoses like autism spectrum disorder as illnesses but rather as potentially alternative forms of perception and behavior—and as a potential alternative form of social interaction based less on empathy and more on object relations and technological connections (see Angerer 2014b, 103-118). The figure of the little sister has now taken its place in everyday reality and in media fictions, whether Siri on the iPhone or the operating system Samantha in Spike Jonze's film *HER* (2013) (Angerer 2015, 57-66). Both of these machines imagined as female are examples of the affect-generating side of this field as clairvoyantly anticipated by the numerous little and not-so-little sisters of 1990s sci-fi (see Piercy 1992; Scott 1994). But whereas Siri stands firmly in the tradition of the subservient female spirit, the figure of Samantha created by

Jonze performs her tasks in spite of her programming, ruthlessly exposing the emotional indifference of the machine.

. . . and Movement

If machine learning and neuro-mental apparatus are mutually dependent, the question arises as to how psyche and machine meet on the one hand and, on the other, what traces this encounter leaves. Or do they bypass each other, with the machine capable neither of perception nor of recognizing what it sees? How, then, do algorithms "address" us, as John Cheney-Lippold rightly asks, pointing out that this addressing certainly does not correspond to Althusser's concept of interpellation (1971)? In my view, Althusser's claim that the policeman's "Hey, you there!" catapults individuals into the status of subjects as they relate it to themselves has always been a problematic and incomplete explanation. Because questions remain: What does this relating mean? How does one feel addressed? What happens at this precise moment, and how does this inscription of the state operate? Cheney-Lippold does not really answer his own question, stating tersely: "The dividual is the subject digitized" (2017, 173). Which sounds not unconvincing at first: today, the non-unified subject, permeated by structures like those of language, the sensory apparatus, and the unconscious, is digitized, grammatized as a series of ones and zeros. But as I criticized the equation of technology and the unconscious above on the grounds that the unconscious as defined by psychoanalysis is in many ways incompatible with such a model, I would also argue that dividual and digital cannot be simply equated. The picture is more complicated.

The concept of the nonconscious allows this complex process to be understood (in theoretical terms), taking the binary time code of the machine and inscribing it into processes of the psycho-organic body. This inscription takes place via the affective,

which—as a technical term—creates and prevents connections as well as interrupts and delays them.

This focus on affect evokes the history of the interval, which is part of the wider history of organic movements that were not ignored by psychoanalysis (on the contrary) but occupy a peculiar gray area where the psyche is concerned. The separation between the mind on the one side and the brain and its physical localization on the other side was only radicalized by psychoanalysis, reaching its high point with the hegemony of text in poststructuralism before being increasingly displaced from the center of discourse. Today, for many different reasons, this separation can no longer be upheld, which partially explains the turn toward psychophysics and applied psychology, with their concepts of threshold, excitability, stimulus, and intensity. But current shifts in the relationship between subject, object, technology, and environment call not for a straightforward return to previous models but for a reconnection, for translating them into the present situation.

In the current discussion around artificial intelligence, films and literature are dealing with the growing, uncanny similarity between androids and humans, with what ultimately still sets the two apart, and with the human projections onto these significant others. More and more often, the focus in such work is on how androids see us: the machine that observes, learns, fails to understand, or is surprised, before drawing conclusions that feed back into its own behavior.[1] But this phenomenon, the "uncanny

1 Examples include Kazuo Ishiguro's sci-fi novel *Klara and the Sun* (2021) and Sandra Wollner's film *The Trouble with Being Born* (2020). In both, we as readers/viewers are given a sense of how androids learn the unevenness of the ground, the humidity of the air, the crawling of insects in one's hand, and the way memories are not always immediately accessible—and how they perform this learning in ways not dissimilar to children or even adults. Finally, the androids always need to be charged up with energy (in Klara's case, solar energy) or have body parts replaced or repaired (which is easier for them than for humans).

valley"[2] of androids' heightened resemblance to humans, is not what I am interested in here. Added to which, the story of human-like machines is a long one that has often been told.[3]

With the concept of the affective nonconscious, I go a step further as the intra-actions constituting the human-nonhuman encounters under discussion here take place on such a subliminal level that the question of "human or machine?" is no longer pertinent. One might object that pacemakers, hearing aids, and many wearable mini-robots have long performed such roles. But the difference is on the side of the machines: as described above, they are, in a specific sense, *autonomous*; they measure and filter, send their signals, and intervene in processes (impacting not only on organic life but also, of course, on social and economic life). They could be said to have a life of their own. The human side perceives them as a reflexes, as integrated, automatic elements that may cause irritations in case of malfunction, interruption, or delay—or not, since malfunctions, interruptions, and delays are to be found not only on the side of the machine but also on that of the human. "When timing meets movement" means precisely this: rather than coinciding fully with the movement of the psycho-organic, the timing of the machine organizes the membrane between inside and outside by means of the movement of the affective.

Brian Massumi has spoken of the nonhuman as a "dephased heart" underlying all individuation and not limited to human actors. It is here that dislocation comes into play, the phase postulated by Laclau for the social whole of a society that stands against all closure. Applied to the constellation of the synching of mind and machine, this means that affection and disaffection both take place in a nonconscious zone. An always already deferred temporality (as defined by Malabou for the affective

2 https://de.wikipedia.org/wiki/Uncanny_Valley (accessed June 24, 2021).

3 Golem, Frankenstein, and Olimpia in E. T. A. Hoffmann's *The Sandman* (1816); Jod in Marge Piercy's *The Body of Glass* (1992).

core self of the brain) and digital timing (that corrects its own steps with increasing self-assurance) come together—or not.

The notion of the nonconscious I propose clearly has a speculative aspect that attempts to articulate the signs of the times. As an ever-evolving "algorithm awareness" (Gramelsberger 2020) on the side of networked, self-training machines becomes increasingly interwoven with the human psyche, whether such a nonconscious emerges alongside the unconscious—or replaces it—remains to be seen.

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Marie-Luise Angerer
Nonconscious: On the Affective Synching
of Mind and Machine

Growing numbers of nonhuman companions – smart objects, technical environments, sensor technologies used to augment the human body – are creating affective synching between human and nonhuman agency. Unlike the unconscious of psychoanalysis, this book argues, the resulting nonconscious is no longer coupled to a subject grounded in language, instead acting as an affective link between technical, mental, and physical processes. But how is this nonconscious to be understood? Is it something additional, a new zone intervening between the unconscious and consciousness? Or does it fundamentally call into question the distinction between the two?

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