

## **Machinic Milieus: Simondon, John Hart and Mechanology**

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Our project begins from the premise that the thought of Gilbert Simondon offers a unique perspective for work in disability studies. Over the past couple of years, we have been tracing the history and development of mechanology, or the science of machines, as it evolved through discussions and exchanges between philosophers, engineers and artists beginning in the late 19<sup>th</sup> century. This is a tradition of research that stems from the writings of Franz Reuleaux on *kinematics* in the 1890s, and includes the work of Jacques Lafitte on machines in the 1930s and Simondon's writing on technical objects in the 1950s.

The connection between disability studies and the work of Gilbert Simondon results from our interest in the career of John Hart, a Canadian computer scientist who actively promoted Simondon's work in the 1970s and fostered the dialogue on mechanology among scholars and writers in Canada and Europe. Hart founded the department of Computer Science at the University of Western Ontario in 1964. Alongside his interest in the burgeoning world of computers and automata that occupied his research during the 1960s, Hart was also interested in the development of philosophical frameworks that might help computer scientists to better understand the contributions of their work to society. As a result of his interest in philosophy, Hart was involved in the first translation of Simondon's *Du mode d'existence des objets techniques* into English, a version that remains unpublished today. This fact is significant for our discussion of disability studies because Hart's interest in theories of machines was coupled with his research into the use of computers as a learning aid. In the late 1970s, for example, he helped create the Computer Braille Facility at Ontario and, later on, the Audio Tactile Network, both projects to develop technology for the visually impaired.

By thinking through the relationship between John Hart's work and the writings of Gilbert Simondon, we intend historicize the reception of Simondon's work in the 1960s and 1970s in order to situate his perspective on the relationship between machines and bodies in relation to contemporary debates in disability studies. We interpret Simondon's ideas about "technical objects" in relation to a cluster of work on machines as organ-extension, suggesting that his approach offers a useful framework for thinking about technology that challenges presumptions about sensorial and corporeal normativity. To this end, we sketch out two ways in which Simondon's thought holds promise for contemporary research in disability studies. The first of these arises from Simondon's attempt to integrate conceptual and concrete analyses of technology, an approach that relies on a unique synthesis of phenomenology and ethnology. The second of these, building on Simondon's hybrid philosophical method, is an elaboration of the relationship between technology and humans that focuses on modes of embodied

mediation. Finally, we briefly discuss how Simondon's notion of milieus was articulated through Hart's work on human-computer interaction.

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While the scope and systematic nature of Simondon's thought suggest a high level of abstraction, Simondon is first and foremost a philosopher of concrete particulars. This is true of his writings about machines and technics, but it is equally true of his later work on biology, psychology and technical invention. Simondon's philosophical method is a product of the disparate influences on his work, ranging from philosophy to cybernetics to the history of technology and science. In his discussions of technical objects, Simondon offers a methodological and conceptual focus on materiality and embodiment that draws on both the work of phenomenologists like Maurice Merleau-Ponty (with whom Simondon studied in the 1950s and to whom he dedicated his book on technical objects) and the ethnological study of the evolution of tools and machines adapted from the writings of André Leroi-Gourhan, among others.

Simondon's project integrates the structure and operation of technics into the material and social networks that constitute individual and collective being. This approach separates him from other well-known thinkers of technology, such as Martin Heidegger and Jacques Ellul. Rather than looking for the "essence" of technology (Heidegger) or the formal logical relation of technics (Ellul), Simondon repeatedly draws upon details from the historical development of technologies in order to show that it is in the concrete instantiation of specific technical objects that one finds the key to understanding the ontology of technics. Simondon's hybrid philosophical approach offers a materialist method for the study of technics and technologies that differs markedly from Marxism, yet remains equally grounded in a materialist framework, leading to an important point of intersection with contemporary disability studies: his approach to the relationship between the body and technology.

Simondon's discussion of the technical object (particularly his thorough critique of the opposition between technology and the human) places him in the long line of thinkers belonging to what Mark Hansen and Bernard Stiegler have called "epiphylogenesis," or the co-evolutionary theory that considers tools as extensions of bodily functions and organs. In the first volume of *Technics and Time*, Bernard Stiegler's argues that Simondon provides an early elaboration of theories of the exteriorization of body and memory by technical means. The fundamental paradox of organ-extension, noted by many, is the enhancement/obsolescence duality: the tool enhances the faculties of the organ while making it obsolete at the same time.

The lexicon of the prosthetic – often called upon to describe this machinic and biological encounter – often assumes this tension in its implicit claim that the technical prosthesis eventually dis-ables the organ. As Sarah Jain has noted, the trope of the prosthesis

oscillates between the assumption of a disable body necessitating supplementation and that of an able body amputated by the technical extension of the prosthesis.

Yet, it is worth noting that Simondon and others only sporadically draw on the prosthetic lexicon, which polarizes the discussion about disability and relies on a simple model of causality. The epiphylogenetic approach, and Simondon's work in particular, offers a way out of the paradoxes of the debate about prosthesis. Simondon argues that the technical object mediates between the subject and the world, what Simondon calls the *milieu*. In the process, a new *milieu* is created. In other words, the outcome of the mediating function of the "prosthetic" technical object is not just the augmentation (followed by obsolescence) of the human body, but also includes the creation of an environment in which such relations take place. This "associated milieu" is "at the same time natural and technical."

Simondon combines his analysis of the emergence of the "associated milieu" with a study of the internal coherence and structure of the mediating object as well. In this way, his approach to technical objects expands the focus to consider the human-tool-environment triad as immersive and intensive rather than instrumental. At the same time, he draws attention to the importance of the mode of existence of technical objects in determining the nature of these milieus. Rather than an immutable opposition that favors the organic over the inorganic, Simondon stages the encounter between technology and culture. Importantly, this encounter occurs through technical objects that serve as mediators, a "functional bridge" between the two (*L'invention dans les techniques* 85). This double approach – towards the milieu and the interiority of the technical object – centers Simondon's philosophy squarely on the significance of the non-human, constituting a phenomenology of technology that is not exclusively oriented toward normative models of human experience or subjectivity.

By putting the milieu forward as the site within which bodies encounter technologies, one moves away from the idea of the individual as fixed either psychologically or physically. The human is not a pre-determined set of biological or cognitive capacities (a point Simondon will develop in significant detail in his later writing on individuation), but rather that which enters into relation with technical objects and the surrounding milieu. The theorist Muriel Combes writes that, based upon this approach to the human-technology-world relation, Simondon proposes "a humanism constructed on the ruins of anthropology and on the renunciation of the idea of a nature or a human essence" (Combes 49).

It is for this reason that one might pursue a fruitful dialogue between Simondon's thought and recent work in disability studies that has sought to better understand the relationship between embodiment and various technologies, tools and supports. For example, one might see echoes of the contributions of Simondon in Papadimitrou's description of the experience of adopting a wheelchair as the process of becoming

“enwheeled.” She writes that the use of such an apparatus points to “a way of being in the world that is not merely mechanical or practical (as skill acquisition is often assumed to be) but also existential and embodied” (Papadimitrou 695). There is in Papadimitrou’s discussion of en-wheel-ment much that echoes the relationship between the technical object and human beings that Simondon describes in terms of the associated milieu, or the relations and potentiality that emerges from the interaction between the technical object, its user and its environment.

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Hart’s work was not theoretical in the traditional sense and he recognized that Simondon’s work on technology emerged from similarly oriented engagement with material technologies and inventions. According to Hart and his collaborators, Simondon’s work was essential to the revival of the science of machines they called “mechanology,” following Jacques Laffite. (It is also worth noting here that Simondon was not fully aware of the mechanological tradition, but he recognized that there was similarity between his interest in technical objects and earlier attempts to develop a science of machines.) In this way, Hart’s later work with visually impaired students should not be seen as a radical shift in the focus of his interest. Rather, it was an attempt to put into practice his understanding of the role that technology could play in human development, an attempt that was an exercise in the mixture of concrete material analysis and conceptual analysis that had led him initially to Simondon’s work.

Hart worked on the development of the Computer Braille Facility in collaboration with blind students on the Ontario campus. Retiring from the university in the early 1980s after failed attempts to publish his translation of Simondon and other mechanologists, Hart dedicated himself to developing computer technology for use by blind students, founding the Audio Tactile Network in 1984 (which continues to exist today in London, Ontario as ATN Access). Unfortunately, there are relatively few archival traces that explain Hart’s transition from his work on mechanology to his later work on the computerization of braille and the development of other technological tools. Nonetheless, it is clear that Hart understood that new computing technologies, because they relied heavily on vision, had “severely affected” those with visual impairments. Echoing Simondon’s notion of concretization, Hart worried that the visual bias of computing that emerged in the conceptual phase of computer interfaces formalized systemic barriers for the visually impaired. “What an irony,” he wrote, “to think that that the desire to satisfy simultaneously the needs of the blind could produce a general progress of technology as a whole.” (*Parole véhémence* 187).

In his work, Hart perceived visual disability as an agent of innovation for technological design rather than as a restrictive condition. The human-machine interaction he explored went beyond an ocular-centric interface, offering alternative ways of engaging with computers. Hart’s pioneering work is part of a tradition of enabling human-

computer interaction that has not relied on the augmentation/obsolescence paradox of prostheses, but instead has offered a way of addressing the co-adaptation of subjects and machines through their interaction in a complex milieu. In positioning technology as an adaptable tool rather than inflexible object, we can begin to see how Hart was putting Gilbert Simondon's philosophy to work. The trajectory we have traced between the development of mechanology and Hart's later work on ATN helps situating Simondon's importance for understanding the relationship between disabilities and technology. John Hart's transition from his promotion of mechanology to his later work with ATN demonstrates Simondon's importance for understanding the relationship between disabilities and technology.

#### REFERENCES:

Combes, Muriel, and Thomas LaMarre. *Gilbert Simondon and the Philosophy of the Transindividual*. University Press Group Limited, 2012. Print.

Jain, Sarah S. "The Prosthetic Imagination: Enabling and Disabling the Prosthesis Trope." *Science, Technology, & Human Values* 24 1 (1999): 31-54. Print.

Papadimitriou, Christina. "Becoming En-Wheeled: The Situated Accomplishment of Re-Embodiment as a Wheelchair User after Spinal Cord Injury." *Disability & society* 23.7 (2008): 691-704. Print.

Rolland, Roger, Jean Le Moyne, and Gilles Marcotte. *Jean Le Moyne: Une Parole Véhémence*. Montréal: Fides, 1998. Print.

Simondon, Gilbert, and Jean-Yves Chateau. *L'invention dans les techniques: Cours et conférences*. Paris: Seuil, 2005. Print.