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Informational Ontology: The Meaning of Gilbert Simondon's Concept of Individuation

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Abstract

The French philosopher Gilbert Simondon (1924-1989) was the first true philosopher of information, yet he remains relatively unknown outside of his native France. This situation is curious, given the warm reception his work has received from a small group of internationally renowned thinkers. Simondon's lifelong project was to expound the appearance of what I call an "informational ontology," a subject that deserves to be addressed at length. This article limits itself by focusing on three aspects of Simondon's philosophy of information. First, it situates Simondon within the French intellectual scene in post-World War II Europe to get sense of his cultural milieu. Second, it positions Simondon's work in the context of the American cybernetic tradition from which it emerged. Finally, it offers an exegesis of Simondon's informational ontology, a radically new materialism that stands to change contemporary debates surrounding issues related to information, communication, and technology.

Keywords

Simondon, Deleuze, Shannon, Wiener, information, communication, technology, technics, semantics, data, individuation, cybernetics

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Cover Page Footnote

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Introduction

The French philosopher Gilbert Simondon was the first true philosopher of information, yet few outside of France know anything about him, let alone details of the informational ontology that he would construct. Born in Saint-Etienne on October 2, 1924, Simondon died suddenly in Palaiseau on February 7, 1989. According to a biography on the website organized in honor of her late father's work, Nathalie Simondon writes that in his last years Simondon suffered from a "psychological distress" which caused him to prematurely end his career in the early 1980s.¹ More than anything else, this brief biography, written by the daughter of one of France's greatest yet least well-known modern philosophers, conveys a feeling of tragic contingency, loss, and the notion that, hidden deep beneath the surface of piles of manuscripts and notes that he left behind, Simondon may yet have left us a few philosophical diamonds still waiting to be discovered.² The situation is even more unfortunate in that most of what Simondon did allow to be published has, as of this writing, yet to be translated into English.³ Almost half a century ago now, Gilles Deleuze (1925–1995) discovered what we are beginning to know today. Simondon is responsible for articulating "an entirely new philosophy."⁴ What Deleuze did not point out, and what many English readers of Simondon have heretofore failed to pick up on, is that in articulating this new philosophy Simondon was simultaneously engaged in conversation with some of the most technically advanced scientists, engineers, and mathematicians of the twentieth century. Any real understanding of Simondon's approach to *individuation* – most central of all Simondonian concepts – must acknowledge the privileged position that Simondon gave to notions from within engineering, physics, and especially cybernetics in his original ontology which, as this paper will show, remains a deeply *informational* one.

So far, in France there have been two areas of research on Simondon; the first are works dedicated to the more political dimensions of his philosophy and the

¹ See Nathalie Simondon's biography of her father at <http://gilbert.simondon.fr/Bio/>. The first part of this essay draws heavily from this online biography. Further references to it will be footnoted "Nathalie." All translations of this and any work by Gilbert Simondon are my own.

² One of the stated purposes of the site is to organize the publication of posthumous material.

³ There is one book, however it consists of material for some university courses he taught and does not cover any of the more significant work on communication and information. Gilbert Simondon, *Two Lessons on Animal and Man*, (Minneapolis: Univocal Publishing, 2012).

⁴ Gilles Deleuze, "On Gilbert Simondon," *Desert Islands: and Other Texts, 1953-1974*, (New York: Semiotext(e), 2004).

second include those that, rightfully, attempt to situate him within the history of metaphysics, and specifically the concept of individuation.⁵ What we have not seen, however, is an attempt to come to terms with the more technical nature of Simondon's engagement with the sciences. Simondon was incredibly well-versed in fields that lay beyond the ken of most practicing philosophers. In a brief interview he conducted with the French magazine *Esprit* late in his life, he spoke about his philosophical approach, yet the interview is peppered with references to a diverse array of scientists, engineers, and inventors, including Albert Ducrocq, James Clerk Maxwell, Allen B. DuMont, Robert Stephenson, Michael Faraday, and others.⁶ It is a curious fact that we have yet to see anyone outside of France mention this area of Simondon's work, just as we have yet to see a comprehensive account of Simondon's engagement with cybernetics, perhaps the most important and least addressed aspect of his philosophy. A reading of Simondon must take into account his engagement with these fields, and appreciating his unique conception of the notion of information is essential for any understanding of individuation and the new branch of ontology that he helped to introduce. Indeed, Simondon's name fits just as comfortably among names like Claude Shannon (1916–2001), Warren Weaver (1894–1978), and Norbert Wiener (1894–1964), just as it does Deleuze, Lyotard, and Latour.

The following essay corrects something of this shortcoming by, first, situating Simondon in relation to the cyberneticist concept of information, broadly understood, and second, by analyzing the informational ontology that he helped to introduce. What I hope will become clear is the extent to which Simondon articulated a robust philosophy of information, one that resonates with contemporary approaches to this field, particularly by a new breed of philosophers who have made it their task to develop comprehensive philosophies of information and computation, such as Brian Cantwell Smith and Luciano Floridi.⁷

The essay is divided into four sections. In the first section, I provide a biographical account of Simondon's philosophical maturation in order to better situate him within the broader context of the French intellectual scene of post-World War II Europe. In the second section, I draw on work from some of the

⁵ Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, (Cambridge: MIT Press, 2012). Pascal Chabot, *La philosophie de Simondon*, (Paris: Librairie Philosophique Vrin, 2003). The former is an exegesis of Simondon's politics, while the latter was the first attempt at situating him within the history of metaphysics.

⁶ Simondon. "Sauver l'objet technique. Entretien avec Gibert Simondon." *Esprit* 76, no. 4 (1983): 147-52.

⁷ Brian Cantwell Smith. *On the Origin of Objects*, (Cambridge: MIT Press, 1996). Luciano Floridi, *The Philosophy of Information*, (Oxford: Oxford University Press, 2011).

American cyberneticists and related thinkers that Simondon heavily engaged, with the primary aim of dispelling the outmoded argument, brought up by some contemporary philosophers, that somehow Simondon remained diametrically opposed to the mathematical theory of communication. On the contrary, the American cyberneticists acknowledged right from the beginning what were the shortcomings of the engineering version of information, and Simondon picked up on these threads before setting out on his own philosophical approach. In the third section, I offer an exegesis of his informational ontology, along with my own comments on the philosophy of information. Lastly, I explain how Simondon's unique contributions can be used to transform work in the field of communication. However, before unpacking Simondon's informational ontology, it will be helpful to understand a little more about his background and the well-heeled education that he received both in France and abroad that led him to a deep and prolonged engagement with what would become one of the twentieth century's most talked about phenomena.

Situating Simondon

The philosopher is described by his daughter as having been always on the lookout for new opportunities for recording and reflection. He apparently kept notebooks and a large sketch book during all traveling events, whether at conferences, family holidays or simply journeying abroad.⁸ These notebooks were for sketching architecture and design material he would use in his academic teaching. He conducted experiments in the family home that would also find the fruits of their labor winding up as demonstrative lessons in the academy. But he was no shuttered academic; once in Paris he surrounded himself with the likes of such influential thinkers as Martial Guérault, Maurice Merleau-Ponty, Jean Hyppolite, Jean-Toussaint Desanti, Gusdorf Georges, Jean Laporte, Jean Wahl, and Jacques Lacan. He studied with Gaston Bachelard, specifically on polarity in psychology up to 1948, and seems to have maintained a life-long correspondence with him.⁹ Taking a graduate degree studying the Presocratics, Simondon also seems to have maintained an early interest in ancient philosophy, one that would remain as he situated his informational ontology in opposition to Aristotle's hylomorphism.¹⁰ Yet his interests remained far reaching. He was equally interested in physics (he had a certificate in mineralogy), and also psychology (he

⁸ Nathalie.

⁹ Ibid.

¹⁰ For a more comprehensive analysis of Simondon's relation to both Aristotle and Deleuze in terms of hylomorphism, see my "A New Individuation: Deleuze's Simondon Connection."

had a psychophysiology certificate, under the direction of Alfred Fessard), as well as zoology, mathematics, and the arts. He passed the *agrégation de philosophie* in 1948 and was appointed to the Descartes School in Tours, where he taught from 1948 to 1955.¹¹ In 1952, he studied for three months at the University of Minnesota, learning social psychology, and he participated in a seminar in experimental psychology with Paul Fraise. The context in which Simondon produced his most important philosophical works is equally impressive. His main thesis, *L'individuation à la lumière des notions de forme et d'information* (*Individuation in the Light of the Notions of Form and Information*), directed by Jean Hyppolite, was finally defended in 1958, “before a jury of Jean Hyppolite, Raymond Aron, Georges Canguilhem, Paul Ricoeur and Paul Fraise, and was also attended by Maurice Merleau-Ponty, Jean Wahl, Pierre-Maxime Schuhl and Mikel Dufrenne.”¹² His minor thesis (the French system required that candidates produce two theses), *Du mode d'existence des objets techniques* (*On the Mode of Existence of Technical Objects*), also defended in 1958, was directed under Georges Canguilhem. Both have yet to be published in English.

Simondon was appointed Professor at the Sorbonne in 1963, and Professor and Chair of Psychology in 1965, where he became a colleague of Juliette Favez-Boutonnier.¹³ He also spent time at the University of Paris V, where he taught general psychology, and founded the Laboratory of General Psychology and Technology from 1963 to 1983.¹⁴ He taught at the École Normale Supérieure, specifically at ENS Ulm Street, St. Cloud and Fontenay from 1968 to 1969, and he taught a course in social psychology and industrial psychology at the Faculty of Humanities of Lyon, as well as a course on the psychology of art at the Pedagogical Institute of Lyon from 1961 to 1963.¹⁵ He also worked and taught in Saint-Etienne (1961/1962), Nice (1969), and Lille (1970). From 1964 to 1970 he participated in a seminar on the history of science and technology led by Georges Canguilhem.¹⁶ Finally, and perhaps most importantly from a world-historical perspective, he actively participated in the organization of the Sixth Symposium at Royaumont on the concept of information in contemporary science, which Norbert Wiener attended, in 1962.¹⁷ This conference would have a long-lasting and far-reaching effect on the French intellectual scene, as it was the first significant contact between American information scientists and their European

¹¹ Nathalie.

¹² Ibid.

¹³ Nathalie.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

philosophical counterparts. The effects of this encounter would go through Simondon and eventually find their way to Deleuze, who then disseminated many cybernetic concepts in fields such as philosophy, literature, and the arts. It cannot be underestimated how much French philosophy owes to Simondon's early encounter with cybernetics. Therefore, in the next section, I offer a short survey of the cyberneticist position, before diving into the radically new informational ontology that Simondon would derive from it.

Cybernetics

The American cyberneticists knew that there were areas yet unexplored by the concept of information as it was expressed in mathematics and engineering. Simondon knew this, and his approach to information was, in a way, an extension of these concerns. While he remained deeply critical of some of the cyberneticist approaches to information, he did not disagree with the engineering notion of information altogether. The mathematical theory of communication (MTC) continues to undergird all other forms of communication, including Simondon's notion of information. What I argue is that Simondon's approach to informational ontology is a type of extension of the mathematical theory of commutation, one that accounts for the indeterminacy of information's interactive existence and that furthered the concerns of the earlier cyberneticists. Where the MTC notion of information is associated with a closed system of positive and negative types of feedback (the transmission model), Simondon approached information from a perspective that allowed for the *interoperability* of different types of information, leaving space for *indeterminacy* that would remain a fundamental component of Simondon's open informational schema. These two factors – interoperability and indeterminacy – would allow him to apply the notion of information to fields beyond mathematics and engineering. But what does the mathematical theory of communication *mean*, and how did it set the groundwork for Simondon's informational ontology?

The idea that MTC undergirds other modes of information and communication techniques makes sense given the utility of its wartime origins. Developed in the Bell Labs in New York City during the Second World War, its inventor, Claude Shannon (1916–2001), was a brilliant young thinker who spent the better part of his academic life at MIT. His Master's thesis on Boolean algebra and what he called a "logic machine" would lay the foundations for the design of computer circuits. One of Shannon's often quoted passages is the following taken from his landmark paper, "The Mathematical Theory of Communication," published in 1948 in the *Bell System Technical Journal*:

The fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point. Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem. The significant aspect is that the actual message is one selected from a set of possible messages. The system must be designed to operate for each possible selection, not just the one which will actually be chosen since this is unknown at the time of design.¹⁸

This distinction between what we can call “data” and “semantic information” would be explicated by other cyberneticists and related thinkers, including Weaver, Wiener, Charles E. Osgood (1916–1991), and Wilbur Schramm (1907–1987), each of whom believed that communication is, first and foremost, the flow of information.¹⁹ Clearly, the idea here is that the MTC approach does not have much to do with semantic information. Osgood and Wiener were equally as vocal about MTC’s inability to account for semantic information. The idea was not that MTC has *nothing* to do with semantics but rather that, while it might *undergird* semantics, it cannot account for it on its own. The absence of this important distinction acknowledged by cyberneticists is unfortunately reproduced in general discussions that feed the popular imagination of what information theory and cybernetics is all about, a practice that has been maintained with the appearance of documentaries like Adam Curtis’ *All Watched Over by Machines of Loving Grace*, a film that situates 1940s cybernetics, Thatcherism, and the Twentieth century’s general dissolution of the rights of living beings as part of one confused causal mess. While the film is admirable for the amount of information it shares about early communication theorists, the realities that it speaks to are a touch more subtle than what the 180 minute documentary is able to convey. A number of cybernetic texts can speak to the open place left within information theory that would later be taken up by Simondon.

Osgood – an American psychologist close to the cybernetic circle who is most famous for developing the connotative meaning of concepts known as the “semantic differential” – acknowledged that there was a field beyond the strictly

¹⁸ Claude Shannon, “The Mathematical Theory of Communication,” (*Bell System Technical Journal*, vol 27, 1948).

¹⁹ While only some of these thinkers used the “cybernetic” label, all of them examined cybernetic ideas and interacted with many of the field’s key thinkers.

data-theoretic terms developed in the area of mathematics such as “sending” and “receiving,” particularly in his description of “choice-parts,” that moment where the information-theoretic content of a message gives way to something not entirely predictable. This would be a theme throughout Osgood’s career, and it shares much in common with Simondon’s approach. Osgood saw communication sequences as informational in the MTC sense, but also as something that brings

the communicator repeatedly to what may be called “choice-points”—points where the next skill sequence is not highly predictable from the objective communicative product itself. The dependence of “I’d better not wash the car” upon “looks like rain today,” the *content*, of the message, reflects determinants within the semantic system which effectively “load” the transitional probabilities at these choice-points.²⁰

Osgood would go on to describe a theory that lay beyond the “predicative” model, however, this remained strongly tied to the transmission model of communication. Like the other theorists of cybernetics, he theorized the way a semantic notion of information might be predicated on a strictly engineering perspective of communication, yet he reserved space for a non-connective realm. This sensitivity to contingency, lack of probability, and openness to the informational multimodality inherent to communicative processes are traits that Simondon felt were equally important. Indeed, he would take it one step further by introducing these features – which were up to then associated with semantic information only – to information in the “hard” sense, that is to say, information as an *entity*. To put it in terms of a helpful distinction made by Floridi, information can exist in three ways: information “as” reality, information “for” reality, and information “about” reality.²¹ Where the cyberneticists thought the interoperability and indeterminacy of information “about” and “for” reality, Simondon thought these concepts in terms of information “as” reality. Wiener, long unanimously declared the inventor of the cybernetic tradition, knew this more than anyone.

Wiener saw communication as information just as Shannon did, yet where Shannon stated that he attempted to explain only an engineering approach to information and communication theory in his seminal paper of 1948, Wiener, like

²⁰ Charles Osgood, “The Nature and Measurement of Meaning,” (*Psychological Bulletin*, vol. 49. No. 3. May 1952).

²¹ Luciano Floridi, *Information: A Very Short introduction*, (London: Oxford University Press, 2011). 65.

Osgood and Simondon, admittedly sought to find the way that MTC information can lay the groundwork for a much more fluid and diverse conception of communication that develops from these connective underpinnings. The most interesting figure among the group (for reasons that I will not go into here), Wiener – who Bertrand Russell had once taught and described as thinking “himself God Almighty,” complaining that “there is a perpetual contest between him and me as to which is to do the teaching”²² – admitted that

The desire to apply Cybernetics of semantics, as a discipline to control the loss of meaning from language, has already resulted in certain problems. It seems necessary to make some sort of distinction between information taken brutally and bluntly, and that sort of information on which we as human beings can act effectively or, *mutatis mutandis*, on which the machine can act effectively. In my opinion, the central distinction and difficulty here arises from the fact that it is not the quantity of information sent that is important for action, but rather the quantity of information which can penetrate into a communication and storage apparatus sufficiently to serve as the trigger for action.²³

Wiener developed an approach slightly different from that of MTC, one that admitted to a world where semantic information remained different from, yet still tied to, traditional notions of communication, where the data sent mattered less than the type of data that could *penetrate* into different communication systems. Different *types* of information mattered to the cyberneticists, as any careful reading of their work will show, and this little acknowledged fact flies in the face of contemporary, dehumanizing critiques of that tradition. Notice that penetration is not the same thing as transmission and implies the overcoming of some fundamental barrier. Contemporary debates on everything from cognitive science to epistemology remain deeply tied to the distinction this barrier introduces in terms of information, yet many, it would seem, are unable to account for the interplay between what Wiener calls “brutal” or “blunt” information and the “sort of information on which we as human beings can act effectively.” Contemporary

²² Flo Conway and Siegelman, *Dark Hero of the Information Age: In Search of Norbert Wiener the Father of Cybernetics*, (New York: Basic Books, 2006).

²³ Norbert Wiener, *The Human Use of Human Beings*, (Boston: Houghton Mifflin, 1950). 94.

philosophers such as Floridi are attempting a systematic philosophy that might define the interaction between these two levels of information and more. Indeed, the philosophy of information as a field is long overdue. While the contemporary approach to this field has begun by analyzing the texts of philosopher's whose work relied heavily on the notion of information – perhaps most importantly the work of Fred Dretske (1932–2013)²⁴ – Simondon remains a key figure that has yet to receive substantial attention. The next section will outline some of the more significant points in his philosophy of information, specifically Simondon's informational ontology.

Informational Ontology

A little bit of demystification is in order. Simondon's informational ontology, though exceedingly clear, has become obfuscated through individual philosopher's appropriative attempts at an explanation of his position.²⁵ Deleuze quizzically ignored many of the technical terms that Simondon inherited from the American cybernetic tradition – one would be hard-pressed to find any sustained engagement with concepts like “information” and “communication” in his work, save for in one of his last texts, the deceptively short, brilliant “Postscript on the Societies of Control” – opting instead to retain only those terms in Simondon that imbue a decidedly more philosophical feel, for example, as in such terms as the “preindividual,” “ensemble,” and “dispartion.”²⁶ Deleuze's “rereading” (to put it mildly) of other philosophers is well-known, and the case is no different with Simondon. Simondon was no stranger to terms from fields outside of philosophy proper, and he frequently made use of them, including terms like “transduction,” “modulation,” and “information” (this last in an engineering sense). In what follows, I will attempt to minimize my own reflections on what I call the more “philosophical” terms associated with Simondon's work and instead try to focus on those that are directly linked with the different fields that Simondon was drawing from. Additionally, most of the material that I will be quoting from in this section comes from the second half of his major thesis, which was published in France under the name *L'individuation psychique et collective* (*Psychic and Collective Individuation*) by Aubier in 1989.

²⁴ Fred Dretske, *Knowledge and the Flow of Information*, (Cambridge: MIT Press, 1981).

²⁵ I do not think this is necessarily a bad thing in itself for the practice of philosophy. However, if one wishes to better grasp the concepts Simondon was working with in terms of their scientific significance there is a far more accurate and historically embedded story to be told.

²⁶ Gilles Deleuze, “Postscript on the Societies of Control,” *October*, vol. 59 winter 1992.

Simondon developed a unique approach to information that, while finding its origins in the MTC notion of communication, left an open space in the informational schema, allowing him to create a robust informational ontology. Some of the important distinctions between Simondon and the MTC approach are that, for the latter, information theory is one dimensional, is described in terms of probability, and aligned with the notion of entropy as taken from thermodynamics. In many ways, both are indebted to information's spiritual godfather John von Neumann (1903–1957) who, shortly before his death, had prepared an unfinished manuscript for The Silliman Memorial Lectures Series at Yale. This manuscript, erudite and speculative in nature, compared many elements of the mathematical theory of communication (the computational model) with the human mind (the biological model). The manuscript was published posthumously under the title *The Computer and the Brain* in 1958 and the book's importance, along with von Neumann's influence, cannot be underestimated. Famously, the word "entropy" was suggested by von Neumann to Shannon to name the value of information embedded in a message. Simondon knew about these thermodynamic beginnings. In the MTC approach, he tells us, "information theory is the starting point of a body of research that founded the concept of negative entropy (or negentropy), showing that information corresponds to an inverse process of degradation and that, within the entire pattern, information is not definable in terms of the source, or the receiver, but from the relationship between source and receiver."²⁷ To understand how Simondon's "alternative" informational ontology built on these entropic beginnings to eventually move away from MTC, there are a number of concepts that must be worked through, a task that is doubly important before the rich material of Simondon's courses and conferences become available in English (they are infinitely more technical in nature).²⁸ The most essential of these concepts are (1) *metastability*, (2) *individuation*, (3) *transduction*, and (4) *concretization*. In what remains, I will provide an exegesis of these terms.

Metastability signifies the first-order difference between Simondon's notion of information and the MTC version. Where the cyberneticists saw information as a "thing" to be sent and received yet still reserved a place for semantics, they did not account for the way that these different fields of information interact. Simondon's position is unique in that he viewed information as acting in a state of metastability, within a dual-dimensional and preindividual system, one whose nexus or pivoting point rested with the notions of information's interoperability and indeterminacy. Rather than stop at information in terms of its probabilistic

²⁷ Gilbert Simondon, *L'individuation psychique et collective*, (Paris: Aubier, 2007). 50.

²⁸ These are *Cours sur la perception* (1964–1965), *Imagination et invention* (1965–1966), and *Communication et Information: Cours et Conférences*.

transmissibility, he sought instead to think about the place where one type of information interacts with another in an event that produces a fundamental change in ontology. For example, he refers to information as being “never in a single homogenous reality,” but instead as existing in “two ordered states of *disparation*,” “disparation” here merely meaning the previous realms from which the new informational “entity” emerges. Information “either at the unit [MTC] or transindividual level is never deposited in a form that can be given,” [...] but instead is the communication “between two disparate realities,” a “meaning that arises when an operation of individuation discovers that the two disparate yet real dimensions may be a system of information.”²⁹ Information passes from a state of “metastability to stability;” it is “never a given thing” for Simondon. There is no “unity and identity of information, because information is not an end; it requires a system.”³⁰ The amount of foresight that Simondon shows in this formulation borders on that of a clairvoyant. Before Marshal McLuhan, Simondon acknowledged the fact that information itself, as “data” or “message,” was not the whole story, and that the most important thing is the system where the information is constituted. Yet one must be clear here; Simondon acknowledged information’s multimodal character. Information could be “exchanged between beings already individuated” but also “within systems to come that produce a new individuation.”³¹ However, the bulk of Simondon’s work does focus on what one could call “internal information”—“one could say that the information is always internal, it should not be confused with information signals and media signals.”³²

“The notion of form must be replaced by that of information” is quickly becoming one of Simondon’s most well-known expressions.³³ This brings us to the second important notion to understand and probably the most talked about term in Simondon’s philosophy—the notion of *individuation*. Individuation indicates that there is a state of stability and metastability, and it implies “the existence of a system in a state of equilibrium,” one that individuates entities; information in this system is “the difference in shape,” again “never a single term” but rather “the meaning that arises from a disparation.”³⁴ Here, Simondon argues that the notion of information “should never be reduced to signals,” as in MTC, but that it must express the compatibility of two disparate realms.³⁵ The MTC realm sees information as a “homogeneous line in which information is

²⁹ Gilbert Simondon, *L’individuation psychique et collective*, (Paris: Aubier, 2007). 22.

³⁰ Ibid.

³¹ Ibid. 234.

³² Ibid.

³³ Ibid. 28.

³⁴ Ibid.

³⁵ Ibid. 29.

transmitted with maximum safety,” indicating a closed channel, one that advances in signal strength as it avoids noise, and it is in this sense that “only content, not code, can be transmitted.”³⁶ Content is the only thing that can be transmitted in the MTC model of communication; in the words of Shannon, it seeks to reproduce “at one point either exactly or approximately a message selected at another point.” For Simondon, informational ontology, on the contrary, must be understood not in terms of informational content but in terms of informational code, understood as a tool for converting informational artifacts into something entirely new. Contemporary communication practices in “multimodality” and theories on object-oriented ontology speak to something of this concept, and are beginning to prove decisive in furthering our understanding of communicative processes. At bottom it is about a technique which expresses the many different ways it is possible to interface with an informational system. It is about a plurality of individuation, and not a subjective or singular one. Had he lived long enough to witness the flood of new approaches to information along with their attendant technological advances – big data, computational ontology, cloud storage – Simondon would have found solace in the fact that much of what he had to say on the interoperability and indeterminacy of information’s ontological significance came true. “Information is the formula of individuation” rings true today, finally putting to rest philosophical speculations on the separation between matter and form, subject and object.³⁷ The most astute observer of this has been Bruno Latour, who describes Simondon as going beyond such simple distinctions, indicating in his own playful manner that for Simondon “subject and object – far from being at the beginning of reflection the two essential hooks to which it is appropriate to attach a hammock so that the philosopher will be able to sleep – are only rather late effects of the true story of the modes of existence.”³⁸

If individuation is the concept that Simondon deploys in order to overcome philosophy’s separation of matter and form – an ancient distinction that Simondon traces back to Aristotle – seeking instead to describe information as existing in a state of metastability, the name that Simondon gives to the actual action of “changing” of informational properties is *transduction*. In this third cybernetic term, form, for Simondon, “already draws on a theory of information.”³⁹ What becomes important to describe is instead the process by which different informational properties interact among each other to produce something that is ontologically new. Transduction indicates the meeting of two disparate

³⁶ Ibid. 32.

³⁷ Ibid. 22.

³⁸ Bruno Latour, “Prendre le pli des techniques,” numéro spécial de la revue Réseaux (coordonné par Christian Licoppe) Aout-Septembre, Vol. 28 n°163, pp. 13-32, 2010.

³⁹ Gilbert Simondon, *L’individuation psychique et collective*, (Paris: Aubier, 2007). 48.

informational realms and signals the beginning of the process of individuation. It points to the emergence of a new informational structure, one that resolves a disparity between fields, and these fields come together to actively produce the “potential that lives in matter.”⁴⁰ One of his favorite examples is the air-cooled engine versus one that is water cooled. In the air-cooled engine, the informational properties in the air perform multiple functions, whereas the water in the second performs only one and acts as an addition. The air-cooled engine is open, in that the schematic design of the engine interacts with another “milieu” (as Simondon would put it). Transduction means that knowledge of the information inherent to interoperable elements of an open structure can produce real ontological effects. This example is admittedly more technological, but the priority of information even in biology should become clear upon closer inspection. For now, it suffices to say that transduction signifies domains of potentiality, these being the connection of information inherent to different systems, in a way that interfaces with other domains, unlocking and reconfiguring one another, once again calling to attention the notion of the multimodality of communicative information. For a more popular example, one merely has to think of apps and the way they reconfigure information to produce new ontological realities, for instance, as when GPS or other systems reproduce quantified aspects of reality in ways that elicit new affective experiences on the part of the user.

There are, however, some philosophers who attempt to situate information as being opposed to energetic notions of reality, as if thermodynamic properties alone account for the materiality of the world. Nothing could be further from the truth. In fact, information signifies an a priori philosophy, perhaps a first philosophy, one that may work in tandem with energetics, as already evidenced by the highly informational character of the work that is done by many contemporary philosophers of science and physics.⁴¹ Floridi’s work is unmatched in this regard, and his “method of levels of abstraction” shares many affinities with Simondon’s philosophy of information. Like Floridi’s levels of abstraction, Simondon sought not to treat information as idealism or as an “absolute magnitude,” but instead materially, as “an exchange between parts of a system.”⁴² The Simondonian schema necessitates the conservation of information and posits informational properties that, rather than acting as “bits” within a channel, fundamentally alter the system itself, producing a new ontological reality by reconfiguring two opposing realms in a way that resolves a contradiction.

⁴⁰ Ibid. 32.

⁴¹ I am thinking primarily of the work of Bas C. van Fraassen, Steven P. French, and Stathis Psillos. For a comprehensive account of information’s relevance to these philosophers of science, see Floridi’s brilliant *The Philosophy of Information*. 46.

⁴² Gilbert Simondon, *L’individuation psychique et collective*, (Paris: Aubier, 2007). 234.

Simondon's philosophy of information retains this sense of dialectic. The relationship is not designed ideally as one "between preexisting terms, but as a plan of reciprocal information exchange and causation in a system [...] the relationship exists physically."⁴³ It is both informational and material, producing informational structural realism. Here, one sees what Deleuze may have found most enticing in Simondon's informational ontology. For Simondon, "information expresses the immanence of each of the subsets with the set."⁴⁴ However, this immanence does not imply homogeneity of information; information for Simondon remains fundamentally heterogeneous: "Information is not homogeneous with respect to its current structure, and there therefore remains in the individual a margin between the current structure and acquired information."⁴⁵

Concretization describes the relationship of the metaphysics of information to the ontology of the technical object. This is where I situate most of my own work on Simondon. As is often the case with thinkers who deploy idiosyncratic use of terminology, Simondon's concepts are typically misread and grouped into a combative category of thought to which I do not think they entirely belong. Many have tried to situate Simondon as completely opposed to the mathematical theory of communication to the extent that his theory bares absolutely no connection to those of Shannon and Wiener. This would be a mistake. While Simondon was often very critical of both Shannon and Wiener, I think it would be incorrect to situate him as being diametrically opposed. Rather, I believe that Simondon thought information as an entity in very much the same way as Shannon and Wiener; however, he described the entity that information is in terms of a different type of *process*. The difference is not that Simondon saw information as a "thing" differently from Shannon and Wiener, but that he envisioned it's interoperability in a different sense. Like the buffoonish character Wayne in the 1992 movie *Wayne's World*, if I continuously close and open one eye and then the other ("Camera one, camera two! Camera one, camera two!") it will produce each time a new effect where my affective ocular sensibility changes with each "click" (this back and forth of perspective is famously known as "parallax"). The objects in my visual field clearly do not change when I perform this activity, but something else certainly does, namely, the affect produced by each new percept. But does this mean that these two pairings of affect/percept are two distinct entities? Not at all. All that has changed is a mode of processing information. I understand Simondon's relationship to the mathematical theory of communication in very much in the same way. Information is, of course, a real "thing" to be discussed and studied; environmentally, semantically, and physiologically. It can

⁴³ Ibid. 210.

⁴⁴ Ibid. 236.

⁴⁵ Ibid. 273.

even be viewed as being sent and received. The difference lies not in the “thing” but in its process, its interoperability, and its functionality. This is where I see Simondon contributing something that is unique to the philosophy of information and communication. And I will admit my bias. In the aforementioned parallax analogy, I view Simondon as having the one eye open.

So how does the interoperability of information lead us to artifacts, to technological objects, and finally to theorizing technological genesis? I understand technology in terms of technique. If opening and closing my eyes is a technique, then it is a type of technology. But in this example there is no type of long-form genesis. How to explain the long-form genesis of technical objects? Here again Simondon proves eminently useful. His concept of *concrétisation* (“concretization,” though this is an unfortunate translation), I believe, is more useful than the concept of individuation in that it avoids humanist correlative attitudes and certain types of “soft metaphysics” that people are prone to engage in when dealing with highly generalizable, and historically messy, terms like individuation. But I will not digress into a meta-theoretical exercise on why occasionally the terminology associated with certain concepts deserves to be left behind. *Concrétisation* is not quite like the English transitive verb “concretization.” First of all, the English word is ugly. Second, and more importantly, *concrétisation* is an indefinite process that does not indicate a “transfer” as if something had gone from one state (abstract) to the next (physical), as concretization does. Concretization defines a specific result. It is used in the way that I can say, simplistically, that I have “given form to an idea” (the way that a group of advertisers might be told to make a brand more “concrete”). *Concrétisation*, on the other hand, describes a certain type of “pull;” it indicates what Simondon described as the “life” or “being” of the technological object. It is a notion popularized in books like *Wired* co-founder Kevin Kelly’s *What Technology Wants*. But it is not a type of emergentism like the kind Kelly argues for. The reason is that the “sum” of *concrétisation* is not greater than its parts; it does not connote something that at one point never existed. To put it simply, it’s *concrétisation* “all the way down.” *Concrétisation* is the engine that drives individuation.

Even though I have just made the argument for the original French, for the sake of clarity, in what remains I will simply say “concretization” since I am no longer concerned with comparing the two, and the reader should understand “concretization” in the French sense outlined above. So, what are the inherent qualities of concretization? There are two. The first is that during the technological genesis that is concretization, the technological object tends toward self-sufficiency. You can cast aside all thoughts of “strong” artificial intelligence and mythological notions of conscious machines. All this means is that

concretization is not an additive process, and that the technological object tends to get smaller as it re-purposes elements within itself. When I say that concretization is not additive and that it becomes self-sufficient, this is due to Simondon's second and more nuanced point, that technological objects re-purpose themselves by an interoperability that is achieved through the transduction of two regimes of information. What does this mean? If I have a technical object "AB", and I want it to do something else, then I have to add "C" to it. This is not concretization but an additive process (think of the water-cooled engine). Concretization operates more along the lines of an algebraic equation, not in the direction of the "plugging in" of numbers that happens when we substitute variable functions with known quantities, but the reverse, when we reduce the equation down to its simplest, abstract form. In this sense, concretization is a rather counter-intuitive process. It does not tend toward the "real" or concrete "thing" so much as it does toward the essence of the technical object. Simondon provides countless examples and empirical evidence of just such a transcendental transductive principle throughout *Du mode d'existence des objets techniques*, moments in history where parts in the technological object become useful in more ways than one, re-purposed, or achieve a higher state of interoperability, and as a result help to move the technological object along in its concretization toward a more abstract state of being. But it should not be forgotten, and people do not talk about this nearly enough, that information plays a fundamental role in this concretization. If concretization is the engine that drives individuation, then information is the gas that keeps concretization working.

Informational ontology, then, sees all things as real, yet it acknowledges along with Simondon that information is the methodological skeleton key that allows us to inquire into the "objects" and "materiality" in the first place. As Floridi so eloquently puts it, we are decades into our "fourth revolution" after Copernicus, Darwin, and Freud.⁴⁶ At this late stage in the game, we need to keep this philosophical car running and not turn back for lack of historical or philosophical hindsight. Alan Turing, long held up by mathematicians and computer scientists, deserves to enter the pantheon of continental heritage and create some ripples in this too often isolationist pond. Simondon, while clearly at odds with much of the mathematical theory of communication and its practitioners, did not denounce them entirely. He engaged much of Turing, and the extent of Deleuze's engagement with Simondon was no tiny event, as we are all beginning to see. To end with a cliché, it does not take a special type of genius to see that $1 + 2 = 3$.

⁴⁶ Luciano Floridi, *The Fourth Revolution: How the Infosphere is Reshaping Human Reality*, (Oxford: Oxford University Press, 2013).

For my conclusion, I will briefly explain what I believe a return to Simondon – and specifically an informational ontology – can contribute to the field of communication.

Communication and New Materialism

How might Simondon's unique contributions be used to transform work in the field of communication? What does it all mean? It would be much more effective to explicate the significance of Simondon's work and to describe exactly what conceptual or methodological advantage there is in situating him as a philosopher *of information for communication*. What is there to recommend his work?

The way I see it, Simondon is useful to the study of communication for four reasons, although they can be grouped under the general observation that communication as a discipline has yet to “find” a philosophy that it can call its own. We have yet to find a work that outlines communication's metatheoretical positionality *in toto*. This is barring, of course, work on this subject in two by-now classic texts, Robert T. Craig's excellent “Communication Theory as a Field” (1999) and John Durham Peters' insightful “Genealogical Notes on ‘The Field’” (1993). Consider that many other “fields” have canonical philosophical texts that outline something of their theoretical heritage. Communication must find a philosophy that speaks to the multimodality of three things—information, communication, and technology, and that answers the philosophical question “What is communication?” I believe Simondon provides us with an answer to this question, for it is not enough to accept the sorry conclusion, so often reached in these metatheoretical exercises, that communication is an “interdisciplinary” mix of this and that, or, worse, that it is by virtue of being an academic potpourri that communication finds meaning. Such conclusions are conceptually lazy. Simondon offers us the conceptual tools with which to parse through this field in a properly analytical and philosophical way that can enable future scholars of communication a way forward, while providing a useful reference point.

A return to Simondon specifically provides communication with the following. First, Simondon offers us a new *methodology* from which to conduct inquiries related to communication as an empirical endeavor. An *individuating* methodology would seek to proceed by articulating instances of the modulation of communicative processes themselves, rather than in the simple “transmission” of meaning or data between pre-given, already individuated entities. For example, whether we are talking about empirical evidence in doctor-patient health communication or the analysis of vast quantities of data in social network analysis, an individuating methodology would seek to measure, uncover or understand those communicative structures that modulate in the act of

communication and that perpetuate by virtue of an individuating flexibility. What variable characteristics of the formal “consultation” setting are responsible for trends that develop in interpersonal communication? How do reflective properties inherent in the visibility of a wiki edit history potentially alter future edits? These are the structural qualities of modulation that an individuating methodology would seek to uncover. Second, Simondon offers us a new conceptual toolbox and specialized *terminology* with which to frame our future discussions on entirely new communicative phenomena: the language of *technics*. Instances of modification in the technical evolution of objects such as engines, programs, and games can be referred to as points of “concretization” when we intend to say something like “technological evolution.” Moments where once-separate levels of communicative or informational properties are linked and give way to something new can be referred to as acts of “disparation,” and so on (Simondon uses the example of left and right retinal imaging). Third, Simondon allows us to bypass a longstanding philosophical debate; however, it is one that affects the future of communication studies also. A Simondonian informational ontology allows us to finally put aside the subject-object deadlock and instead consider the human that is present in the technological object, and vice versa, as an *ensemble*. Communication research into interfaces and human-computer interaction stand to benefit from Simondon’s deeply phenomenological approach to technology and embodied interaction, where the point is less about the separation of the human from the technical than it is about the successful interoperability of the ensemble. Fourth, Simondon shifts the discussion from paradigms of closed ecologies to wide-open informational paradigms. Though this might sound speculative, I believe Simondon’s informational ontology stands with some of the most rigorous philosophies of informational structural realism that currently exist, and thus that it can inform communication not by proffering predetermined boundaries of inquiry as in ecology, but by recommending an open informational realism that is amenable to the most radically inquisitive forms of research, such as in multimodality (Simondon’s concept of “transindividuality” expresses something of this). But there is much more than this to recommend in Simondon.

For all of the above stated reasons (and many more), Simondon is uniquely situated to add significantly to communication (and philosophy) once again. Although tragically cut short, his career and the body of work that it produced stands as a veritable treasure chest of philosophical diamonds still waiting to be discovered. In the same way that Ian Hacking found inspiration in Foucault, producing some of his best work after the French philosopher had died, or in the way that still countless others found inspiration in Deleuze, when I think of Simondon it is with the hope that, vicariously, he too will one day enjoy in the afterlife the career he was so close to obtaining in this one.

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