

Introduction

Catching Up With Simondon

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As a young philosopher Gilbert Simondon identified technology as a site of obsession, anxiety, and misunderstanding within contemporary culture. "Culture," he wrote, "has become a system of defense designed to safeguard man from technics" (*Mode of Existence*, 1). According to Simondon, technique and technology ubiquitously structured thought and practice, especially in the contemporary world, yet philosophical tradition relegated the technical to an obscure zone of conceptual neglect. Simondon took the intimacy and obscurity that surrounded our relation to the technical as a clarion call to philosophy. Over the course of thirty-odd years of philosophizing, he examined the relation of the technical to the cultural and elaborated a quasi-technicist account of ontology itself. Yet while he made definite progress toward re-acquainting the world of culture with the world of technics, his own philosophy found a less fortunate fate; even as his theses were quietly disseminated throughout structuralist and poststructuralist thought, and were covertly conveyed into Anglophone thought, his name and his work remained largely unknown and misunderstood.

At the time of his death in 1989 it appeared that his philosophy and its association with technics would become a victim of that same stigmatization he spent his entire career challenging. After Simondon's death, a trickle and then a flood of works deluged whatever defense system had been constructed to protect (French) philosophy from his peculiar and often subversive work. Re-publications of old texts, first printings of unpublished texts, and waves of secondary tributes and interpretations spread across the French philosophical scene.¹ Italian, German, and Spanish translations followed. His role as an influence upon Gilles Deleuze and as a predecessor of actor-network theory was acknowledged, while his promise for new materialisms and process philosophy became an object of debate.² Yet even today his work remains largely unknown, and the long-promised translations of his major texts continue to languish in prominent university publishing houses. For these reasons, we look upon this collection of essays not so much as an introduction, but as an

attempt to catch up with a thinker we regard as both central and obscure in contemporary theory debates.

This essay will outline the two major areas of Simondon's thought, which loosely correspond to his account of the technical object in *Du mode d'existence des objets techniques* and his reconceptualization of ontology as onto-genesis, developed in *L'individuation à la lumière des notions de forme et d'information*. We show that Simondon's continuing relevance is grounded in his simultaneous engagement with both technique and individuation. We do this by exploring Simondon's relationship with cybernetics, here interpreted as the seminal moment for the understanding of technique and ontology present across his work. The essays that follow expand on the intersection between his process-oriented ontology of individuation and the philosophy of technology in surprising and, at moments, contradictory ways. By contrasting the approach taken in this issue to the philosophy of technics found in the work of Bernard Stiegler (the primary interlocutor for the majority of contributors in their engagement with Simondon), we advocate for a more open approach to Simondon's philosophy that is adequate to the task of philosophy in the contemporary moment. In drawing the reader closer to the complexity and ambiguity of Simondon's thought, we hope this collection will also initiate a new round of debate among Anglophone readers.

1. Simondon in the Context of Post-War France

Simondon belonged to an eminent generation of French thinkers who came of age during World War II and its aftermath. Much ink has been devoted to the significance of the German occupation and German philosophy on "French theory" and poststructuralism.³ These debates forestalled investigation into another set of influences, arguably more decisive: namely, the postwar reconstruction of the French economy according to industrial, technological, and economic models associated with American enterprise. Kristin Ross writes of this transformation:

The speed with which French society was transformed after the war from a rural, empire-oriented, Catholic country into a fully industrialized, decolonized, and urban one meant that the things modernization needed—educated middle managers, for instance, or affordable automobiles and other "mature" consumer durables, or a set of social sciences that followed scientific, functionalist models, or a work force of ex-colonial laborers—burst onto a society that still cherished prewar outlooks with all the force, excitement, disruption, and horror of the genuinely new. (4)

Fascination and apprehension over new technologies of research, control, and automation swept French culture in the 1950s and 1960s. Henning Schmidgen's essay in this collection captures this moment when recalling the work of engineer-turned-novelist Alain Robbe-Grillet⁴ and Barthes's

sophisticated deconstruction of mythological machines. He could have equally cited Jean-Luc Godard's dystopian depiction of a state run by computers and the real-life efforts by the French Préfecture de Police to re-tool their legendary "fichiers" with IBM computers in order to identify and track Algerian terrorists.⁵ All of these efforts elaborated upon a well-established French technocracy, but the new technologies—particularly those associated with the computer and cybernetics—reinvigorated the fantasy of a state run with machinic efficiency and precision.

Within the French university system the impact of new sciences and technologies was even more pronounced. The postwar transmission of wartime research across the Atlantic, the return of exile intellectuals from England and the United States, and high-profile interventions by the Rockefeller Foundation and other American groups in the French universities transformed French higher education.⁶ Claude Lévi-Strauss, for example, embodied each of these influences. In addition to acting as cultural and scientific representative for the French state and UNESCO from the late 1940s through the early 1950s, he also worked with the Rockefeller Foundation and other organizations to promote cybernetics and information theory in France after the war. The founder of cybernetics himself, Norbert Wiener, singled out France as a special site for developing his research. His celebrated book *Cybernetics* was published simultaneously in the United States and France, and he lectured at the Collège de France and on Radio France in the late 1940s and early 1950s.⁷ Well into the early 1970s, philosophy and the human sciences in France would continue to grapple with conceptual themes introduced during this period.

With the possible exception of Raymond Ruyer,⁸ Gilbert Simondon was the only French philosopher to have earnestly attempted a fullscale re-evaluation of philosophy and of cybernetics in light of one another. Canguilhem, his doctoral supervisor, may have been influential in this regard. Canguilhem wrote a number of historical and philosophical texts aimed at historicizing aspects of the cybernetic problematic (feedback, reflex, information, the thinking machine).⁹ Simondon was also critical of cybernetics and information theory, expressing strong objections to cyberneticians' tendency to erase the distinction between living and technical systems, and expressing skepticism over Norbert Wiener's romantic—Platonic, some would say—political program.¹⁰ But at the heart of Simondon's project is an attempt to re-deploy the findings of cybernetics in a form adequate to the demands of philosophy, and also an attempt to recast philosophy in alignment with the suggestions of cybernetics. He described Wiener's *Cybernetics* as a "work of enormous ambition" that was, "more a discourse on method than a definitive work, and which reminds one of Descartes. It is a philosophical work that is only secondarily technological and mathematical" (*Communication*, 195-96, note 6). Simondon

advocated the reconceptualization of processes of individuation not only in terms of stability, but also metastability, concepts that resounded with the cyberneticians' preoccupation with life and society as homeostatic or self-regulating mechanisms. He transposed the concept of "transduction"—an informational practice of converting energy or transmissions from one form into another—into the heart of his philosophical analysis. Most importantly, he identified biology, technique, social interaction, and ontology itself with information processes of communication, connecting his work with cybernetics even if he refused to restrict himself to the discourse and findings of cyberneticians.¹¹

2. Beyond Cybernetics

Cybernetics and postwar science marked the occasion and, to some extent, the stakes of his invention. Yet, the motivation for the appropriation of cybernetic and informatic concepts was not simply a question of historical circumstance. The integration of cybernetics and information theory into the problematics of philosophical reflection enabled Simondon to re-frame philosophical accounts of human being.¹² Adapting cybernetics' emphasis on communication, he supplemented it with concepts from psychology, the physical sciences, and biology. This furnished Simondon with operational concepts that could be adapted across the wide range of domains his philosophy addressed.

For Simondon, as for cyberneticians such as Norbert Wiener and Gregory Bateson, "information" emerged as the common currency of this grand scientific synthesis.¹³ However, moving beyond the cyberneticians, Simondon defined information as the basis for a generative and process-oriented ontology. Rather than the content shared between a "sender" and "receiver" as described in Claude Shannon's celebrated theory of information,¹⁴ Simondon suggested that his approach involved a turn away from the quantification of information in order to speak of "the *quality* of information or informatic *tension* (*tension d'information*)" (*L'individuation*, 542). Distinguishing his own interpretation of the concept of information from more widely circulated interpretations, he develops an understanding of the term that transforms communication and interaction into processes through which individuals are constituted. Simondon elaborates the ontological transposition of information in his explanation of the term given early on in *L'individuation a la lumière des notions de forme et d'information*. He writes:

Information never relates to a single and homogenous reality, but to two orders in a state of disparation... it is the tension between two disparate facts; it is the signification that arises when an operation of individuation discovers the dimension according to which these two disparate facts might become a system.. (ibid., 31, our translation)

By linking information to a “state of disparation,” Simondon is adapting a term borrowed from optics to describe the way in which stereoscopic vision integrates two images into a single perception, to explain the genesis of beings.¹⁵ Making this “state” of disparity central to his definition of information goes well beyond the transmission of data between two pre-established entities. Rather, “information” designates the fundamental process through which being itself is articulated or generated via dynamic interactions with other beings and the environment.

The conception of information as both interactive and ontologically constitutive found in his major thesis illuminates the peculiar title of his first thesis: *On the Mode of Existence of Technical Objects*. Why this emphasis on a “mode of existence,” rather simply on the “technical objects” themselves? Precisely because this focus on differential genesis and emergence prohibits speaking of “technical objects” in isolation or as a “being” unto themselves. Much as Simondon rejects an account of the human that excludes technical objects, so too an account of technical objects themselves would be necessarily partial and incomplete. However the turn toward “modes of existence” underscores the differential and informational genesis of technical objects in relation to other and complementary modes of existence—for example, organic beings. Again, thematics from cybernetics resound throughout this account. But whereas the founder of cybernetics Norbert Wiener ultimately recoiled at cybernetics’ promise to upset human being—suggesting that the technical was in some sense a modern and contingent disruption in a previously holistic culture—Simondon seized upon the technical disruptions of modernity as an occasion to rethink human “modes of existence” as having an essential relation to technical beings.¹⁶

However, his significance as a philosopher depends on the fact that he framed his writings as interventions that extend well beyond the established frameworks of cybernetics. In his minor dissertation¹⁷ entitled *On the Mode of Existence of Technical Objects*, Simondon takes great pains to frame the question of technology as a part of an account of co-constitutive and holistic relations among organic and non-organic beings. He begins the book by noting that the opposition between culture and technics, man and machine, is based upon an antiquated and ill-conceived prejudice. He declares his intent to begin overcoming this prejudice. He goes on to explain that, “what philosophy has to achieve in this respect is analogous to what the abolition of slavery achieved in affirming the worth of the individual human being” (*De la Mode*, 9). Cybernetics’ rejection of absolute distinctions among humans, animals, and machines enabled an initial step toward this analysis, but Simondon’s philosophy provides the rigor and reflection for moving beyond the techno-hype and faddish rationalism of cyberneticians’ often confused comments upon human being.

It is along similar lines that we might better understand his project of re-formulating the human sciences, which stands behind his work in *L'individuation à la lumière des notions de forme et d'information*. In traversing findings and figures from classical and medieval philosophy, modern chemistry, mathematics, communication engineering, foundries, and factories, Simondon elaborates a vision of ontology and knowledge as constitutively heterogeneous yet indissociably linked fields. Cybernetics and information theory provide a philosophical method that allows him to develop a unified schema for philosophical, social and scientific fields—what Simondon terms axiomatization. (*L'individuation*, 531-552). As both Xavier Guchet and Jean-Hugues Barthélémy note in their contributions to this volume, the axiomatization of the human sciences was not secondary to his critique of the concept of the individual. Both are directly related to his critique of the distinction between form and matter—what he calls hylomorphism—as defining the way in which individuated beings had previously been understood in philosophy.¹⁸ Claiming that this foundational distinction is erroneous both empirically and analytically, Simondon describes how individuation as an onto-informational genesis can make sense of how knowledge and being intersect. As Adrian Mackenzie explains, “Since living entities individuate continuously, rather than being formed once, they *are* information. They are continuous, variable processes of matter-taking-form” (50). The turn to information as an ontological concept is the foundation of Simondon’s elaboration of individuation as a process that could bring together the different regimes of being (physical, biological, psycho-social) and knowledge about beings in their plurality and difference.

In both these texts, Simondon’s heterodox appropriation of cybernetic concepts opens the path to a philosophical method that challenges traditional philosophical analysis through a new analysis of technology and of being. Methodologically, by resisting the historicism or ideological critiques of some of his contemporaries, Simondon takes up cybernetics in order to stage an experimental confrontation and analysis of ontology, society and technique. Conceptually, this opens up a way of engaging with the philosophical tradition and the contemporary world that does not fall back into distinctions among philosophy, science and the social. For Simondon, there can be no Cartesian retreat into the chambers of the mind. The philosopher and the epistemologist, as well as the engineer and the sociologist, must descend into the streets, factories, and theaters where being is articulated, confronting its multiple and varied embodiments.¹⁹ From this perspective, philosophy itself must not only confront, but also submit to the multiplicity of an historical, lived, heterogeneous, and ultimately material world.

3. Simondon and Stiegler

It is difficult to discuss Simondon's thought without also noting the complicated paths along which his work has been circulated. As already noted, Simondon is best known for the publication of his major and minor theses. The peculiar history of these texts' publication in some way reflects and traces the sporadic and inconsistent reception of Simondon's work more generally. Although *De la mode d'existence des objets techniques* was published in 1958 and by all accounts given a positive reception among French philosophers and engineers, it quickly went out of print. In a country where academics pride themselves on their private libraries, it was hard to come by copies of the text. The fate of his major thesis proved more complicated and unfortunate. The first part, on physical and biological individuation, was published in 1960. The second part, on psycho-social individuation, was not published until 1989. It was only in 2005 that the work was published in its entirety in a single volume.

Due to the fragmented publication of his work, readers have often encountered Simondon's thought in second-hand fashion, with his key insights re-framed. For this reason, it is not surprising that in the essays that follow, it is the work of Bernard Stiegler that often stands as the primary interlocutor for discussions of Simondon's philosophy. Taking up Simondon's interest in the role of technology in ontogenesis, it is Stiegler who has gone furthest in developing a philosophy of technics that elaborates issues close to those raised by Simondon's discussion of cybernetics and information theory. Stiegler is an extremely prolific writer; it is not possible to trace the entire arc of his engagement with Simondon within the confines of this introduction. However, given his relevance to this collection as well as the extent to which his writings have shaped current perceptions of Simondon in the Anglophone world, it is necessary to draw attention to the complexity of the relationship between the two thinkers.

Beginning with the first volume of his *Technics and Time* series (1994), Stiegler develops his view that the individual subject, as well as collectivities, organize themselves by means of the exteriorization of faculties—a claim he elaborates into his thesis of *epiphylogenesis* (the thesis that life develops by means of something other than life.) It is Simondon's elaboration of the technical object as the externalization and concretization of knowledge that is one of Stiegler's key inspirations for this fundamental claim of his philosophy (along with the writing of Leroi-Gourham, whose work was also of tremendous importance for Simondon.)²⁰

As both Mark B. N. Hansen and Jean-Hugues Barthélémy point out in their contributions to this volume, the particular reading that Stiegler offers of this process is, in effect, a generalization of what is only one particular mode of the genesis of the individual and the forms of collectivity

in Simondon's work. However, this is a position that Stiegler has made more absolute and fundamental to his philosophy as it has developed. In Simondon's writings, the pre-individual is defined as that aspect of being which is ontologically prior to any form of individuation whatsoever, yet which remains the source for any future individuation that has, is or could take place (*L'Individuation*, 304-306). Psychosocial individuals and collectivities emerge by means of a process of radical transformation, or transduction, which re-configures the material and immaterial at the level of what Simondon calls the "transindividual." Such transformations occur, for Simondon and Stiegler alike, by means of technical objects, which Simondon defines as "the support and the symbol of that relation that we would like to call 'transindividual'" (*Du Mode*, 247). Thus, the transindividual draws upon the pre-individual as a source of potential, innovation and change by means of the technical object (or what Stiegler will also call prostheses), yet the pre-individual and transindividual remain distinct in Simondon.

As Barthélémy convincingly argues here, echoed by Hansen, Stiegler has affirmed with increasing force (particularly in the third volume of *Technics and Time*) that the pre-individual is itself technically-constituted, as a site of "tertiary retention" made up of technically inscribed forms of cultural and social memory.²¹ By arguing this position, Stiegler is effectively departing from Simondon's understanding of the relation between the technical and the social; he is replacing Simondon's understanding of the ongoing relationship between the pre-individual and forms of individuation with one where technique understood as the inscription of experience is ubiquitous (volume three of *Technics and Time* is occupied with cinematic time, with antecedents going back to Kant and beyond.) In this way, we might read Stiegler's development of Simondon's thought as one that privileges the latter's insight into the place of technique within Simondon's attempt to understand the relationship between being and technology.

The path taken by Stiegler runs the risk of reducing the complexity of relations between technology and being, a reduction that Simondon is careful to avoid. As Hansen writes elsewhere, "What Simondon depicts then is a co-evolution between two independently-evolving domains, the technical and the human."²² Stiegler's radicalization of the thesis of *epiphylogenesis* transforms the relational conception of the technical object elaborated by Simondon into the universal concept of technics. This reduces Simondon's ontology to a subset of his conception of the technique. In this introduction and the essays that follow, we have sought to elaborate a different relationship between these two problematics. Even at the risk of rendering the relationship between the two major problematics in Simondon's thought ambiguous, it is an approach that attempts

to recognize and better understand their mutual interdependence. For this reason, we have focused on the relationality and transformativity of Simondon's conception of information rather than the notion of technics he develops. We believe that such an approach lays the groundwork for ways of understanding how technical objects might be embedded in a more general ontology and epistemology of individuation.

4. Re-configuring Technique

In the first essay in this volume, Henning Schmidgen situates Simondon's writing on technology in the context of the social and cultural changes taking place in France after the Second World War. It allows the reader unfamiliar with Simondon's work to better understand what remains difficult in his discussion of the technical object with regard to received understandings of technology and the politics of living with machines. Near the end of the essay, Schmidgen reminds us that an important aspect of Simondon's philosophy was the development of a normative ethics. Although he does not engage with this ethics as it was developed in Simondon's writing on individuation, he does point us toward the ways in which Simondon saw the ethics of the evolution of technology taking shape with regard to the structure of technical objects as well as the forms of interaction they solicited from humans. This is a theme that would occupy Simondon throughout his career, even constituting the subject of one of his final publications.

Although conceived and developed independently, the essays by Mark B. N. Hansen and Barthélémy can be read as attempts to develop the problematic that organizes this special issue: namely to understand the structure that being takes on when it emerges on the grounds of modern technology. Engaging with the full breadth of Simondon's work, both essays involve extended engagements with Simondon's understanding of individuation, the relationship between individuation and invention, and the role that technique places in the process of individuation. Both authors are interested in how Simondon develops the concept of the pre-individual. Defined in a variety of ways, the pre-individual is the source of individuation, being the site of all potential modes of existence. As becomes clear, however, the pre-individual should not be taken as suggesting that this field of potential only precedes the emergence of any form of individuation whatsoever. Rather, the pre-individual, as potential, continues to drive ongoing processes of individuation, becoming manifest and present at all levels of individuation. This includes processes of psychosocial individuation, which Simondon also calls the transindividual. The relationship between potential understood as the pre-individual and the transindividual is perhaps the most elusive aspect of Simondon's work, and both authors elaborate some of the reasons for this difficulty.

In Barthélémy, we see how the continual relation between the pre-individual and the transindividual comes to impact the status of knowledge understood as a particular form of individuation. Barthélémy frames his elaboration of the identity between knowledge and individuation that is posited in Simondon (his claim that “knowledge of individuation is the individuation of knowledge”) as part of a debate with the work of Stiegler. He argues that Stiegler’s focus on the prosthetic genesis of being leads him to ignore Simondon’s claim that it is the pre-individual and not the transindividual (which is to say the psycho-social) that is the sort of innovation and genesis. For Barthélémy, the approach offered by Stiegler is one that forecloses the radically inventive nature of individuation put forward by Simondon by framing it exclusively within the realm of technique. By offering a different reading of Simondon’s original claim, this essay lays out the foundation for a more radical rethinking of the nature of human individuation.

Similarly concerned with the relationship between the pre-individual and technique, Hansen develops the generative and emergent relationship between the pre-individual (as source of individuation) and technique (as site of transindividuation) as a way of thinking about the manifold relationships between individuals and immersive, distributed media environments. More specifically, Hansen uses Simondon’s thinking of the relationship between individuation and the preindividual to make sense of the inability to perceive the nature of the manifold relations with technology we enter into when we interact with such environments. He does so by developing what he calls the “operational blindness” of perception in media environments. By operational blindness, Hansen is describing the fact that “*human* consciousness does not and cannot experience the functioning of the technically-distributed system to which it belongs *as a direct perception*, which is to say, at the time that it is occurring.” Unlike Stiegler, who transposes technique into the root of all forms of individuation, Hansen’s essay focuses on the ways in which particular media technologies “engineer” our relation to the pre-individual. In challenging Stiegler’s characterization of the pre-individual as the repository of tertiary memories, Hansen uses Simondon’s theorization of individuation to offer a more complex understanding of the relationships among technique, culture and experience than has been found in Stiegler’s recent work (where the media industries are increasingly characterized along lines borrowed from Adorno and Horkheimer’s “culture industry.”)

Finally, the essay by Xavier Guchet draws our attention to the ways in which Simondon himself sought to contextualize his thought in the concept of cultural and technical knowledge. Returning to the problematic opened up by Barthélémy, Guchet elaborates how Simondon’s epistemol-

ogy did not stop at the individual, but was also engaged in re-thinking the structures according to which knowledge is organized socially. Guchet traces how Simondon's project of "axiomatising" the human sciences on grounds adequate to the contemporary moment develops in his thought via a carefully balanced re-thinking of the nature of the human subject, in line with knowledge about humans. For Simondon, this was part of his larger project of re-founding humanism for the modern age. In his essay, Guchet explains that it is Simondon's engagement with technology that comes to stand as the core of his project to bring together the re-formulated human sciences around a radically reconfigured understanding of the human.

5. Toward an Expanded Inheritance

In a late essay on the relationship between technics and ethics, Simondon concludes his discussion of the ethical dangers and possibilities of technologies by considering recycling and recuperation, by which he means the use of the old in new contexts, as a possible model for an ethical practice ("Trois Perspectives," 107-118). He links this ethical practice to what he call *technologie approfondie*, which might be translated as "in-depth technology," explaining that, "in-depth technology must not only learn to invent the new, but to reinsert and reactualize the old in order to build a present in the service of the future" (ibid., 118). The core of the ethics of technology that Simondon elaborates is the desire to "bring life and functionality back to old conceptions that are recuperated within a contemporary habitat" (ibid., 115). Simondon concludes that technique on its own is insufficient for the development of such a practice and requires a reflexive subject for this to occur. Twenty-five years after the publication of his book on technical objects, we can see that Simondon continued to situate technique and technology within a broader philosophical project of rethinking social and epistemological norms, even though the markers of cybernetic discourse have long since disappeared.

By way of conclusion, we would like to take the ethics he elaborates as a guide for how to read Simondon today. In a 2002 essay Isabelle Stengers raised the question of how to "inherit" Simondon.²³ Though often critical of Simondon's concepts and understanding of technics, she approaches this question as part of an effort to think about what "tools" Simondon's thought gives us, and how we might most effectively use them. (302). While the essays gathered here are considerably more favorable toward the contributions Simondon's thought can make to contemporary debates in philosophy and critical theory, we might take from Stengers's essay a way of reading Simondon that follows the spirit of his ethics. This would be an approach that does not simply seek to situate his work in the

pantheon of great French thinkers, but to return it to use, and find new “functions” for his concepts. As English translations of Simondon’s texts become more readily available, we hope that this collection will stand not so much as an “introduction” to Simondon (the question of what is fundamental or essential to him remains unsettled) but as an occasion for expanding the possibility of his inheritance. It is our hope that this will enable the debates over Simondon to expand, and enable his work to be taken up in contemporary Anglophone discussions, ranging from the philosophy of technology to debates about the relationships among ontology, politics and ethics.

Notes

The editors would like to thank Rob Mitchell and Rebecca Evans for their help and advice in putting together this special issue.

1. For a selection of this work, Jacques Roux (ed.), *Gilbert Simondon: Une pensée opérative* (Saint Etienne: Publications de l’Université de Saint-Étienne 2002). A further indication of interest in Simondon is evidenced by the creation of the journal *Cahiers Simondon*, edited by Jean-Hugues Barthélémy and published by Harmattan since 2009. Also, since 2007, his course notes have been published, including: *Cours sur la perception* (Chatou: Editions La transparence, 2007), *Imagination et invention* (Chatou: Editions La transparence, 2008) and *Communication et information* (Chatou: Editions La transparence, 2010).
2. With regard to Simondon’s relationship to Deleuze see Anne Sauvagnargues, *Deleuze: L’empirisme transcendantal* (Paris: PUF, 2010) and Alberto Toscano, *The Theatre of Production: Philosophy and Individuation between Kant and Deleuze* (Basingstoke: Palgrave Macmillan 2006). In terms of the relationship between Simondon and Actor-Network Theory, see Bruno Latour, “Prendre le pli des technique,” *Réseaux* (Issy-les-Moulineaux 2010) 13-31.
3. See for example *The Heidegger Controversy: A Critical Reader* (Cambridge, Mass: MIT Press, 1993); and *Responses: On Paul De Man’s Wartime Journalism*, ed. Werner Hamacher, Neil Hertz, and Thomas Keenan (Lincoln: University of Nebraska Press, 1989).
4. See also Ross, 75.
5. See Neil MacMaster, “Identifying ‘Terrorists’ in Paris: A Police Experiment with IBM Machines during the Algerian War,” *French Politics, Culture & Society* 28, no. 3 (2010): 23-45.
6. See Brigitte Mazon, *Aux origines de L’École des hautes études en sciences sociales: le rôle du mécénat américain (1920-1960)* (Paris: Les Editions du Cerf, 1988).
7. See David Mindell, Slava Gerovitch, and Jérôme Segal, “From Communications Engineering to Communications Science,” in *Science and Ideology: A Comparative History*, ed. Mark Walker (New York: Routledge, 2002), 74-77.
8. See Raymond Ruyer, *La Cybernetique et l’origine de l’information* (Paris: Flammarion, 1954).
9. See Georges Canguilhem, *La Formation Du Concept De Réflexe Aux XVIIe Et XVIIIe Siècles* (Paris: J. Vrin, 1977); Georges Canguilhem, “Machine and Organism,” in *Incorporations*, ed. Sanford Kwinter and Jonathan Crary, trans. Mark Cohen and Randall Cherry, vol. 6 (New York, NY: Zone (MIT Press), 1992), 45-69; Georges Canguilhem, “Le concept et la vie,” *Revue Philosophique de Louvain* 64, no. 82 (1966): 216-223.
10. See Simondon, *Du Mode d’Existence Des Objets Techniques* (Paris: Aubier, 1989), 44, 49, 149-152.
11. On the relationship between cybernetics and biology in Simondon, see Henning Schmidgen, “Thinking Technological and Biological Beings: Gilbert Simondon’s Philosophy of Machines,” *Revista do Departamento de Psicologia, UFF* (2005). Available from: <http://>

- www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-80232005000200002&lng=en&nrm=iso
12. On Simondon and Being, see Erich Hörl, "Die offene Maschine. Heidegger, Günther und Simondon über die technologische Bedingung," *MLN*, no. 123 (2008): 632-655.
 13. See Norbert Wiener, *Cybernetics, or Control and Communication in the Animal and in the Machine* (New York: Wiley 1948). Gregory Bateson, *Steps to an Ecology of Mind* (New York: Ballantine Books 1972).
 14. See Claude E. Shannon, "The Mathematical Theory of Communication," *The Mathematical Theory of Communication* (Urbana: University of Illinois Press, 1964), 29-125.
 15. For further discussion of the importance and meaning of disparation in Simondon, see Alberto Toscano, "The Disparate: Ontology and Politics in Simondon," paper delivered at the Society for European Philosophy / Forum for European Philosophy annual conference, University of Sussex, 9 September 2007. Available from: http://www.after1968.org/app/webroot/uploads/Toscano_Ontology_Politics_Simondon.pdf.
 16. On Norbert Wiener's anxieties that cybernetics threatened liberal subjectivity see N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999).
 17. In France scholars write two dissertations, one "major" and one "minor."
 18. The critique of hylomorphism and the development of the concept of individuation is the subject of the first chapter of Simondon's book on individuation (Simondon, *L'individuation*, 39-66.)
 19. For a philosophical and Heideggerian interpretation along these lines, see Bernard Stiegler, "The Theater of Individuation: Phase-Shift and Resolution in Simondon and Heidegger," trans. Kristina Lebedeva, *Parrhesia*, no. 7 (2009): 46-57.
 20. Both of these core arguments for Stiegler's thought are first laid out in Bernard Stiegler, *Technics and Time, 1: The Fault of Epimetheus*. Trans. George Collins and Richard Beardsworth. (Stanford, CA: Stanford University Press 1998). They are further developed in the later volumes of the series.
 21. Although first introduced in *Technics and Time, 1: The Fault of Epimetheus*, this argument recurs in most of Stiegler's texts since.
 22. Mark Hansen, "'Realtime Synthesis' and the Différance of the Body: Technocultural Studies in the Wake of Deconstruction," *Culture Machine*, Vol. 6 (2004), URL: <http://www.culturemachine.net/index.php/cm/article/viewArticle/9/8> (last accessed October 24, 2011).
 23. See Isabelle Stengers, "How should we inherit Simondon?" In *Gilbert Simondon: Une pensée opérative*, 299-315.

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