Cont Philos Rev (2014) 47:153–176
DOI 10.1007/s11007-014-9292-2

Individuals and technology: Gilbert Simondon, from Ontology to Ethics to Feminist Bioethics

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Published online: 23 May 2014

Abstract Two key themes structure the work of French philosopher of science Gilbert Simondon: the processes of individuation and the nature of technical objects. Moreover, these two themes are also at the heart of contemporary debates within Ethics and Bioethics. Indeed, the question of the individual is a key concern in both Virtue Ethics and Feminist Ethics of Care, while the hyper-technical reality of the present stage of medical technology is a key reason for both the urgency for and the success of the field of Bioethics. And yet, despite its potential for thinking about these issues, Simondon's philosophy remains largely unknown. Rather than exploring Simondon's complex ontology for itself, the aim of this paper is to establish what contribution his work can make in Ethics and Bioethics on two essential questions: the relational structure of the self and the nature of the human-technology relation. I argue that Simondon's re-conceptualization of the individual harmonizes with perspectives in Feminist Bioethics (particularly the Ethics of Care) and points toward what I call an "open" Virtue Ethics that takes relations to be essential. In order to establish this connection, I explore at length the relational approach to Feminist Bioethics offered by Susan Sherwin's work. I argue that a Simondonian account of technology and of the individual furthers the relational understanding of the self, offers a characterization of Virtue Ethics that is in harmony with the Ethics of Care, and clarifies a notion of responsibility that is implicated in the complex reality of the modern technological milieu.

Keywords Simondon · Individuation · Feminist Bioethics · Ethics of Care · Virtue Ethics · Technology

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> Less than twenty years earlier, no one was doing grafts, and certainly not protecting against their rejection through the use of cyclosporine. Twenty years hence, to be sure, other grafts will involve other methods. Personal contingency intersects with the contingency of technological history. Earlier I would be dead, later I would survive by other means. But "I" always finds itself tightly squeezed in a wedge of technical possibilities.
>
> —Jean-Luc Nancy[1]

The above passage, drawn from Jean-Luc Nancy's reflections on his own experience of heart transplant surgery, offers an initial illustration of two key themes in the work of French philosopher of science Gilbert Simondon (1923–1989), namely, individuation and the history of technics (*technē*).[2] And yet, despite its importance for these two themes, Simondon's post-phenomenological philosophy of science, which attempts to offer a "first philosophy" beginning from physical schemas, remains largely unknown.[3] Although Simondon's doctoral thesis was dedicated "*À la mémoire de M. Merleau-Ponty*," and although he worked with other French thinkers such as Mikel Dufrenne and Georges Canguilhem,[4] most philosophers who are familiar with his work have only encountered it indirectly through the writings of Gilles Deleuze[5] or, more explicitly, in the work of Bernard Stiegler.[6] Even if his concept of "individuation" has sedimented into the discourse of subjectivity (particularly in France),[7] Jean-Hughes Barthélémy seems justified in naming Simondon "the most well-known unknown," or the "most ignored of the great French thinkers of the twentieth century."[8] The goal of this paper, however, is not to repair Simondon's place in the history of philosophy, nor to offer an exhaustive

[1] Nancy (2008, p. 162).

[2] The question of individuation is developed in Simondon (2005). The question of technology is explored in Simondon (1989). All translations from these books are my own. In the case of Simondon (2005), an English translation of the introduction is available as Simondon (1992). Although I have often altered the English translation, when I am citing from the introduction I will also include the English pagination in square brackets.

[3] Barthélémy (2005, p. 7). All translations from this book are my own.

[4] Like Merleau-Ponty, Dufrenne and Canguilhem are also acknowledged in a dedication, this time to Simondon's later work, *Du mode d'existence des objets techniques*. See Simondon (1989).

[5] Simondon figures in two of Deleuze's most well-known books: Deleuze (2004a); Deleuze and Guattari (1987). Simondon is also featured in a particularly interesting review written very early in Deleuze's career. See Deleuze (2004b). However, I would tend to agree with other commentators (such as Barthélémy) that this association with Deleuze has in fact been detrimental to Simondon's own reception, leading to Simondon being inappropriately associated with a certain "anti-realist" reading of Deleuze. See, for instance, Barthélémy (2005, p. 35).

[6] See, for instance, Stiegler (1998).

[7] The concept is often employed without explicit reference to Simondon. It has, however, become more explicit in recent work by Renaud Barbaras in French [see Barbaras (1998, pp. 220, 79)], and by Elizabeth Grosz in English, whose keynote address at the *Society for Phenomenology and Existential Philosophy* (SPEP) 2010 meeting in Montréal, Québec, Canada, drew extensively on Simondon's physical ontology. 2010 also saw, I believe, the first major conference on his work, *Gilbert Simondon: transduction, translation, transformation*, at the American University in Paris, May 27–28, 2010. Indeed, the very recent and first book in English dedicated to his work begins with an Editor's Introduction aptly titled "Simondon, Finally." See de Boever et al. (2012, p. vii).

[8] Barthélémy (2008, p. 15). All translations from this text are my own.

account of his complex ontology.[9] Rather, I explore the striking fact that Simondon's two major themes, individuation and technics, are also at the heart of contemporary discourse on Ethics and Bioethics, and I examine the potential contribution his work might offer a feminist approach to these themes.[10]

The question of the individual is central to Bioethics. Moreover, many writers focus on the ethical implications of specific medical technologies, and it is hardly rare to read that the urgency (and success) of Bioethics is a direct result of the hyper-technical reality of the present stage of medical technology.[11] Everywhere Bioethics implicates individuals and invokes technology, but too rarely are the individual and the technological themselves put into question. In the first part of this paper, I explore Simondon's ethical system and the components of his other work necessary for understanding his ethics. In the second part, I argue that Simondon's re-conceptualization of the individual harmonizes with perspectives in Feminist Bioethics (particularly the Ethics of Care) and points toward what I call an "open" Virtue Ethics that takes relations to be essential.[12] In particular, I explore Feminist Bioethicist Susan Sherwin's relational approach as exemplary in this comparison.[13] Finally, I argue that Simondon's reflections on technology suggest a deeper understanding of technics as a dynamic evolution rather than as a neutral tool defined in terms of its "use." A Simondonian account of technology and of the individual furthers the relational understanding of the self, offers a characterization of virtue, and clarifies a notion of responsibility that is implicated in the complex reality of the modern technological milieu.

1 An ethics of the metastable

> Ethics expresses the sense of the perpetual individuation, the stability of becoming that is the stability of being as pre-individual.[14]

Simondon's work is, in my opinion, as exciting as it is inaccessible. Beyond his style of employing the jargon of various highly technical fields (including genetics, physics, and cybernetics), he also shifts the usage of these terms toward his own

[9] For important global studies of Simondon's thought, see Barthélémy (2008), Chabot (2012), and Combes (2013).

[10] For the purposes of this paper, I use Bioethics and Medical Ethics interchangeably.

[11] Battin (2003).

[12] Virginia Held argues that the Ethics of Care should be conceived of in opposition to traditional Virtue Ethics because Virtue Ethics focuses too much upon *individual dispositions* rather than on *relations*. See Held (2006). I believe that Simondon's emphasis on the *reality of relations* (discussed below) offers an important way of bringing together the Ethics of Care with contemporary discourses in Virtue Ethics.

[13] Susan Sherwin's work focuses our attention consistently upon the importance of context and power dynamics in situations where these ethical factors can and often do remain hidden. In this paper, I focus on three of her articles: Sherwin (1989, 1996, 2000).

[14] Simondon (2005, p. 335). It is worth noting the importance of the French term *sens* in this passage, which means alternatively "sense," "meaning," or "direction." Much like the use of the term by Merleau-Ponty, Simondon's arguments turn on a rich sense of the interplay among these various meanings. See Landes (2013b, pp. 205–206).

ends.[15] Moreover, he introduces a series of interconnected technical terms (the pre-individual, the transindividual, the associated milieu, transductivity, etc.) and repeats them throughout his theoretical investigations at all levels, from physical processes to social and "transindividual" realities. As a result, his work represents a highly complex and intricate "theory of everything," or what Barthélémy calls a "Genetic Encyclopedism."[16] Writers engaging with Simondon have understandably focused on coming to terms with this complexity, while attempting to clarify the role of the hard sciences or cybernetics in his thought.[17] Additionally, the consequences of his account of psychical and collective individuations have begun to draw attention in certain areas of social and political theory.[18] It seems, however, that the question of ethics in Simondon has remained unaddressed, even if accounts of his work often acknowledge a certain normative direction.[19]

And yet, the conclusion of his central text, *L'individuation à la lumière de forme et d'information*, constitutes a serious reflection on ethics. Simondon writes: "Ethics is that through which the subject remains a subject, refusing to become an absolute individual, a domain closed off from reality. (…) Ethics expresses the sense [meaning and direction] of a perpetuated individuation."[20] In order to come to terms with his philosophy of individuation, then, this notion of ethics must be clarified. After a brief overview of his account of individuation, I will explore this ethical conclusion of his systematic thought. This will demonstrate what he means by the "sense" [meaning and direction] of ethics, and point to the guiding role a notion of virtue might play in this ethical theory that decidedly collapses meta-ethics, normative ethics, and practical ethics. In short, an "ethics of the metastable" will involve perpetually cultivating fields of lesser violence. This part of the paper will then conclude with a brief note on the relationship between this ethical reflection and the political aspects of his project regarding the *transindividual*.

1.1 Individuation

Simondon's philosophy begins from the fundamental question: "What is an individual"? According to Simondon, there are two main philosophical answers, and both presuppose that "the individual considered as a constituted [and static]

[15] For instance, Simondon's use of the physical notion of "potential energy" is not drawn from its usual use, but rather from its use by physicist Louis Broglie, and is an idiosyncratic use that needs to be carefully explored in Simondon's subsequent development of the notion of a "metastable equilibrium" as discussed below. See Barthélémy (2008, pp. 23–25) for a discussion of Simondon and Broglie.

[16] Barthélémy (2008).

[17] Such is the approach by Barthélémy (2008), as well as Chabot (2012). Also see Hottois (2000) and the various contributions to de Boever et al. (2012).

[18] For instance, a recent panel at the *Society for Phenomenology and Existential Philosophy* devoted to Simondon was presented in 2010, "Transindividuality: Historical and Political Encounters with Gilbert Simondon." Also, see Virno (2004, pp. 76–79) and Combes (2013).

[19] See, for instance, Dumouchel (1992). See also Combes (2013, pp. 64–71) and Grosz (2012), although Grosz focuses more on Simondon's potential contribution to "modes of radical political thought," a direction that will connect with part two of this paper.

[20] Simondon (2005, p. 335).

individual (…) is the interesting reality, the reality to be explained."[21] First, he identifies "substantialist" theories, beginning from Plato, which posit that each individual is the expression of a pre-existing essence. Second, "hylomorphic" accounts, beginning from Aristotle, see the individual as a combination of form and matter that themselves pre-exist the individual. These traditional approaches take the actual process of individuation to be incidental, as an inessential obscure zone or black box, and not as "that in which the explanation itself must be found."[22]

Pointing to the complex reality of individuation, Simondon contends that we must invert this orientation, that we must "understand the individual through individuation rather than individuation beginning from the individual."[23] The separable and static individual from which the tradition begins is an explanatory fiction, and this recognition of complexity and concrete process is perhaps the foundational Simondonian intuition. As Barthélémy suggests, Simondon is perhaps *the* philosopher of complexity, for his "genetic encyclopedism unites […] the broadest philosophical abstraction with a scientific inquiry that is simultaneously encyclopedic and rigorous."[24] Simondon's positive position is an attempt to re-describe the individual as merely a certain phase in the process of becoming *as becoming*, or as a crystallization from a pre-individual set of possibilities that are not fixed.[25] The individual is neither fixed nor stable, but is rather a *metastable* equilibrium, that is, an equilibrium that is supersaturated and full of potential future individuations that must be understood through probability and not through deductive logic or linear causality. To follow Barthélémy's description of the project, Simondon *de-substantializes* the individual without thereby reducing the individual to a fiction, that is, without *de-realizing* the individual.[26] In other words, Simondon contends that the individual must be reconceived as a:

> [R]elative reality, a certain phase of being that assumes a pre-individual reality prior to it and that, even after individuation, does not exist all by itself, for individuation does not exhaust in a single stroke the potentials of the pre-individual reality and, on the other hand, what individuation brings about is not only the individual but also the individual-milieu dyad.[27]

[21] Simondon (2005, p. 23 [1992, p. 297]).

[22] Simondon (2005, p. 24 [1992, p. 299]). Simondon's use of the term "individuation" refers to the complex process by which individual are formed and the important relations involved in this process. Simondon takes this process to be a constant reality, in that each "individual" is merely a temporary stage in a trajectory of individuations, and individuation does not merely express a pre-existing essence, but each individuation loops back to reshape the "essence" being expressed as a result of the complex influence of the milieu in which it is expressed.

[23] Simondon (2005, p. 24 [1992, p. 300]).

[24] Barthélémy (2008, p. 16).

[25] The guiding image of crystallization captures this process in the sense that the form of the crystal is not predictable in a linear fashion, but rather merely in terms of probabilities depending on a highly complex set of intensive factors in the supersaturated solution.

[26] Barthélémy (2008, p. 13).

[27] Simondon (2005, p. 24–25 [1992, p. 300]).

The individual, then, is a momentary phase in a *trajectory* of individuations, and a proper understanding of the individual would have to provide an understanding of the dynamic and real—vertical and horizontal—relations that *essentially* belong to this individual.[28]

1.2 From individuation to Ethics

Simondon concludes his central text with a discussion of the question: "Can a theory of individuation, through the intermediary of the notion of information, provide an ethics?"[29] He answers that such a theory can provide the *foundations* for an ethics, but that such an ethics would remain dynamic given its central commitment to *openness*. In order to present his own ethical reflections, he again divides the history of philosophy into two branches, this time identifying a "pure ethics of eternity" versus an "applied ethics of becoming." Simondon here seems to have in mind the division between deontological and consequentialist approaches, although at times he seems to be alluding to the division between universalist metaethical and evolving normative ethical systems as well. Either way, philosophers are found guilty of separating substance and becoming by privileging individuated reality over individuating reality, and thus a proper understanding of individuation is required for a proper understanding of ethics.

"Pure" ethics identifies the ethical as outside of becoming through its repetition of the substantializing move of the Platonic understanding of the individual. Such a "contemplative" ethics removes the ethical from "the passions, from concrete power structures, and from the 'here and now.'"[30] In other words, it is an attempt to discover the ethical as beyond existence and as outside of becoming, although this presupposes a relation to becoming itself. The second branch in philosophical ethics, what Simondon calls "applied" ethics, privileges the concrete reality of becoming, the constant shifting of norms in history, although he suggests that it can only claim identity across time by implicitly importing some or all of the values of a pure ethics. Thus, the two branches only have meaning when taken together, "and yet they define norms that give incompatible directions; they create a certain divergence."[31]

Simondon's presentation of his alternative conception indicates that his project reshapes the contemporary division of metaethical, normative, and applied ethics. Consider the following claim:

> The notion of communication as identical to the internal resonance of a system in the process of individuation can, on the contrary, strive to grasp being in its becoming without granting a privilege to either the immobile essence of being ["pure ethics"] or to becoming *as* becoming ["applied ethics"].[32]

[28] For a more detailed discussion of the status of the logic of *trajectory* in Merleau-Ponty and in Simondon, see the introduction to my book: Landes (2013a).

[29] Simondon (2005, p. 330).

[30] Simondon (2005, p. 330).

[31] Simondon (2005, p. 330).

[32] Simondon (2005, p. 330).

In other words, Simondon is looking for a position between a static, eternal ethics and an ethics that is forever in motion. His idiosyncratic concept of "communication" emerges from his understanding of crystallization, a guiding image in his text. For Simondon, crystallization is the placing into communication of systems not previously in communication, or the resolving of a tension between orders, and the result emerges in a "transductive" logic that moves in a propagative manner (each crystallization building on the previous ones) and in which the new relations of the new phase involve an essential change to the "individual." In short, Simondon's ontology involves the *reality of relations*, and thus the entering into communication is itself a shift in essence in the systems involved. Each phase of a trajectory is a "metastable" state, meaning that it expresses and carries forward a "pre-individual" reality that exceeds its expression and that is a key source of potential future individuations. "Pure" ethics and "practical" ethics both fail to capture this notion of becoming as the dynamic "constitution of successive metastable equilibriums."[33]

Simondon's positive position emerges from a distinction between "norms" and "values." For Simondon, norms are the internal lines of coherence within a particular metastable equilibrium, whereas values are that which remain as a "transductive unity" in the evolution of norms into the next metastable equilibrium of norms; values are the "sense" of the trajectory and guide the individuation, that is, they provide it with both direction and meaning. Values are not "eternal" norms; rather, they are the virtual, non-explicit potentials providing continuity to the discontinuous trajectory of metastable equilibriums and they themselves are shifted and altered in the course of the evolution of norms as systems enter into new relations. The desire to establish eternal values in the face of becoming is understandable, but since any claim to know values happens within becoming, it will necessarily fall back upon the "norms discovered in everyday life," and "ethics, at its core, is abortive [*est défaillante*]."[34] Ethics is an open history of the trajectory produced by the unfolding tension between norms and values; it is "*the expression of an individuation* creating a merely metastable and provisional state as a discontinuous phase transfer."[35] Thus, the individual can be considered a "moral subject" because she or he exists simultaneously as an individuated reality and as the place of passage for an individuating *trajectory* in communication via a transductive unity in the unfolding system. The trajectory itself becomes the object of study.[36] Moreover, the actions of each individual are a negotiation between present norms and the unfolding trajectory of values; every gesture is both a crystallization of a relatively stable set of norms *and* the preservation of the momentum for going further toward crystallizing future (non-linearly predictable) structures.

Although Simondon does not make use of the language of the virtues, I would suggest that his position harmonizes with Virtue Ethics in important ways. Ethics

[33] Simondon (2005, p. 331).

[34] Simondon (2005, p. 332).

[35] Simondon (2005, p. 333).

[36] I have begun to develop the notion of *trajectory* in Landes (2013a), and I am continuing to explore this concept in other papers that are in progress.

would not, for Simondon, provide an algorithm for "right" action, but would rather require each individual to cultivate a style of action that productively places norms and values into communication through individuating action that is always constituted by its relations and milieu. That is, *ethics is about cultivating the metastable* as the subject of a perpetuated individuation. *Between* merely following the norms of the present and freely creating purely new norms, ethical action will be best understood as a taking up of the past toward a more and more open future, the cultivation of oneself as an open trajectory through the forever evolving structures of character.[37] Consider Simondon's description of moral, non-moral, and immoral actions. A *moral* act, according to Simondon, is one that harmonizes with the reality of becoming by engendering ever more productive metastable equilibriums. A *non-moral* act is one that is wholly self-enclosed and that withdraws from transductive development, as well as from its relations with other metastable structures. An *immoral* act is one that actively blocks transductive development and destroys metastable possibilities for self and others. Thus, a *virtuous* person would need to cultivate a practical wisdom (*phronēsis*) in order to negotiate values and norms in a productive and responsible way, a non-virtuous person withdraws from relations and becoming, and a vicious person attempts to freeze becoming or to block alternatives within the metastable set of possibilities. The *de-substantialized* "individual," then, is the site of a transfer of individuation, and the ethical is that which allows the subject to remain a subject without falling into the trap of wanting to act as an "absolute individual," detached from the world and from other subjects. The virtuous person cultivates the metastable in his or her own life as well as in the networks in which they find themselves and which make up part of their evolving essence. There is no algorithm for being a virtuous person because individuation does not occur according to a deductive or linear logic, but this does not remove the single duty each individual has to hone an open set of virtues that will help to propel forward the individuating process toward a more open and responsible future.

1.3 Ethics and the transindividual

An important consideration, given the brief presentation above of Simondon's "ethical" reflection in terms of Virtue Ethics, would be to ask whether this approach falls short of Simondon's insistence on taking individuation rather than individuals as the central concern. Indeed, an important criticism of Virtue Ethics from Feminist Ethics of Care is that the virtues ultimately amount to dispositions of individuals and, as such, the infrastructure of cultivating virtues is perhaps unable to capture the essential structures of *relations* at the heart of a proper understanding of human agents as relational selves.[38] Moreover, the normative appropriation of Simondon's thought has been focused not on its implications in ethics, but rather on the importance of *collective* individuation and the *transindividual* in economic and

[37] This interpretation is shaped by my reading of Merleau-Ponty's account of the paradoxical logic of expression, where each human gesture is on a scale between pure repetition and pure creation, never reaching either extreme, and each gesture thus takes up the past toward a future by joining into the trajectories of sense. For more on this reading of Merleau-Ponty, see Landes (2013a).

[38] Held (2006).

political theory.[39] Perhaps the above sketch, then, by focusing on virtues and on the single imperative of cultivating individuating trajectories, fails to capture essential human relatedness and the social-political implications of the *trans*individual.

This paper is grounded, however, upon the idea that the first worry would be mistakenly directed toward a Simondonian inspired Virtue Ethics. Although it may be the case that traditional formulations of Virtue Ethics focus on individual (often rational) cultivations of dispositions, the structure suggested above *begins* from the assertion that the "individual" is but a phase in a process that must be understood within a robust account of the *reality of relations*. Simondon's thought provides a powerful way of thinking about individuals as moments within unfolding trajectories at the heart of a complex network of forces, and yet preserves a locus for the individual to be not *merely* dissolved into this network. As he argues, ethics is precisely a way for a "subject to remain a subject."[40] A *de-substantialized* self is not merely a product of its relations, it is the phase of a trajectory that exists in a paradoxical relation to itself and to its milieu, its past and its future. The network both shapes us and is, paradoxically, sustained and reshaped by us. We are neither wholly in control nor wholly created; this is precisely the paradoxical logic of expression that I have argued is at the heart of Merleau-Ponty's philosophy.[41] We exist *within* systems that create our very possibilities and that paradoxically exist nowhere other than in the possibilities of our future gestures, and this is what it means to be human, forever on the scale between pure repetition of the past and pure creation of novel structures, never reaching either extreme. Simondon furthers the Merleau-Pontian ontology of the self by his insistence upon our existence as unfolding trajectories and upon the reality of our relatedness. For Simondon, an "individual" is defined as a network of real relations to the past, the pre-individual, the milieu, and indeed to others who are co-individuating in themselves and with us in pairs, groups, and collectives. Our relations partially define us, essentially, and so if a Virtue Ethics emerges out of this Simondonian understanding, it would not be one that mistakenly conceives of humans as isolated individuals cultivating their individual dispositions. Indeed, as Combes writes, "the tension between preindividual and individuated, which a subject may experience within itself, cannot be resolved within the solitary being but only … in relation with others."[42] The "psycho-logical" and the "collective" individuations are not two separate processes resulting in two isolated "individuals" (a mind and a society); rather, they are modalities of individuating systems and the psycho-social is the transindividual that is sustained as a modification of individuals, that exists nowhere other than in the real potentials of individual systems, and yet that transcends them. Simondon writes: "The transindividual is not exterior to the individual and yet, to a certain extent, it detaches from the individual. (…) It does not have a dimension of

[39] Stiegler (1998) and Grosz (2012).

[40] Simondon (2005, p. 335).

[41] See in particular Landes (2013a, p. 27).

[42] Combes (2013, p. 33).

exteriority, but rather a dimension of transcendence or surpassing [*dépassement*] of the individual."[43]

This notion of the transindividual is at the heart of Simondon's rejection of traditional (liberal) understandings of the relation between individuals and collectives, and this is indeed a key reason that Simondon's thought has been taken up in terms of radical social, economic, and political theory. What the above suggests, however, is that the political and the ethical cannot be separated, and precisely because a collective individuation does not produce a separable substance ("the collective").[44] There is certainly in Simondon a significant emphasis on the technical object as the place of collective individuation, but perhaps this emphasis leaves behind the key phenomenological aspects of experience from within the unfolding metastable trajectory that I alluded to above following Merleau-Ponty. Although Combes thus suggests that a focus be maintained on what, "in the human, tends to go beyond the present state," she does not develop Simondon in the ethical directions suggested above. It is, I argue, precisely ethical thought (in terms of the virtues) that provides a counterbalance to the social, economic, and political critique that permeates Simondon's oeuvre. The paradoxical and ethical structure of human experience—as both shaped by and reshaping the metastable trajectories and relations that constituted it—provides the grounding for a post-humanist though phenomenological political reflection. Moreover, the recognition that the transindividual is not the same as collective individuation and is not contained in the individual requires precisely this emphasis on the ethics of the metastable as the cultivation of potentials from within dynamically evolving systems.[45]

2 Rethinking the individual in Ethics and Bioethics

The question of the individual is a central concern in contemporary Bioethics, and yet, if Simondon is correct, then the very concept of the individual needs to be reworked in light of the complex reality of individuation *in relation* and the evolving nature of the "individual's" place within the trajectory of values. Although this is not the place for an extended discussion of the history of ethical thought, it is

[43] See further, Simondon (2006, p. 281ff.) and discussion by Combes (2013, pp. 33–42).

[44] In short, I am sympathetic with Combes' critique of Stiegler's appropriation of Simondon as overly focused on the technical in order to move too quickly to a critique of contemporary social, economic, and political structures. See Combes (2013, pp. 64–70).

[45] See Combes (2013, pp. 33–38) for an argument against a simple identity between collective individuation and the transindividual. Also, it might be noted that Grosz (2012, p. 50) does identify these two concepts in her study of the potential for Simondon's thought for feminist political thought. Although I agree with both the spirit and content of her paper, the position in this paper is that allowing for the transindividual to be understood in light of Merleau-Ponty's paradoxical logic of expression leads to an important insight into Virtue Ethics beyond Grosz's important contribution to feminist political thought. This position might also be understood as an argument that the ethical (and political) import of Simondon's thought can be found in the work on individuation without necessarily resolving the relation between Simondon's work on individuation and on technics, a focus that Combes (2013, pp. 64–70) argues leads to Stiegler's incomplete account.

worth noting a few instructive comparisons in classical normative ethics.[46] The intention of this section, however, is to demonstrate that if we accept Simondon's understanding of ethics, then we are led to a position in Bioethics very much in harmony with a relational or Ethics of Care approach. I will thus attempt to show how a Simondonian "relational" Virtue Ethics, outlined above, might help to further the important project of feminist perspectives on Bioethics as a means toward responsibly moving toward new and less violent metastable equilibriums.[47]

2.1 Traditional approaches

The Kantian deontological approach is surely one of Simondon's implicit targets in his criticism of "pure" or "contemplative" philosophical ethics, because any theory that takes a Kantian approach appears to presuppose a robust theory of the individual. Consider the first formulation of the Categorical Imperative. The moral agent is assumed to have the ability to withdraw from the concrete reality of becoming (to use Simondon's language) in order to determine the eternal and rational viability of the maxims of her or his action. Rather than examining the real situation, the moral agent examines the rationality of making the maxim a universal law and attempts to identify contradictions. The result would be rational rules holding universally and thus existing outside of time. Simondon would reject this very methodology and would be suspicious that the universal rules would simply be the re-inscription of the "norms" of the supposed moral agent. Or consider the second formulation, the imperative to treat others always as an end in themselves and never merely as a means. As Tom L. Beauchamp notes, this is certainly the

[46] As Tom L. Beauchamp notes, classical normative theories exerted a heavy influence on the development of Bioethics in the 1970s and 1980s, but they tend to play a diminished role in today's debates. This is surely because the concrete nature of applied ethics has shown – as Simondon would agree – the inadequacy of the attempt to find eternal and universal principles. See Beauchamp (2003, pp. 16–17). The turn away from theory, however, has resulted in what Sherwin identifies as the unreflective application of principles, which I will discuss below. See Sherwin (1996, p. 188). Moreover, it seems to me that a robust theory would be required to *justify* the turn to supplemental ethical theories and to determine how these should be approached and situated. Indeed, as Norman Daniels writes, "we need a much more sophisticated view of the relationship between general principles and particular cases." Daniels (1996, p. 107). I believe the richness of Simondon's thought offers precisely this sophistication.

[47] Harvey et al. (2008) offer a commentary on how certain aspects of Simondon's thought might serve to further a feminist critique of classical humanist approaches to ethics. Although most of their paper is an introduction to Simondon's system, ultimately they offer a critique of Simondon's ontology as having drawn an opposition between physical and living individuations, and so as being best understood as a provocation for rethinking individuation beyond product-based accounts of identity. I would agree with Elizabeth Grosz's assessment of this paper as having not fully grasped the power and scope of Simondon's thinking. See Grosz (2012, p. 56, n. 12). Although Grosz makes significant steps toward revealing the normative potential in Simondon, she is mostly focused on his potential in radical and feminist political thought: "a new way of understanding a world that is not ultimately controlled or ordered through a central apparatus or system … a way of understanding subjectivity or personal identity … [as] a new order of object that is now able to take its own operations, its own forms of inner resonance as its object and mode of addressing problems" (p. 53). The further step to the ethical suggested in this paper involves returning to the subjective experience of being *within* the metastable trajectories, resulting in the suggested placement of Simondon within a Virtue Ethics tradition.

formulation that has had the most lasting influence on the discourse of Bioethics,[48] and yet it too focuses on a notion of the individual as fixed and isolated, which, if Simondon is correct, cannot hold. What counts as treating someone as an end, or respecting their autonomy (to invoke also the third formulation of the categorical imperative), would also have to be adjusted given Simondon's notion of communication. For Simondon, communication is not a question of rational minds encoding and de-coding messages, but rather a bodily intersubjectivity that begins well before rational and linguistic communication. The reality of relations vastly complicates the otherwise laudable intuition to treat others as means or not to infringe upon their autonomy. This shares some deep resonances with, for instance, Virginia Held's critique of non-relational understandings of individuals in traditional ethics.[49] Recognizing the continuous trajectory of individuation, which is always already in communication, requires a more sophisticated relation to the history of becoming and the realities of the potentials that are involved in any particular phase. Thus, Kant's formulations involve the assumption that neither moral and rational agents nor the universal principles they identify are dynamic and evolving. As Simondon shows, however, the fact is that moral action happens in the tension between values and norms, and given that every individuation is an essential change, no norms can be immutable, and the very "moral agents" acting are hardly as stable, independent, and autonomous as they may at first glance seem.

The consequentialist approach seems to belong to the "practical" side of philosophical ethics. Whether we consider act or rule consequentialist accounts, the shift from intentions to consequences seems to map onto a shift, in Simondon's language, from being to becoming, or from values to norms. But again, the majority of approaches here privilege a particular understanding of the individual as an isolated decision-maker and as an isolated registry of pleasure or pain, happiness or satisfaction. If the right thing to do is to maximize the good (defined in terms of a mere sum of isolated goods) or to adopt the rules that maximize the good, then we see a failure to recognize individuals in the process of collective individuation.[50] To put this in Simondon's terms, the result would be an ethics in "perpetual movement." The norms would themselves be in constant revision as the context changes and as such would not express any continuity between phases. Such an account of right action fails to recognize the importance of values in addition to norms, and the resulting ethics cannot account for a notion of responsibility that each moral subject has for the meaning and direction of individuation given their position as both the individuated reality and the site of passage for the trajectory.

An important development in ethics and applied ethics has been the influence of contractarian or contractualist accounts, and notably the influence of Rawls' *Theory*

[48] Beauchamp (2003, p. 17).

[49] See Held (2006).

[50] It is precisely a rejection of an understanding of a group as a "sum of separate individuals" that leads Alasdair MacIntyre to his notion of practices and shared goods. This connection to contemporary Virtues Ethics is, I believe, a rich and fruitful direction opened up here for Simondon's work, so long as Virtue Ethic's "functional" account of humans is recast into the structures of virtuous and open trajectories of psychic and collective individuation *in relation*. See MacIntyre (1984, chapters 14 and 15).

of Justice.[51] Without endorsing a Kantian approach and, to be fair, limiting his claims to the political, Rawls stakes the scope and direction of his text on the individual over and against any utilitarian approach. "Each person," he begins, "possesses an inviolability founded on justice that even the welfare of society as a whole cannot override."[52] The account famously develops a notion of "reflective equilibrium" in terms of self-legislated and rational rules of fairness. The moral structure that is to be adopted is the one that rational agents would choose from a position of ignorance as to their actual position in society. Rawls concludes that these legislators behind the veil of ignorance would decide upon the widest possible civil liberties and would allow for the unequal distribution of resources only to the extent that this distribution aided those least well-off members of the group.[53] Rawls does allow that the reflective equilibrium is never necessarily stable, in that further investigation could lead to revision of our judgments in order to have them correspond to our principles. But the principles themselves do not, it seems, allow for instability, and neither are "we," as rational-decision makers, changing either.

Simondon might agree that, by abstracting the rational individual from her or his position within a set of norms, this thought experiment is perhaps a way of pointing to some of the salient features in the *values* expressed at any given phase. Yet Simondon would not only contest the unproblematic existence of the individuated decision-makers behind this veil, but he would also argue that the values they choose only exist within the virtual or excess "sense" of the structure and trajectory of norms. As decision-makers from a given society, they cannot be drained of their facticity, for they are nothing other than this facticity. This emphasis on individuals making decisions places them outside of becoming, whereas Simondon stresses that the moral action is the one that negotiates the metastable from *within* becoming in a virtuous manner.

2.2 A feminist approach to the relational self

One of the most important contributions in the rethinking of the individual subject has come from Feminist Ethics, and a first glance here seems to indicate that the Simondonian position sketched thus far is closest to such an approach. Of course, Feminist Ethics itself is not a single homogeneous field and approaches vary according to author. For the purposes of this paper, I will focus on one feminist approach that seems to resonate with several aspects of Simondon's thought, namely, Susan Sherwin's understanding of a "relational" approach to individuals and specifically to the question of autonomy in health care.[54]

[51] Rawls (1999).

[52] Rawls (1999, p. 3).

[53] As Sherwin argues, "Rawls envisioned a process of reflective equilibrium that seems to be aimed at producing timeless, static, universal rules for ethics." Sherwin (1996, p. 193). Sherwin rightly notes that Rawls himself addresses the question of situatedness in his later work. Sherwin argues that his notion of "political consensus" there does not provide any protection against a consensus achieved through oppressive means. See Rawls (2005).

[54] In addition to Sherwin's voice, many of the members of her group *Feminist Health Care Ethics Research Network* write on similar concerns and approaches to these very issues. See for instance,

In an important essay related to the above critique of Rawls, Sherwin resonates with Simondon in suggesting the need to dismantle the prevailing distinction between practical and theoretical ethics,[55] which she argues is particularly exacerbated in the sense of a "moral division of labour" between the abstract and conceptual work of philosophers, and the concrete and practical work in "the actual world of health care."[56] Bioethics often proceeds through conceptual clarification and mechanical application of some accepted bioethical principles, often, as she notes, some version of the popular "Georgetown Mantra."[57] Although the debates continue about the relative value of either side, all players seem to acquiesce in the division itself. In contrast, Sherwin argues, in Simondonian fashion, that the two sides are "inextricably linked" and that the influences "run both ways."[58] Even if philosophers and bioethicists do not make this claim explicit, the philosopher's penchant for abstraction and thought experiments, and the bioethicist's attraction to empirical application of largely unexamined principles (like the Georgetown Mantra), demonstrates this implicit distinction in practice and risks leaving concrete and structural oppressions unacknowledged and unchallenged.

By contrast, Sherwin calls for her readers to embrace "the importance of doing theory and practice together,"[59] which also involves recognizing that the framing of the practical moral problem is itself an ethically and politically significant event, not a neutral and unproblematic observation. In fact, not only does the discussion of Sherwin's approach here harmonize deeply with Simondon's work, she even seems to provide a short blueprint for a virtuous practice of ethical reflection in the Simondonian sense outlined above. She writes: "Part of the task of bioethics, then, is to become sensitive to and critically engaged with the ethical issues involved in the decisions of which questions are studied, how they are formulated, and what conceptual tools are brought to bear on them."[60] By approaching the metastable *responsibly*, one can identify aspects of the structure that have been "overlooked," and that when identified and weighed properly can radically shift the conception of the situation and how it will crystallize into a new structure of norms. Such an

Footnote 54 continued
Morgan (1998). For other Ethics of Care approaches to the relational self that I believe share this resonance, see Held (2006) and Friedman (2000). Indeed, as Friedman writes (cited by Held): "According to the relational approach, persons are fundamentally social beings who develop the competency of autonomy … in a context of values, meanings, and modes of self-reflection that cannot exist except as constituted by social practices. … It is now well recognized that our reflective capacities and our very identities are always partly constituted by communal traditions and norms that we cannot put entirely into question without at the same time voiding our very capacities to reflect." Friedman (2000, p. 40–41). For Held's discussion of this and related theories of self in Ethics of Care, see Held (2006, chapter 3).

[55] The article in question is Sherwin (1996, p. 187).

[56] Sherwin (1996, p. 188).

[57] The "Georgetown Mantra" is the name given to the popular system of "mid-level" principles drawn from normative ethics for use in applied ethics by Tom Beauchamp and James Childress. For a discussion of the Georgetown Mantra, see Battin (2003, p. 298). Sherwin is critical of the consequence of this systematization, at Sherwin (1996, p. 188).

[58] Sherwin (1996, p. 189).

[59] Sherwin (1996, p. 190).

[60] Sherwin (1996, p. 191).

approach is precisely the attempt to negotiate the explicit norms and the implicit values of the present by taking them up toward an ever more open structure. For instance, Sherwin's approach demands that we bring Rawls' abstract reflection on the principles to be preserved in a dialogical "reflective equilibrium" into conversation with the "practical world of moral life."[61] Moreover, Sherwin also invites her reader to not simply consider the "abstract" moral principles of the dialogue's participants, but also to consider the trajectory that led to their formation. In short, we cannot begin with individuated principles; we must examine the process of individuating that is temporarily solidified in this structure, and that is already preparing for its next crystallization.

Given these initial similarities in language and intention, how might Simondon's apparatus contribute to Sherwin's project? It appears that Simondon's work is useful in two important ways, namely, 1) to provide the argumentational apparatus to move from Sherwin's description to binding moral claims, and 2) to offer the means to explore the virtual structures of a given metastable equilibrium by bringing out not only the oppressed voices, but also the silent voices of the past and the potential voices of the future, all contained in the pre-individual that is played forward. With regard to the first point, consider Sherwin's apt description of our urgent task:

> [I]n a world in which powerful systems of oppression and domination have a significant and unjustifiable impact on the relative privilege or disadvantage of members of different social groups, such systemic forces must be seen to be morally objectionable. Because systemic oppression, such as sexism and racism, has devastating consequences on many human lives, and because it is manifestly unjust, it is a matter of moral urgency that we identify, condemn, and find ways to eliminate these sorts of forces from our society. Listening to the voices of those who are harmed by these oppressive forces will help us to recognize and address the moral injustice of oppression.[62]

Her identification of the inherent and *temporal* harm of oppression as morally unjustified seems, to me, unquestionable. And yet, perhaps I am simply predisposed to accept her perspective.[63] Indeed, if we examine the passage, each of the three sequential claims attempts to effect a move from *is* to *ought*, that is, each is an attempt to performatively reject the *is/ought* problem and to introduce a certain *critical-ethical vision*, to use a term developed by Alia Al-Saji, into the metastable potentials of her readers.[64] But does this performance of a world-view have traction with someone who is not predisposed or prepared for shifting their vision toward a critical-ethical vision?

[61] Sherwin (1996, p. 192).

[62] Sherwin (1996, p. 192).

[63] For a writer who is not convinced by Sherwin's call, see Arras (2003, pp. 347–348).

[64] The term "critical-ethical vision" is employed by Alia Al-Saji (2009) in an important article rethinking of how racism or sexism can become sedimented into the invisible structures of vision. Indeed, the notion of virtue I am drawing out of Simondon might productively be thought of in terms of vision, despite Simondon's own apprehension about the phenomenological tradition. For Simondon's concerns about the phenomenological tradition, see, for instance, Barbaras (2006) and Guchet (2001a).

What Simondon's ontology of individuation (and specifically the "open" Virtue Ethics it implies) provides is an ontological position that rejects the *is/ought* distinction in order to describe the complex place we occupy within the unfolding metastable trajectories of value, at once shaped by and sustaining the very oppressive forces Sherwin calls for us to recognize and to work to remove. This project, then, is precisely one of cultivating the metastable. The invocation that we "must" recognize oppressive forces that may or may not even be visible to the privileged groups then can be heard as a call to cultivate the becoming of those caught up in the continual evolution of the concrete situation. Moreover, it would seem that such an account leads to a shift in focus from the limitations of dialogue that Sherwin herself identifies[65]—a shift to a structural analysis of the tension between norms and values that includes both the explicit voices and the implicit violence that may be either real or simply harbored in the potentials of what we continuously play forward. To recall Al-Saji's approach, vision can be violent insofar as it can totalize and reinforce racist or sexist structures in such a way for them to appear "self-evident" or necessary, and insofar as they inherently obscure their own historical and social genesis. Thus, the cultivation of an ever-more subtle critical-ethical vision would be the practical outcome of Simondon's ethical reflections, a "virtuous" seeing that is ever open to new situations and to taking responsibility for its own potentially oppressive structures as well as its own "invisibilities" in the trajectory from which it springs.[66] Vision is part of the complex process of individuations at both the individual and the collective levels. Such an account might speak to a reader not already on board with the political project. In other words, reading Sherwin's call for a "feminist reflective equilibrium" is importantly clarified if we conceive of her project itself as a moment in the trajectory of "metastable" equilibriums, and as the feminist value as a moral force for opening ever-richer virtualities or invisibilities in our evolving vision of what it means to be human as the place of passage of individuating trajectories unfolding in relation to the past, the present, and others toward an (ideally) more open and less violent future. To follow MacIntyre, then, such an identification of the being of the individual in individuation would allow for us to bridge the fact/value distinction itself by pointing to facts about vision that are at once descriptive of our openness and normatively charged by our nature as open and unfolding centers of individuation.[67]

3 Rethinking the technical of medical technology

A second major contribution of Simondon's work emerges from the question: "What is a technical object?"[68] Related to his above arguments against a

[65] Sherwin (2000, p. 76).

[66] See Al-Saji (2009, p. 379). Al-Saji rightly notes that vision involves at least two layers of invisibilities: its own historical and material genesis and the "invisibles of the visible" such as color, line, depth, and as she would add, social structures of power.

[67] MacIntyre (1984, pp. 56–59).

[68] As Paul Dumouchel writes: "Is there an essence of technical objects? Do they form a natural kind? Does our classification of certain things as technical objects carve nature at the joints or is it purely nominal?" Dumouchel (1992, p. 407).

hylomorphic approach to the essence of the individual, Simondon rejects any theory of technology that reduces technological essence to "use." His study of paradigmatic examples of technological evolution or "concretization" shows that technological development is an *essential* aspect of human individuation[69] and that the technical system itself has a certain *internal* dynamic. To follow Bernard Stiegler's formulation, there is a transductive relation revealed in the ambiguity of the phrase "the invention *of* the human."[70] With regard to the intentions of this paper, a brief glance at the literature of Biomedical Ethics reveals an important focus on the hyper-technical reality of modern medicine embodied in certain medical technologies or the dizzying pace of technological progress in medical technology more generally, and the concern that philosophical and ethical reflection has not kept pace. And yet, despite the prevalence of technology in this discourse, writers consistently accept the seemingly straightforward understanding of technological essence as a neutral "tool," and proceed to discuss the *intentions* behind or *effects* of its use, as well as the new human relations and responsibilities it reveals. If Simondon is correct, however, this default understanding of technical objects needs to be reworked in order to account for the reality of technical concretization and the transductive relation between humans and technology.[71] In this final section, I present a brief sketch of Simondon's "*mechanology*" and delineate some ways it may help to enrich bioethical discourse relating to technology.

The complex relation between the ethical and the technical is present from the very first lines of Simondon's text *Du mode d'existence des objets techniques* (1989). For Simondon, philosophical reflection has a normative role to play in re-conceptualizing technical objects akin to the role it played during the enlightenment in re-conceptualizing the "value of the human person" in the "abolition of slavery."[72] As Dumouchel notes, this claim is an extension of the belief that knowledge leads to freedom,[73] and thus we can see again that Simondon's work has the ethical scope of the phenomenological cultivation of a critical-ethical vision discussed above. The study of technical objects is a normative project, and Simondon rejects what he calls a "facile humanism" that opposes humanity to

[69] Stiegler (1998). This story is nowhere better presented than in Stiegler's chapter on the deepening understanding of technics from André Leroi-Gourhan to Simondon.

[70] "The Invention of the Human" is the title of Part I of Stiegler (1998).

[71] Recognizing this is not straightforward. As Gail Weiss writes: "The durée of the techno-body, whether this body be that of a newly cloned sheep, a "test-tube" baby, or a woman hooked up to technological devices that records fetal movement, fetal heartbeat… (etc.), arises out of a violent effort and requires a violent effort in order to see the interconnections that link this durée with our own." Weiss (1999, p. 112). An obvious reference is here included by Weiss to Donna Haraway, who writes that the "machine is us, our processes, an aspect of our embodiment." Haraway (1991, p. 180). Simondon's approach, however, suggests a different starting point by focusing on the role of the internal dynamic of the technical system, again resulting from his attempt to move away from a naïve phenomenological approach toward a "general phenomenology of machines." Cf. Parrochia (2009).

[72] Simondon (1989, p. 9).

[73] Dumouchel (1992, p. 408).

machines in favor of a rigorous humanism that takes seriously the complexity of the relations between technology, humanity, and nature.[74]

Simondon identifies two societal attitudes toward technological objects: the first "treats them as pure *assemblages of matter*, stripped of genuine signification, and presenting only a utility"; the second treats them as robots harboring "hostile *intentions*" toward humans, or imagines that they "represent for man a permanent threat of aggression or insurrections," that is, a threat to human freedom.[75] Nevertheless, both of these attitudes lead to the classification of the machine as a mere tool because they come from a shared error, namely, the assumption that the level of "perfection" of a machine is determined by its level of "automatic functioning." The history of technological evolution belies this assumption, and shows that automatic functioning is a relatively "base" or rudimentary level of technical essence. In contrast, Simondon identifies the "genuine perfection" of a machine with its openness to external information and to the "margin of indetermination" that such an openness fosters.[76] Such a shift in perspective indicates that objects cannot be grouped according to their use, but rather according to their reality as a phase in a more general technological concretization. Consider the case of two different types of wrist-watches discussed by Dumouchel, one with a spring motor and one with an electric motor. For Simondon, the common "use" of keeping time is irrelevant to the reality of these technical individuals, for the spring motor is part of an evolutionary line related to the crossbow, whereas the electric motor is part of a different lineage, related to the buzzer or the doorbell. Grouping objects by use obscures the technical reality of the objects, which is akin to the privileging of individuals over the process of individuation.[77]

In relation to the technological object, the human being is neither an external craftsperson imposing form upon an inert matter, nor the "slave master" overseeing machines denied of any internal dynamic of their own. As Dumouchel explains, "concretization is not the mere meeting of an ideal form and a completely amorphous matter, but a process of discovery which progressively exploits the virtualities of the physical world."[78] The technical system is a trajectory of individuations "progressing" toward a more and more open system through a progressive integration of functions. In this progress, the human is the "permanent organizer of a society of technical objects that need him [or her] in the manner that

[74] Simondon (1989, pp. 10–11). Simondon does not explicitly name the opposite of what he calls a "facile humanism," but the implications are clear, and so too is the necessity that a Simondonian "humanism" would not be an essentializing one, but rather something of the "open" humanism we might expect to see in Merleau-Ponty's political writings. For example, see Merleau-Ponty (1964). Regarding this aspect in Simondon see, Barthélémy (2008, p. 4) and Guchet (2001b).

[75] Perhaps this notion of "robots" is dated, but it seems to me that technological advances can still be seen in this general scheme, although we now speak more readily of artificial intelligence and of cyborgs (see earlier note).

[76] Simondon (1989, p. 11). Although I do not have the space to develop this point here, the importance of the notion of "indetermination" in Simondon and in Stiegler needs to be properly situated in relation to Bergson's use of the term in the opening pages of *Matter and Memory*. See Bergson (1991).

[77] This discussion is a paraphrase of Dumouchel (1992, pp. 409–410).

[78] Dumouchel (1992, p. 412).

the orchestra needs a conductor."[79] The conductor and the orchestra modulate together in a transductive relation, the conductor's expressions and gestures happen along *with* the orchestra's, and this imagery leads Simondon to conclude that the relation "of humans to machines is one of a perpetual invention."[80] The human negotiates the indeterminations of the metastable structures and, when acting "ethically," guides a crystallization of new structures that take up and enrich the internal dynamic of the machines,[81] but as a result human essence too evolves with each successive concretization. Technology, then, embodies a human reality; human reality is *technical*.

According to Simondon, a proper awareness of this transductive situation naturally comes slowly, for in the dynamic reality of technical and human individuation, the focus is never on the process itself. Each individual "worker" is linked merely to a single machine at a single stage of its technical evolution; each "owner" is related to the functioning of machines through the abstraction of its "price and the results of its functioning."[82] We saw above that the "philosopher" is caught in a misguided conception of individuals outside of individuation, and Simondon here suggests that scientists, who self-consciously leave theory aside in favor of its application, are equally blind to the technological reality upon which their practical work in fact depends daily. Since no region of knowledge or practice seems equipped to understand the complex dynamic of technical evolution, Simondon suggests the formation of a new field of knowledge named *mechanology*, which would amount to a sociology and a psychology of the machine. In response to the tension between the human role as coordinator of technics and the reality of technical individuation as a quasi-biological individuation (in that it contains a certain internal dynamic), culture must crystallize a new form of knowledge to relieve this tension. In other words, if humans are to regulate the technical *responsibly*, and hence cultivate themselves through their own necessarily technological being, then they need to develop an understanding equal to the task.

An important aspect of this new understanding will involve recognizing the internal dynamic of the technical system itself. "There is in technical objects," writes Stiegler, "a dynamic that stems neither from the soul nor from human societies, but that, like these, plays a determinant role in the movement of human becoming and must be studied for its own sake."[83] Simondon's study of technological evolution identifies an "inventiveness" internal to the technical

[79] Simondon (1989, p. 11).

[80] Simondon (1989, p. 12).

[81] This progress is from a more "abstract" arrangement to a more "concrete" one. As Dumouchel explains, "abstract" describes a situation in which the functions are independent. Consider the evolution from a "water-cooled engine" to an "air-cooled" engine. In the case of water-cooling, the cooling system is independent from the function of the engine itself, triggered by some connecting mechanism. In an air-cooled engine, the design exploits the convection motion created by the external parts of the engine itself as it heats up. It is thus internally related in that the very functioning of the engine creates the cooling required. This is a concretization of a technological essence, begun abstractly through the initial invention of the water-cooled engine. For this and other examples, see Dumouchel (1992, pp. 412–414).

[82] Simondon (1989, p. 13).

[83] Stiegler (1998, p. 67).

systems, but that must be coordinated through human activity. The result is a "non-anthropological" theory of technics that prevents us from conceiving of technological objects as "mere" tools. The history of technics proceeds, via human coordination, toward increasingly open systems with greater amounts of indetermination.[84] Because each technological individual is also part of a history of earlier technical concretizations, it cannot be just a "mere hump of inert matter."[85] As Stiegler writes, this "inorganic matter organizes *itself*," but importantly it does so through the medium of the human, and is thus a "quasi-biological dynamic." Although humans are both involved and re-shaped in this dynamic, the technical individuation is not a properly "human process."[86]

If Simondon is correct, then the technological object expresses a certain tendency of inorganic nature toward organization, and the trajectory of technological individuations belies the classical division between *phusis* and *technē*. The technological individuation requires the human in the role of inventor and organizer, but the inventive function of "anticipation *itself supposes the technical object.*"[87] Thus, the dynamic of technical individuation is one toward openness to indetermination, and this is why Simondon can equate the tendency to see machines as "tools" as analogous to an enslaving, an analogy that can only hold given the reality of the internal dynamic of the technological system. Rather than merely employing the machine as a means, the virtuous technician or inventor would be the one who works with the metastable potentials of the system toward a technological system more and more open to indetermination, and who would also recognize the transductive influence of technological evolution on an evolving human essence as well. Each concretization of the technological essence is also simultaneously a new individuation of the coordinator, and thus is open to the same ethical concerns as I sketched above with regard to the cultivation of the metastable equilibrium in the negotiation between norms and values. A non-virtuous coordinator, then, would be the person who merely "uses" technology for some external end (such as the creation of profit) or who blocks the open trajectory of the evolution of technology and thereby blocks human becoming.

Now the question is whether this shift in understanding of the technical object—from a "tool" toward the transductive expression of a dynamic human-technical-nature triad in which becoming is an open metastable process—might, as I suggest, offer a shift in our approach to technology in Bioethics. Contributions in Bioethics often address the role of specific medical technologies in raising new ethical concerns or revealing important human relations, as well as papers recognizing the hyper-technological reality of modern medicine as giving rise to the urgent need for Bioethics itself. Many early debates in Medical Ethics involved thought experiments concerning technological devices, such as respiratory machines, and lively discussions still focus on issues such as transplant technologies often in the context

[84] Here one might think of the development of information systems from looms and early calculators to contemporary technological systems, such as the Internet.

[85] Stiegler (1998, p. 71).

[86] Stiegler (1998, p. 72).

[87] Stiegler (1998, p. 81).

of scarce resources or in the context of determining proper definitions for "death" (brain death, circulatory cessation, etc.). Most, however, ask "should we *use* the technology," or "how should we *use* the technology?" Just as Simondon argues that culture sets itself up as a defense of humanity against the threat of technology, it seems that Bioethics has set itself the task of the defense of humanity from the threat (or risks) embodied in medical technology. I certainly do not want to reject the importance of these discussions; I simply wish to ask what the impact of a shift in our understanding of technology from a tool to a complex dynamic and as part of human becoming as outlined above might have on these discussions.

It seems that taking a Simondonian approach here again points toward a position in harmony with Feminist Bioethics. Indeed, if Simondon is correct in the above account, then medical technology cannot be seen as a mere tool or as an inherent threat needing to be isolated. A *medical mechanology* would be a form of knowledge that identifies technological objects not in their *use*, but according to their place in an historical lineage of concretization, and given the human role as the coordinator of this evolution, the human essence expressed in each phase would have to be made clear. As Dumouchel notes, once we reject the notion that technical objects are merely tools, we can no longer be confident in fully understanding what we invent: "we understand what we make no better than we understand what we do."[88] There would thus be no foundation for the claim that technology itself is neutral, and only our uses or intentions are culpable. The history of technics is *internal* to human reality, and as such our development of technics ought to conform to the ethical standards for all individuations upon which we can have at least some, though never total, control. In other words, the "ethics" of medical technology would involve neither eternal principles nor ever changing norms, but would rather correspond to the open virtue ethics sketched above, and would involve a responsible negotiation of norms and values through the establishment of metastable equilibriums in the evolving transductive relation between humans and the technologies we coordinate.

4 Conclusion

It seems that the Simondonian approach explored in this paper opens the discussion of ethics and technology to many important relations that would be otherwise obscured by a definition of the technical object as a tool or an account of the individual failing to address individuation. Consider Sherwin's claim: "Feminist theorists (…) recognize that reproductive technologies are a product of existing social patterns and values, and most find reasons to believe that these technologies will shape attitudes and opportunities regarding reproduction in the future."[89] If the technologies themselves are not "neutral tools," as Simondon shows, then we have a very good reason to agree with Sherwin that "racism, sexism, classism, or bias against the disabled" is "at the heart of many developments in the new reproductive

[88] Dumouchel (1992, p. 409).

[89] Sherwin (1989, p. 65).

technologies" despite what may appear as otherwise good intentions or neutral technologies.[90] Properly identifying the technological lineages will help to reveal these important ethical concerns when we turn to consider a virtuous approach to medical technologies that takes seriously our relational selves. Moreover, technology understood in the narrow sense amounts to promoting closed ideologies of health or normality in particular, and of human essence in general, whereas technology understood as a dynamic expression of technicity tending toward openness and as always in a transductive relation to human becoming would require an ethics of technology from within this larger picture. As Sherwin argues, the "effect of the medicalization of women's reproductive lives has been to make women dependent on male authority," and this use of technology for "control" reveals the very conception of technology identified as pernicious by Simondon as well as the pernicious effects it has on both the becoming of humanity (closing off possibilities for half the population) and of technology (leading to the increase of automation rather than openness in medical technology).

Simondon's work on individuation and the history of technical concretization is thus importantly animated by a deeply normative impulse and, as I have argued, his original and rich conceptions both harmonize with and contribute to important insights offered by Feminist Bioethics. Indeed, the complexity of modern technological medicine can only be responsibly addressed if we account for all of the complex factors involved in the genesis of our current metastable equilibrium as we attempt to move toward a more ethical future.

Acknowledgments I would like to thank an anonymous reviewer of this paper for comments that helped to improve it, particularly in relation to Sect. 1.3 on the transindividual.

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[90] Sherwin (1989, p. 65).

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