The Ontology of Media Operations, or, Where is the Technics in Cultural Techniques?

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My aim in this paper is to develop an ontology of media operations that is rooted in Gilbert Simondon's theory of individuation, and specifically, in the insight that the individuation of theory is practical, concrete, and runs parallel to the individuation of being, and that individuation is instigated by the reception of environmental singularity by a metastable receiver. In contrast to Bernhard Siegert's understanding of operative ontology as a cultural technique, such an account: 1) treats heterogeneity and singularity as a feature of communication across orders of magnitude (and specifically across the preindividual–individuation divide) and not simply as a property produced by the cumulation of already individuated agencies; 2) treats theory as immanent to cultural operationality rather than an abstraction from it; 3) grasps contingency not on the basis of possibility (being this assemblage rather than any other possible one) but rather as a feature of environmental potentiality or singularity that can only be grasped in individuation as reception, which is to say in an individuation of thought that parallels the individuation of being. Such an alternate account will prove necessary to address operations of media that fall outside the cultural enclosure.

Beyond these significant differences, what distinguishes this alternate model of reception is its capacity to account for what motivates the processing of the distinctions that produce culture and that lie at the heart of the operative ontologies paradigm. Where Siegert can only refer to the figure of recursion, and to the concrete recursivity of distinct cultural operations, as the source for the distinctions that produce culture,[1] Simondon's reform of information theory yields some-

[1] It is, of course, on this very topic that Siegert marks his own originality vis à vis Thomas Macho's understanding of cultural techniques as »symbolic« or »second-order« operations. For Siegert, such a distinction »suffers from an overly reductive notion of the symbolic in combination with a too-static distinction between *first-order* and *second-order techniques*« Siegert: Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real, New York 2015, p. 13. His example of cooking makes this clear: where Macho would relegate cooking to the status of first-order technique, Siegert notes that cooking is both a »technical procedure that brings about a transformation of the real and a symbolic act distinct from other possible acts« (ibid.). In this sense, any particular instance of cooking –

thing like an *Ur*-operator for all processes of individuation, and thus for all cultural distinctions: on his account, information plays the role of environmental singularity that, by triggering the coming together of matter and form through the process of reception, supports the very ontogenesis of cultural practice and whatever distinctions it may produce.

In addition to operating as a supplement of sorts to recent work on cultural techniques, my contribution here is intended to revisit the role of media in the critical formation called »operative ontologies.« While recognizing the need to move beyond the various impasses left in the wake of the widespread dissemination of Friedrich Kittler's media science in Germany and beyond, I want to ask what happens to media, and specifically to *technical* media, in recent developments in German cultural theory. More precisely, I shall seek to show that recent developments like cultural techniques strip technical media, and technics more generally, of any autonomy or quasi-autonomy in relation to culture, and that the reaffirmation of such autonomy or quasi-autonomy, albeit within a broader cultural field, informs or has the potential to inform a different legacy of Kittlerian media science: one that preserves some aspect(s) of technics' alterity in relation to culture while recognizing that technics do not operate in a vacuum, that their operation is thoroughly imbricated within concrete cultural processes.

1. A Different Geneaology of Cultural Technics: Simondon

What is needed above all for such a purpose is a mode of theorizing that is capable of distinguishing technics from culture, and it is precisely in Simondon's account of individuation that I propose to look for such a mode of theorizing. At stake in my supplementation of operative ontologies is thus a conception of culture that differs fundamentally from the one developed by Siegert, Macho, Schüttpelz, et al., in their work on cultural techniques. Theirs is—or so it seems to me—an account that ultimately privileges human processes of meaning making, even as it seeks to enfranchise various nonhuman and material processes as a crucial dimension of the raw material informing cultural distinctions. On this score, they share much with Actor-Network-Theory and the post-ANT work that they often cite as inspiration. What Simondon offers, by contrast, is an account that invests technics with a power to enfranchise environmental contingency—the »extra-cul-

boiling, roasting or smoking – is always an »act of communication« that communicates »to both the inside and the outside that within a certain culture certain animals are boiled, roasted, and/or smoked« (ibid.). Hence, Siegert concludes (refuting Macho): »cooking does indeed thematize cooking in the act of cooking« (ibid.).

tural« and, in some sense, the »extra-human«—by brokering its participation in individuation prior to its assimilation into the cutural enclosure. That this happens without entirely eliminating the alterity of technical processes only serves to underscore the different investments in media and technics at issue in the two approaches.

In a 1965 essay, »Culture and Technics,« Simondon seeks to specify the operation of technics by tracing the heritage of culture from its origin in agriculture.[2] What this history reveals is an original meaning of culture that stems from techniques of cultivation and that specifies the work of culture as an operation not on the living being itself but rather on its environment. Cultivation techniques, Simondon writes,

»act primarily on the environment, which is to say on the energy resources at the plant's disposal over the course of its development, rather than on the plant itself, as a living individual. […] And so we must first and foremost recognize that the notion of culture is taken from a technique [*une technique*], one that has a great deal in common with animal husbandry, but that differs from it because it depends on action exerted on the living being's environment [*le milieu vital*] rather than on the living being itself [*le vivant*].«[3]

Culture obtains its modern meaning following a certain »disjunction« from technics: »when the word *culture* is used today to speak of man as a cultured or cultivated being, despite the word's technical origins, a disjunction, maybe even an opposition, is set up between the values of culture and the schema of technicity: […] culture has domesticated technics like an enslaved species.«[4] In order to contest this opposition of culture and technics, Simondon proposes that one view both of them as internally differentiated subcategories of one larger category of technicity. Culture and technics are both »activities of manipulation, and thus technics,« which act on the human either directly, in the case of culture, or indirectly via the intermediary of the environment, in the case of technical activities.

Simondon leaves no doubt, however, regarding the relative importance of these two subcategories, and what he has to say helps to expose the crucial role played by the environment in his philosophy of individuation:

»The raising (élevage) of man by man—which is what we should call culture—can exist in a human micro-climate, and so be passed down the generations; by contrast, cultiva-

2 Gilbert Simondon: Culture and technics (1965), in: Radical Philosophy 189 (Jan/Feb 2015), pp. 17–23.
3 Ibid., pp. 17–18.
4 Ibid., p. 18.

tion [*culture*] of the human species through the transformation of the environment achieved by technical activity is almost necessarily amplified to the dimensions of the entire inhabited earth: the environment is the instrument for the propagation of transformations, and every human group is more or less affected by the environment's transformation.«[5]

Technics can be distinguished from culture on this account because of its scale: where »culture« remains intra-cultural, the technical capacity to transform the environment renders it *inter*cultural, a force that operates globally, across the »dimensions of the entire inhabited earth.« For Simondon, it is the industrial revolution that marks the shift from culture as élevage to culture as technical transformation of the environment. On his account, pre-industrial technologies are aligned with culture, industrial ones with technics: »so long as technologies remain pre-industrial,« Simondon suggests, »the transformations' order of magnitude remained intra-cultural,« whereas in the industrial era, technologies spill across »the boundaries of human groups with different cultures,« and the technical transformations of the common, inter-and extra-cultural environment occur in the mode of »consequences without premises.«[6] The distinction at issue here marks the historical moment when technics breaks with culture, when technological development outstrips the logic of cultural reproduction and inheritance.

As the moment when technics break free from their cultural enclosure, the industrial revolution catalyzes a massive expansion in the extracultural agency of the environment and specifically in its mediation of the human's relation to itself and to the world. By posing non-intended challenges to the human that exceed the resources of culture, technical transformations of the environment introduce new forms of recursivity between the human and the world that exploit the gap between technics and culture from which novelty arises. Despite his focus on the human practice of environmental design,[7] Simondon leaves no doubt concerning the source of the agency at issue here: it is the potentiality of the environment itself—»*cette charge qu'est le milieu*«—and not any human intention or act. Only this potentiality can lend the technical act its defining »character of risk, wager and defiance in the face of habits«: here environmental potentiality is a source for »a certain deframing with respect to cultural norms.«[8]

5 Ibid., p. 18.

6 Ibid., p. 18.

7 »man stimulates his environment by introducing a modification; as this modification develops, the modified environment offers man a new field of action, demanding a new adaptation and arousing new needs.« Ibid., p. 19.

8 Ibid., p. 20.

In contrast to the recursivity that informs Siegert's version of cultural techniques—a formal recursion in which cultural practices thematize themselves and thus generate their own ontological descriptions—the recursivity at issue here is distinctly material, not simply in the sense that it involves a concrete exchange of energy between humans and the environment, but for the more specific reason that technics transform the environment *precisely by operating on matter itself*:

»A very large number of technical operations consist in the preliminary processing of matter; processed matter is already highly technicized. The cultural schema of opposition between matter and form, which supposes matter's passivity, is extremely impoverished when faced with the valorization of matter that results from technical operations; matter harbours functional characteristics corresponding to cognitive schemas and axiological categories that culture cannot offer.«[9]

For Simondon, postindustrial technics operate on matter directly, without any need to proceed through cultural categories, and in a way that taps into the source for such categories. What is at stake here is thus ultimately a difference in the legacy of agriculture itself: for whereas Simondon emphasizes the disjunction of cultivation techniques writ large from animal husbandry precisely in order *to liberate technics from its narrow cultural function*, Siegert simply elides cultivation with breeding in order to focus on the cultural techniques of doors and gates; it is these latter, more than the relation with an environmental outside, that facilitate the processing of species differentiation: »The difference between human beings and animals,« writes Siegert, »is one that could not be thought without the mediation of a cultural technique. In this not only tools and weapons (which paleoanthropologists like to interpret as the exteriorization of human organs and gestures) that play an essential role, but also the invention of the door, whose first form was presumably the gate (*Gatter*)—which is hardly an exteriorization of the human body. The door appears much more as a medium of coevolutionary domestication of animals and human beings.«[10] If agriculture is the origin of culture, for Siegert, the gate is the cultural technique of agriculture, and hence of origin itself: as what marks the distinction between nature and culture, animal and human, the gate is the »*ur*-cultural technique […] if there ever was one.«[11]

9 Ibid., p. 22.

10 Bernard Siegert: Door Logic, or, The Materiality of the Symbolic: From Cultural Techniques to Cybernetic Machines, in: Siegert: Cultural Techniques (as note 1), p. 193.

11 Geoffrey Winthrop-Young: The *Kultur* of Cultural Techniques: Conceptual Inertia and the Parasitic Materialities of Ontologization, in: Cultural Politics 10/3 (2014), pp. 376–388: 386–387.

For Simondon, by contrast, the *ur*-cultural technique is a technical operationality that brings about individuation. On his account, technics operates directly on matter, rendering matter active in ways that resist and exceed the hylomorphic schema of Western philosophical reason. Technics thus operates the *ur*-distinction—the distinction between form and matter, and it does so, importantly, not as an end in itself, but as a phase in a larger process of individuation that results in and from the (non-hylomorphic) imbrication of matter and form. With his reformed conceptualization of information—in which information singularizes environmental metastability, thereby catalyzing individuation—Simondon provides a model for the technical operation of matter as contingent actualization of environmental potentiality. In this way, as we shall see in detail below, he provides an account of what motivates the processes that generate the distinctions that (only) subsequently produce culture.

2. Between Cultural Techniques and Media Archaeology

If »cultural techniques reveal that there never was a document of culture that was not also one of technology,«[12] as Geoffrey Winthrop-Young puts it, we can wonder if the inverse is also the case: are there, that is, operations of technics that are not also documents of culture? Media archaeologist and ex-historian Wolfgang Ernst answers with a resounding »yes.« For Ernst, cultural historiography, like all other modes of cultural analysis, becomes possible only after media operations, of which writing is a prime example, have transformed »the continual flow of signals« into the form of »discrete recording.«[13] Ernst emphasizes again and again the need to mark a categorical distinction between media archaeology and cultural techniques, and he relentlessly criticizes all gestures to subsume media operationality under the umbrella of culture:

»The premature inclusion of the analysis of technological media processes in the category of cultural studies robs it of its explosive potential. […] media archaeology deals with artefacts, particularly with those that are created only in the process of technological execution; for instance, when a radio receives a broadcast. Regardless of whether this radio is an old or a recent model, the broadcast always take place in the present. In contrast to media history—that is, the human vantage point (Vico)—media archaeology

12 Geoffrey Winthrop-Young: Cultural Techniques: Preliminary Remarks, in: Theory, Culture & Society 30/6 (2013), pp. 3–19: 6.

13 Wolfgang Ernst: From Media History to *Zeitkritik*, in: Theory, Culture & Society 30/6 (2013), pp. 132–146: 143.

tentatively adopts the temporal perspective of the apparatus itself—the aesthetics of micro-temporal processes.«[14]

The temporal perspective of the media apparatus is, in Ernst's understanding, the product of a mathematical operation that differs categorically from the historical products championed by Vico: »The basis of modern media is precisely this kind of mathematics, which already constitutes an epistemological step beyond traditional cultural techniques. The Turing machine thus became the first strictly theory-born medium.«[15] If its logic »does not belong […] to the historical world,« this theory-born medium nonetheless brokers access to what lies beyond culture at the same time as it expands the cultural enclosure.

In his account of how this happens, Ernst underscores the media operation of measurement, which simultaneously foregrounds the fact that media themselves are their own best archaeologists, as he puts it elsewhere,[16] and imposes the necessity for environmental mediation prior to the advent of culture and the distinctions that create it: »Only through the technological act of measuring can the sonic element, as the most fleeting of all cultural goods, re-enter cultural memory. But by the same token, historical recollection is de-historicized and the cultural-historical model is replaced with technical parameters of measurement.«[17] In this respect, the generalization of measurement that occurs in the era of technical media is analogous to quantum measurement: just as we cannot know, and cannot have any relation to, the quantum object prior to its materialization as a quantum phenomenon following measurement, so too we cannot know or have any relation to the energetic-informatic environment prior to its materialization as inscription following measurement:

»When historiography is no longer viewed as the simple relationship between an object and its perception, but rather as mathematically mediated (statistics) and […] as a combination of measured object, measuring apparatus and perception, then historical time will be transformed into an observable in the sense of quantum physics. It is the act of registration (recording) that inscribes this time with a quality of irreversibility.«[18]

14 Ibid., p. 141.
15 Ibid., p. 136.
16 Wolfgang Ernst: Digital Memory and the Archive, edited by Jussi Parikka, Minneapolis/London 2013. See my discussion in Mark B. N. Hansen: Medium-Oriented Ontology, in ELH 83/2 (2016), pp. 383–405.
17 Ernst: From Media History to Zeitkritik (as note 13), p. 143.
18 Ibid., p. 143.

On Ernst's understanding, in sum, media archaeology operates with and at the level of information—»on the basis of their elementary, sub-semantic procedures«—understood, following Shannon's mathematical theory of information, as independent from meaning and outside of cultural life. By calling for a »study of media time that is grounded in communications theory« and that operates at a remove from »historical formations of meaning,« Ernst foregrounds the imperative for an »apparatus-based *theoria*« that eschews any »subject-centered perspective« in favor of an informational theoretical perspective capable of processing »non-cultural input,« »signals rather than the signs themselves.«[19]

3. Signalanlyse als Zeichenanalyse?

Precisely such a technicist understanding of media forms the target of Bernhard Siegert's argument for *Signalalyse als Zeichenanalyse* in his cultural and physical history of the practice of ringing bells.[20] Siegert begins by distinguishing between two options for writing such a history: »Entweder man interpretiert den Glockenklang als Zeichen, […] oder man fasst den Glockenklang als Signal im physikalischen Sinne auf.« In the former case, one would write »eine kultursemiotisch fundierte Geschichte von Gefühlskulturen«; in the latter, one would keep a firm grip on the »signalanalytische Beschaffenheit dieses Dings.« What makes the latter task possible, Siegert explains, is »die technische Möglichkeit zur Aufzeichnung und Prozessierung von akustischen Ereignissen, die sich der notenschriftlichen Aufzeichnung schlichtweg kategorisch verweigern.«[21] Siegert specifically criticizes Ernst's claim that media archaeology »akzentuiert […] Signal- statt Zeichenverarbeitung«; as Siegert sees it, such a media archaeology is not an archaeology at all, but rather an empty iteration of a purely formalist information theory:

»Aber eine nachrichtentheoretisch fundierte Medienwissenschaft, die historischen Sinnbildungsprozessen fernsteht, ist keine Medienarchäologie, sondern nichts anderes als eben Nachrichtentheorie. Medienarchäologie ist nur dann Archäologie, wenn sie nicht Signal- gegen Zeichenverarbeitung setzt, sondern einen Begriff kultureller Zeichen aus der Signalanalyse gewinnt. Also nicht Signal- *statt* Zeichenanalyse, sondern Zeichenanalyse *als* Signalanalyse.«[22]

19 Ibid., pp. 134–135/137.
20 Bernard Siegert: »Erzklang« oder »missing fundamental«: Kulturgeschichte als Signalanalyse, in: Julia Kursell (ed.): Sounds of Silence – Schall im Labor (1800–1930), Berlin 2008, pp. 7–20.
21 Ibid., p. 9.
22 Ibid., p. 9.

The burden of the ensuing historical analysis of bell ringing accordingly centers on Siegert's effort to extract a cultural concept of the sign from the physical signal analysis of the sound of ringing bells. Siegert's argument hinges on what appears to be an analogy: ringing bells »repräsentieren und signalisieren im Symbolischen den Ausnahmezustand, weil sie im akustisch Realen der Ausnahmezustand sind.«[23] Yet this analogy, one that appears to span the gap separating the physical and the cultural, the real and the symbolic, may well turn out to be an assimilation, since the gap between the real and the symbolic can only be bridged by exclusion. What Siegert's analysis accomplishes then is less an opening to the signaletic than a restriction of the operation of ringing bells to a symbolic operation that is itself a displacement of the withdrawal of the acoustic real from the domain of human experience. By restricting the operativity of ringing bells in this way—which is to say, by restricting it to one of its multiple facets, its capacity to stand in for the withdrawn acoustic real—doesn't Siegert in fact compromise the heterogeneity of the signal in order to reduce the »real« to a pre-instituted cultural function?

At stake in Siegert's call for signal analysis *as symbol analysis* is, ultimately, an assimilation of signal into symbolic:

»Das Symbolische ist die buchstäbliche Ordnung, in der die Glocke angeschrieben wird, in der sie nach ihrer Tonhöhe und ihrem Glockenprofil klassifiziert wird. […] *Das Symbolische ist aber auch das Signal*, welches der Schlag der Turmglocke ist, der Ruf, der die Menschen über die Grenzen der Pfarrgemeinde hinaus zur Versammlung ruft, zum Gotteswort, zum Feuer, zum Feind. Das Reale der Glocke ist schließlich das, was sich unmöglich anschreiben lässt und was erst technische Medien, Tonbangeräte und Harmonic Analyzer aufzeichnen und verarbeiten können: das Reelle der absoluten Frequenzen, das im Fall der Glocke von einem ›missing fundamental,‹ einem mangelnden Fundamental, gekennzeichnet ist, das psychoanalytisch nichts anderes ist als ein fundamentaler Mangel.«[24]

On this understanding, both signal and symbol stand against a real, »das Reele der absoluten Frequenzen,« that evades notation and can only be made manifest by technical mediation. And, despite Siegert's effort to theorize the so-called »missing fundamental«[25] through the register of the imaginary, it is clear that his analysis

23 Ibid., p. 11.

24 Ibid, p. 19, emphasis added.

25 »A harmonic sound is said to have a missing fundamental […] when its overtones suggest a fundamental frequency but the sound lacks a component at the fundamental frequency itself. The brain perceives the pitch of a tone not only by its fundamental frequency, but also by the periodicity implied by the relationship between the higher harmonics; we

remains tributary to what is in essence a culturally-driven and culturally-determined account of the practice of ringing bells.

What seems less clear is what payoff Siegert's effort to embed a cultural history within a signal analysis actually has; for in the end, whatever force ringing bells wield as the »state of exception of the acoustic real« is a force that operates and can only operate entirely within the cultural realm and as a contribution to the myriad cultural functions of ringing bells that Siegert so carefully enumerates. Given that his aim is to correct the technicist strain of Ernst's Neo-Kittlerian mode of media archaeology while welcoming Ernst's call for attention to the physical, signaletic dimension of information, Siegert's example seems wholly out of place. As an example intended to foreground the contribution of the acoustic real to the symbolic efficacy of cultural techniques, ringing bells simply miss the mark, since they are unable to address the other side of the technical mediation of the real—namely, how technical media measurement prepares (in the sense of an experimental preparation) preindividual microphysical materiality to catalyze the very processes of individuation that subsequently engender cultural techniques, along with the ontological distinctions their operation generates.

Though intended to address this shortcoming, the argument Siegert offers in the *Introduction* to his book on *Cultural Techniques* marks what is in effect the limit of his approach. In order to introduce cultural distinctions, media operate as a »third,« as an interface to what is ultimately at stake in any such distinction and what underlies every such distinction—namely the division between the symbolic and the real. On this account, media can engage the real either to bring it into the domain of the symbolic or to mark its exclusion from this domain; media cannot, however, broker any *positive* or *constructive* relation with the signaletic real:

»Media appear as code-generating or code-destroying interfaces between cultural orders and a real that cannot be symbolized. Resorting to a different terminology, we can refer to the nature/culture framework in terms of the real and the symbolic. By assuming the position of the third, an interface between the real and the symbolic, basal cultural techniques always already imply an unmarked space. By necessarily including the unmarked space that is excluded by the processed distinctions, cultural techniques always contain the possibility of liquidating the latter. In other words, cultural techniques always have to take account of what they exclude.«[26]

may perceive the same pitch […] even if the fundamental frequency is missing from a tone«, under: https://en.wikipedia.org/wiki/Missing_fundamental (21 July 2017).

26 Siegert: Cultural Techniques (as note 1), p. 15.

If Siegert here defends some minimal autonomy of the real, and of the signaletic domain, against the imperialism of the symbol, his gesture remains critically moot so long as the real can only be engaged through its exclusion. Media, for Siegert, operate exclusively to »filter the symbolic from the real,« to effectuate a split between what can and what cannot enter the symbolic domain. With this conclusion, we can grasp what is ultimately at issue in Siegert's imperative to derive *Zeichenanalyse* from *Signalanalyse*: namely, the leveling of any substantive distinction between symbol and signal and their wholesale assimilation into an account of cultural symbolization: »The methodological gain derived from using the cultural techniques approach is most apparent when the ontological distinction between symbols (as defined by logic) and signals (as defined by communications engineering) is replaced by the practical problem of distinguishing between them.«[27]

Despite compromising the autonomy of the signaletic, Siegert's position remains crucial as a corrective to Ernst's technicist focus: he is right, that is, in calling for an embedding of the information operation of media within contexts larger and more complex than the purely technical context in which a message is transmitted through a channel. When performed in isolation from symbol analysis and cultural history, signal analysis remains a purely technicist operation that has little to say about human experience or media archaeology. Yet Ernst's position is also important as a corrective to Siegert's reductionism. In addition to calling for a defense of the autonomy or quasi-autonomy of the signaletic, Ernst helps to specify the role of signal analysis in cultural history and the symbolic dimension of human culture: rather than forming a correlate to symbols, signals operate in an entirely different domain altogether, and thus require mediation by technical media operations in order to inform cultural activities. The real is not so much excluded, as accessed indirectly, via the mediation of technical operations, and in a way, significantly, that does not assimilate these latter into the domain of culture and cultural history. In short, the relation between symbol and signal is not direct and correlational, but indirect and brokered by operations of media measurement: signals participate in culture not by being rendered symbolic, but rather by participating in the actual individuation of culture, in the genesis of symbolization and techniques of symbolization.

27 Ibid., p. 15.

4. The Amplifying Power of Noise

In »Cacography or Communication?,« Siegert pays hommage to philosopher Michel Serres for developing a concept (the parasite) and a »multifaceted model« that makes it possible »to employ both communication theory and cultural theory to arrive at an understanding of cultural techniques.«[28] Serres's theory provides a model, specifically, for the transformation of communication from a purely technical, informational-theoretical operation to a cultural operation writ large.

A term that brings together three distinct meanings—static or noise, a biological organism that preys on a host, and an uninvited guest who eats for free—the parasite is at once a figure that complicates any efforts to restrict communication to a technical operation and a reminder of the fact that all communication is mediation, that a »third always precedes the second.« With its focus on the parasite, Serres's account facilitates a displacement of the sender-receiver model in favor of a noise-information relationality, and for this reason furnishes a model for Siegert's own understanding of media as operators of cultural distinctions: »For Serres,« Siegert writes, »communication is not primarily information exchange, appeal, or expression, but an act that creates order by introducing distinctions; and this is precisely what turns the means of communication into cultural techniques.«[29]

To take Serres as a forerunner of cultural techniques, however, Siegert must engage in a reductive assimilation of his conception of noise. On Siegert's reading, the operations of communication are strictly identified with the cultural activities that symbolize the real: »media filter the symbolic from the real *or* messages from channels full of noise.«[30] In this equation, noise is strictly identified with the real, which is to say, with that which must either be symbolized through media operations or excluded as that which resists such symbolization. Such an assimilation, however, fundamentally misrecognizes the significance of noise in Serres's transformation of information theory: rather than an excluded or unmarked outside of symbolic activity, whose contribution remains that of a guarantor of contingency and the openness of future possibilities,[31] noise for Serres is a potential source for the ontogenesis of living systems.

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28 Ibid., p. 20.

29 Ibid., p. 23.

30 Ibid., p. 15.

31 »A theory of cultural techniques such as that proposed by Serres, which posits the phatic function as its point of departure, would also amount to a history and theory of interruption, disturbance, deviation. Such a history of cultural techniques may serve to create an awareness of the plenitude of a world of as-yet-undistinguished things that, as an inexhaustible reservoir of possibilities, remains the basic point of reference for every type of culture«, Ibid., p. 23.

This aspect of Serres's engagement with information theory can be traced to his adoption of Henri Atlan's notion of »positive« or »autonomy-producing« noise. For Atlan, whose aim is to embed information theory in the broader context of living systems, a fundamental difference must be drawn between two operations of noise, a difference that depends directly on the broader context of such operation. On one hand, there is the restrictive, negative role noise plays within the channel, which is to say, the prevailing concept of noise we inherit from information theory and cybernetics. On the other hand, however, there is the open-ended, positive role noise plays within the whole system or organism. While insisting that his supplementation introduces a »positive ›organizational‹ role for noise […] without contradicting the theory of the noisy channel,« Atlan draws attention to the shift in levels on which such a distinction is predicated. In moving outward from the technical circuit to the whole system or organism, noise undergoes a switching of signs, a conversion from a negative to a positive function: »the ambiguity introduced by the factors of noise in a channel of communication situated inside a system *has a different signification (its algebraic sign is different)* depending on whether one has in mind the information transmitted in the channel itself or the quantity of information contained in the whole system (in which the channel is one element among a large number of relations between numerous subsystems).«[32]

In his appropriation of Atlan's work, Serres likewise draws attention to the difference of levels involved in the change of sign. If this attention marks a shift away from a purely technicist approach to information as transmission, it moves in a different direction than Siegert's culturalist enframing. For what is crucial for Serres's development is how the shift in levels and in the sign itself renders noise a positive agent in the concrete ontogenesis of the whole system: following Serres's appropriation of Atlan's theory, communication is transformed into a productive act capable of harnessing the contingency of the environment. Communication names the process whereby noise—ambiguity that is destructive at the level of the channel—becomes constructive at the more-encompassing level of the system as a whole.

Serres's appropriation brings out a dimension of Atlan's work that will prove crucial in what follows: namely, the role placed upon the act of reception in the shift outward to the context of the whole (living) system. For Atlan, as for Serres, the receiver is defined by two characteristics: 1) its openness and hence susceptibility to being affected by environmental contingencies (what Atlan calls »errors«) and 2) its creativity, that is, its capacity to self-organize as a consequence of its

32 Henri Atlan: Noise as a Principle of Self-Organization (1972/1979), in: Henri Atlan: Selected Writings on Self-Organization, Philosophy, Bioethics, and Judaism, edited by Stefanos Geroulanos and Todd Meyers, New York 2011, pp. 95–113: 102.

interaction with environmental contingency. Atlan suggestively describes this interaction in his 1974 paper as a process of »continuous disorganization constantly followed by reorganization« that »is not directed by a programme but occurs under the effects of random environmental factors.«[33]

Let me suggest that Serres's appropriation of Atlan marks a radicalization of Atlan's own reflections on the role of the receiver. Indeed, Serres combines two aspects of Atlan's theory in order to develop an environmental theory of reception: on one hand, Atlan's claim that »the observed meaning of information« is its »observed consequences on the receiver«; and, on the other, Atlan's claim that »the change in the level of the observation […] is itself related to a change in the level of a hierarchical organization.«[34] Once combined, these claims advance a powerful argument for the environmental sensitivity and creativity of reception that is premised on a collapse of the distance between observer and receiver, which is equally to say, on a repudiation of the idea that there is an outside of the whole system operating in open, fluid interaction with an environment of contingencies.

5. Media Between Environmental Singularity and Metastable Receptivity

What is at issue in the shift from the level of the channel to the level of the whole system is thus not simply a shift in the position of the observer *within the channel*, but the distinction between *two fundamentally opposed types of reception*: reception of a pre-formed message by a pre-existing receiver (the technical paradigm of information exchange) and reception as an individuation of the receiver that is simultaneously the individuation of the information it receives. With the introduction of this distinction, we are returned full circle to Simondon's reflections on the role of the environment in the mediation of culture. What Simondon's reform of information theory establishes more clearly and compellingly than Serres's is precisely how reception can accommodate environmental contingencies as a non-trivial dimension of the process of individuation.

What makes Simondon's reform of information theory both original and incisive is his understanding of information as a process of reception, rather than of transmission. Where Shannon's model presupposes an already individuated sender and receiver and focuses on the problem of transmission through a noise-free

33 Henri Atlan: On a Formal Definition of Organization, in: Journal of Theoretical Biology 45/2 (1974), p. 295–304: 300.

34 Henri Atlan: Hierarchical Self-Organization in Living Systems: Noise and Meaning, in: Milan Zeleny (ed.): Autopoiesis: A Theory of Living Organization, New York 1981, pp. 185–208: 196, 198.

channel, for Simondon, information *is created in the process of its reception*; it is the result of an encounter—and indeed, of an encounter with (environmental) *noise*. More specifically, information is created when a contingent element of the environment operates as a singularity that triggers a process of individuation in a metastable receiver.

Simondon is most explicit on this score in his lecture course on *Communication et Information* where he seeks to defend the position that »the metastability of the receiver is the condition for the efficacy of incidental information.« »*To be or not to be information*,« he writes, »does not depend only on the internal characteristics of a structure: information is not a thing, but the operation of a thing arriving in a system and producing a transformation. Information cannot be defined outside of this incidental act of transformation and the operation of reception. It is not the sender who makes a structure information, because a structure can function as information in relation to a given receiver without having been composed by an individualized and organized sender. Impulses stemming from a phenomenon of chance [*hazard*] can trigger a determinate receiver just as much as if they were emitted by a sender […].«[35] Summing up this claim, Simondon notes that information is determined less by its »finalized emission« than by the sheer »factiticty of the taking of form«: »information is not a message destined to give form but the fact of the taking of form that is induced by a reception.«[36] This thesis conceptualizes information as a »fact« rather than an »intentional act,« and indeed, Simondon is explicit in underscoring how individuation is instigated by the reception of singularities that stem from the part that is not individuated in an individual-in-individuation, which is to say, from the metastability of the entire individuating system: »it is precisely what is not individuated in each [individual] that permits the encounter.«[37]

Simondon's conceptualization of information as singularity introduces a mechanism for the environment to participate in processes of individuation, including human individuation, in ways that are not exclusively channeled or filtered through human modes of selection and that emerge during individuation itself. In a recent book devoted to developing Simondon's account of individuation as an »ontology of encounter,« philosopher Baptiste Morizot pinpoints the operation of a certain kind of contingency (»*hazard*,« a French word meaning both risk and chance) at the heart of all processes of individuation. For Morizot, *hazard* names a mode of environmental agency that contributes to individuation without giving

35 Simondon quoted after Baptiste Morizot: Pour une théorie de la rencontre: Hasard et individuation chez Gilbert Simondon, Paris 2016, p. 87.

36 Ibid., p. 88.

37 Ibid., p. 216.

up its »otherness,« its operation as a worldly process independent from the subject- or self-referenced operation of the individual-in-individuation. Understood as »non-finality«—as radical indifference of the environment in relation to any and all specific individuations—*hazard* thus names a mode of environmental agency, a mode in which the environment participates in individuation, without first or indeed ever needing to be assimilated into it.

Media understood as measuring media in Ernst's sense mediate such individuation: they bring environmental singularities, contingencies in the environment, into relationship with metastable receivers that are by definition open to novelty. As mediators between contingent environmental singularities and a susceptible, open receiver, media thus operate on environmental materiality—or what I elsewhere call »worldly sensibility«[38]—prior to their function within cultural practices and following a markedly distinct vocation. Media operate by measuring environmental materiality, which is to say in ways that render the latter more amenable to being taken up by incipient processes of individuation. Media may do this, for example, by giving form to physical signals, thus rendering the latter *not* so much symbols ready for cultural assimilation, but rather something more akin to »implicit« or incipient forms: elements of environmental materiality or worldly sensibility that proffer opportunities to and for ongoing processes of individuation.

This account of mediation as the brokering of inchoate contact between an amorphous environment and an open, metastable receiver serves to distinguish Simondon's account as a distinct operational ontology of media, since for him individuation is always co-operationalized by the mediation of an environmentality that operates »extra-culturally,« in the sense Simondon lends the term in »Culture and Technics,« which is to say, from outside and autonomously in relation to the individuation it helps to broker. Individuation, in other words, requires two factors: the mediation of environmental materiality that gives it potentiality for taking form and a selectivity exerted by an incomplete individual-in-individuation as a function of its own metastability. Contingency is involved in the coming together of these two factors, since the selection of an environmental element is a function of the history of the selecting individuation (more precisely: of that which has not yet been individuated in that individuation) as well as the sheer contingency of that element's availability for such selection. If every individuation is an encounter—an encounter *not between* two individuals, but one *that itself individuates*—every individuation is a *mediated* encounter, in the sense that media operations of measurement will always already have been involved at the point when information is generated from the meeting of environmental singularity and metastable receiver.

38 Mark B. N. Hansen: Feed-Forward: The Future of Twenty-First-Century Media, Chicago 2015.

That all of this occurs prior to the stabilization of cultural practices and distinctions, supports my central claim here, along with my key point of contention with the cultural techniques paradigm—namely that technical media operate outside the cultural enclosure. Functioning as a »proposal« rather than a »cause,« media operate to pre-form environmental materiality for processes of individuation that underlie culture itself. When Morizot compares environmental singularities to signals,[39] it is precisely in order to foreground their operation prior to the advent of individuated beings and forms of culture generated by such individuated beings: far from transforming physical signals into cultural symbols, technical media mediate elements of environmental materiality, the domain of the signaletic, in ways that make them amenable to selection by individuals-in-individuation without compromising their contingency, their exteriority, or their (quasi-) autonomy. That these processes only subsequently lead to the genesis of cultural practices and the distinctions they produce indicate the necessity to theorize media as what Simondon would designate an »extra-cultural« and »technical« operation: the operation of pre-forming environmental materiality to facilitate its (contingent) participation in individuations that will subsequently become the very agents of cultural practices writ large.

39 Morizot: Pour une théorie de la rencontre (as note 35), p. 214: »Singularity is not a cause; it can be distinguished from a cause as a signal can be distinguished from a stimulus. Information is not imposed as a cause imposes an effect, but is taken up in an act of resolving a problem, and is selected by a compatibility that is of the order of a structuration anterior to the individuated being.«