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Abstract
This paper responds to an invitation to historians of political thought to enter the debate on new materialism. It combines Simondon's philosophy of individuation with some aspects of post-humanist and new materialist thought, without abandoning a more classically 'historical' characterization of materialism. Two keywords drawn from Barad and Simondon respectively – 'ontoepistemology' and 'axiontology' – represent the red thread of a narrative that connects the early modern invention of civil science (emblematically represented here by the 'conceptual couple' Descartes-Hobbes) to Wiener's cybernetic theory of society. The political stakes common to these forms of mechanical materialism were attacked ontologically, epistemologically and politically by Simondon. His approach, I will argue, opens the path for a genuine materialist critique of the political anthropology implicit in modern political thought, and shifts political thinking from politics conceived as a problem to be solved to politics as an arena of strategic experimentation.

Keywords
Barad, Descartes, Hobbes, new materialism, political anthropology, Simondon, Wiener

> Il y a des lignes qui sont des monstres: la droite, la serpentine régulière, surtout deux parallèles. Quand l'homme les établit, les éléments les rongent. Les mousses, les accidents rompent les lignes droites de ses monuments [...] Il serait intéressant de vérifier si les lignes régulières ne sont que dans le cerveau de l'homme. (Delacroix, *Notes sur les lignes*).

In this paper I will cross Simondon's philosophy of individuation with some aspects of post-humanist and 'new materialist' thought while, at the

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same time, remaining within the ambit of a more classically 'historical' characterization of materialism. I will specifically focus on Simondon's early paper 'Epistemology of Cybernetics' [*Épistémologie de la cybernétique*] (written in 1953 and posthumously published as Simondon, 2016a), in which he was still elaborating what would soon become his theory of individuation, later fully developed in *Individuation in Light of Notions of Form and Information* [*L'individuation à la lumière des notions de forme et d'information*] (Simondon, 2005 [1958]). I will also hint at some aspects that I take as relevant for my purpose in Karen Barad's work (2003, 2007), implying that a nexus between these two research trajectories could be better explored by an analysis of their approaches to quantum mechanics as a critique of the modern mechanical worldview. The relation between Simondon's philosophy and quantum mechanics has recently been studied in detail (Bontems and De Ronde, 2019), and the relation between Simondon's philosophy of individuation and the feminist questioning of identity has now been on the philosophical agenda for a while (cf. Harvey et al., 2008; Grosz, 2012). My rather limited goal in this paper is to emphasize the political stakes often implicit in Simondon's ontological and epistemological research and suggest that these can be relevant for many of the reflections presently carried on under the label of 'new materialism'.

Openly a 'humanist', Simondon was certainly not – at least on his own terms – a materialist. That said, there is something that directly connects new materialism to Simondon: a common fascination with technology and science (notably the theory of information), an attempt to conceive of matter as 'agency' (in particular in relation to thermodynamics and quantum physics), and the project of developing, on that basis, a social ontology. This is something that has been recently referred to as 're-engagement with science', 'reconceptualization of agency' and 'reliance on a "flat" ontology' (Choat, 2018: 1028). Moreover, this corresponds to three of the passwords that have been widely used to enter Simondon's oeuvre: technicity, metastability, and the transindividual. The first (technicity), was first used by Bernard Stiegler (1994); the second (transindividual) by Étienne Balibar (1997) and Muriel Combes (1999); the third (metastability) by a recent wave of research building on Simondon's theory of information (Blanco and Rodriguez, 2015; Hui, 2016; Mills, 2016). I am not going to privilege any of these entry points into Simondon's philosophy or pretend to achieve a synthesis of such interpretations. His philosophy of individuation was indeed a conceptual network that related all these elements without aiming at a final synthesis. As this paper will point out, this is the very reason why Simondon's apparently outdated attempt to develop a 'new humanism' (Simondon, 2016b) should be included in the 'post-humanist' agenda of new materialism.

Furthering the effort carried on by his master Georges Canguilhem within the life sciences, Simondon challenged the very concept of

immutable 'laws' in both the natural and social sciences, along with the foundationalist project attached to it since early modernity. What the systematic form of Simondon's main works may conceal is the radical commitment to conceptual experimentation that animates the encyclopaedic enterprise he intended to carry on beyond phenomenology and structuralism. Simondon's theory of individuation distanced itself at the same time from the anthropocentrism implicit in the phenomenological concept of sense, and the structuralist mechanization of social dynamics, vindicating the experimental and inventive role played by philosophical thinking within society. Entitled neither to assume a supreme function of epistemological foundation nor to establish a privileged point of view over nature, for Simondon philosophy is always playing catch-up with the historical changes of technoscience as well as the complexity of material processes. Far from this being a mark of frailty, it commits philosophy to play a somewhat 'interstitial' yet crucial role in all the fields of scientific research, which can still be a guide for the practice of materialist thinking today.

The present article specifically stresses the connection between ontology, epistemology and political thought in Simondon's theory of individuation and uses it as a materialist tool to challenge the modern conception of a political theory based on the knowledge of (the laws of) human nature, and the relation it implied between political thought and the practice of politics. Two philosophical questions thus form the leitmotif of the paper: How do we theorize the natural and the social, and the knowledge of the human they produce together? How should we relate science and politics, knowledge and political decision and action? Implicit in these two questions is the problem of how to relate science and politics without reducing one to the other, either by collapsing politics into techno-scientific planning (that is, technocracy) or by reducing technoscience to an instrument of the pure voluntarism of political decision (that is, fascism). After a brief premise and partial vindication of what I name – borrowing Engels' expression – 'vulgar' mechanical materialism, I will introduce the two keywords that – drawn from Barad and Simondon – will orient my reflection: 'ontoepistemology' and 'axiontology'. I will then develop my narrative, which connects the early modern invention of 'civil science' within the conjuncture Descartes-Hobbes up to Norbert Wiener's cybernetics, by exploring some passages where Simondon sketches a critique of modern mechanical philosophy, and others where he assesses the political implications of Wiener's cybernetic theory of society.

My final suggestion is that the study of Simondon's philosophy of individuation, and notably his concept of 'metastability', can help us take a step beyond the modern understanding of politics as a problem posed by the 'social unsociability' of human nature and to be solved by either a universal theory of politics or a blind commitment to political decisionism. It is my wager that Simondon's philosophy of individuation

helps explore what materialism can still offer to political thought, beyond those versions of materialism that were and are integral parts of this modern view of politics, and therefore unable to challenge it. A genuine materialist approach, I will argue, allows us to shift political thinking from the search for a universal solution based on what human nature is assumed to be to politics as a strategic experimentation on what human nature can become.

Premise on 'Vulgar' Materialism and Two Keywords: Ontoepistemology and Axiontology

Let me clarify something trivial. As a materialist, I take the writing of this paper as situated – naturally, technically *and* historically. The universe, our planet, and the emergence of life and our species precede and are the natural-historical pre-conditions of the emergence of social groups and therefore technics, language, thought, and of course science and philosophy etc., and – last but not least – our talking and thinking today. In short, 'nature' is – along with history – the condition of possibility of everything we call human. As a consequence, I tend to feel at ease with the mechanical materialism assumed in much popular and scientific common sense, and with thinkers that are crystal clear about their belief that nature precedes thought, whatever their arguments, and however they are expressed. And this paper is, to a certain extent, a vindication of 'vulgar' materialism *as a starting point*, but also implies a critique of it *as ahistorical* and implicitly dualist. However problematic and perhaps philosophically naive, what I call 'vulgar' materialism is a clean rejection of philosophies that would like to see nature as overall dependent on the human subject. The naturalistic formula of this materialist wisdom is offered by Simondon himself:

> Human beings and their technology are a low grade singularity in the universe, entirely surpassed by the cosmos in space, power and time [...] One is eventually confronted with the inferiority of art [*techne*] compared to nature when considering the conditions of existence of the author of art, as a species or variety, the *homo faber*. (Simondon, 2014c: 199)

This form of materialism has the merit of clarifying the problem. It postulates a field of immanence and rejects, at least in principle, all imagination of reality as included within the horizon of the subject – whether the latter be conceived in terms of perception, language, discourse, thought or any other sort of *Geist* or *chère*. On this starting point, Simondon's philosophy of individuation and Barad's agential realism resonate when they both critically address the state of the art of philosophical research in a materialist way. This is how Barad opens

her article on 'Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter':

> Language has been granted too much power. [...] it seems that at every turn lately every 'thing' – even materiality – is turned into a matter of language or some other form of cultural representation. (Barad, 2003: 801)

And this is Simondon's reply to Ricœur during the debate following the presentation of his paper *Forme information potentiels* at the *Société Française de Philosophie*:

> But how can one admit that nature is part of the discourse? This is the postulate grounding your argument, and I will reject it absolutely [...] No, there is a theory of speech far in excess of what might be admitted; it is giving value to speech. There is a theory of nature, in what I have tried to present. (Simondon, 2019: 579, 582)

I do not believe such a stance can be theoretically founded – and yet it can be taken as a postulate, against the mirroring 'idealistic' assumption of an inescapable phenomenological horizon within which no natural-historical pre-condition can be thought to exist prior to the emergence of the (human) subject. I believe the adoption of an 'idealistic' horizon cannot be theoretically justified either. These assumptions precede the arguments meant to provide their foundations, and can only be studied within the paradigms they have contributed to generate. Indeed, as I am going to explain, stating that there can be no metaphysical *foundation* of either materialism or idealism, but only *decision*, is already a genuinely materialist claim.

The critical force of a straightforward materialist assumption is, in short, one of simplification. It can set a whole philosophical agenda that includes the reflection on its own preconditions. Its limitation is, however, that it tends to perpetuate a violent attitude that cancels the extraordinary complexity of matter, reducing it to simplistic representations elaborated by human thinking. This attitude, shared by all sorts of reductionist 'religious', 'spiritual' or even 'dialectical' world views, also includes the 'vulgar' mechanical materialism attacked by Engels, in which nature (including human nature) is deemed as regulated by 'laws' that have been in fact elaborated by human imagination and reason. This world picture, having emerged in early modernity, will be the object of my critique through the lenses of Simondon and Barad's philosophically adverted forms of materialism. What I would like to make clear for the moment is that 'vulgar' materialism does not fail for lack of wisdom (you are born, you live, you die: try and make sense of it). Rather it fails *philosophically* because it is not *consistently*,

that is *historically*, materialist. What is in fact 'idealist' in all sorts of mechanical materialism is the attempt to provide a definitive *foundation* for (scientific) knowledge and (ethical-political) action. Consistent *historical* materialism leaves no space for any sort of timeless laws of nature and a universal, stable human nature. This would make of it an implicit dualism opposing the becoming of matter to the eternity of truth(s).

There is indeed a genuinely materialist alternative to the commitment to foundationalism shared by idealism and mechanical forms of materialism as well. This alternative is what I intend to explore, along with its political stakes, through the two keywords that I will borrow from Barad and Simondon respectively: 'ontoepistemology' and 'axiontology'. According to Barad, 'Ontoepistemology [is] the study of the intertwined practices of knowing in being' (Barad, 2007: 408, n 5), as opposed to 'The separation of epistemology from ontology', which is 'a reverberation of a metaphysics that assumes an inherent difference between human and nonhuman, subject and object, mind and body, matter and discourse' (Barad, 2003: 829). Barad also explores the normative implications of this approach and Simondon coins the neologism 'axiontology' to explain how his 'allagmatic theory [...] is axiontological' because it includes 'a theory of knowledge' as well as 'a theory of value' (Simondon, 2005: 565).[1] In this sense he claims that 'One cannot provide a theory of knowledge that is not, at the same time, a theory of being, and a theory of action as well' (Simondon, 2016a: 214)

In what follows, I will show how a research path marked by these quotes moves away from a) the ontoepistemological *separation* of science and action theorized by western philosophy from Descartes to Kant, and b) the forced technocratic *connection* of science and action explicitly theorized by positivism (and organic to a Cartesian understanding of technics). The two positions are in my view complementary: the latter (technocratic *connection*) solves a false problem posed by the former (ontoepistemological *separation*). This is the pattern: first you separate humans from nature; second, you separate human rational knowledge from human actions (and passions); third, you complain about the separation and the 'irrationality' of animal-*automatic* behaviour; fourth, you solve the (imaginary) problem you have posed by reducing natural *and* human bodily motion to some kind of universal law ultimately elaborated – of course – by human minds.

Such an ideological move is perfectly described by Simondon himself in his *Two Lessons on Animal and Man*, where he just needs a couple of pages to dismantle the Cartesian separation of human reason and animal life *along with* the mechanistic reduction of the former to the latter in the 19th and 20th century. This is, in Simondon's words, the epoch 'that denies Cartesianism not in order to state the animal is a being of reason and has an interiority, a being that has an affectivity', but rather to reduce all living beings, humans included, to Descartes's

mechanical representation of the animal in general as an automaton: 'the content of reality you put into the notion of animality, this content allows us to characterize man. Namely, it is by the universalization of the animal that human reality is dealt with' (Simondon, 2011: 61). Simondon's point is that by reducing all forms of biological life to Descartes's *res extensa* one does not bring humanity back into nature, but rather goes the other way round, and reduces nature – human nature included – to the 'mechanistic' representation of reality provided by early modern science. In other words, what is wrong with 'vulgar' materialist reductionism is that it is insufficiently materialist. It does not respect the complexity of matter. On the contrary, it reduces matter to a too human imagination.

A Very Short Story of *machines à gouverner* from Descartes-Hobbes to Wiener

In my narrative, the conceptual couple Descartes-Hobbes embodies the systematic adoption of the mechanistic project of geometrization of nature, human nature included, born in the 16th century. By 'systematic' I do not mean systematically developed by each of them, but rather developed within their philosophies taken together as a whole. Descartes and Hobbes were overt enemies, they personally hated each other, and their metaphysics were radically opposed. Descartes was a dualist, Hobbes was a monist; Descartes believed no science of politics was possible, Hobbes believed he had founded the new 'civil science'. However, they shared the same mechanical view of the natural world as a deterministic whole made of matter in motion, whose perfect science was to be built by the application of the state-of-the-art mathematics of the time to motion. As a result, they concurred in projecting on nature what was at the time perhaps the highest product of human rational imagination (Euclidean geometry), thus generating modern mechanics. Given that Hobbes was a monist and a materialist, I'll take his philosophy as the prototype of a form of materialism a) whose *ontoepistemology* is based on the assumption of a separation between the eternity of scientific knowledge and natural motion, and b) whose *axiontology* is based on the forced connection of science and action through a technocratic politics founded on that ontoepistemology. What I will maintain is that this form of materialism is in fact an implicit dualism, which makes of Descartes-Hobbes a proper conceptual couple. Let me provide some more details on a narrative that, jumping on Simondon's philosophy as a time travel machine, leaps over a few centuries getting us directly to his critique to Norbert Wiener's cybernetics of society.

In Descartes we can find a fully developed ontoepistemology and the open prohibition of axiontology. His philosophical imagination projects geometrical determinism (i.e. an artificial product of human reason) on

nature, which is thus conceived as subject to the eternal 'laws' of mechanics. It situates the first principles of philosophy in a disembodied Reason-*Res cogitans* that can measure and foresee all the outcomes of the motion of matter from an external point of view. Descartes thus reduces matter (human bodies and passions included, of course) to the passive object of scientific knowledge, and confines the role of Reason to the pure geometrical explanation of natural events, leaving no space for any pure rational knowledge guiding ethical and political behaviour. Indeed, Descartes's metaphysics entails, according to Simondon, 'an absolute jump from the domain of being to the domain of value [*devoir-être*]' precisely because 'being is defined objectively as passive [*res extensa*]' (Simondon, 2016a: 192). Given the metaphysical separation of *res cogitans* and *res extensa*, and a passive concept of matter, no axiontology is possible, and Descartes coherently placed his embargo on the science of politics (unsurprisingly, while commenting on Machiavelli):

> The main reasons for the actions of Princes are circumstances so particular that, if one is not a Prince himself, or has not been sharing their secrets for a long time, he cannot imagine. (Descartes, 1897–1913b: 492)

Despite the provisional morality he took care to establish as a succedaneum of this missing science, Descartes could barely hide the persistent and unfulfilled desire to overcome his own prohibition that had inhabited his philosophy since its early conception: the laws of nature – he claimed – 'are all inborn in our minds [*mentibus nostris ingenitae*] just as a king would imprint his laws on the hearts of all his subjects if he had enough power to do so' (Descartes, 1897–1913a: 145).

Hobbes's *scientia civilis* aimed precisely at overcoming the Cartesian provisional veto on the science of politics by conceiving all sort of beings as 'matter in motion', and knowledge and imagination themselves as material motions in the human brain that determined human behaviour. This ontoepistemological 'move' was meant to solve the axiontological problem posed by Descartes. A direct 'material' relation between political science and political action could be only established by an overwhelming power capable of regulating the material motions of the human brain, human imagination and passions, making human actions fit the ordered, rational 'laws' of human nature (Bardin, 2016). Hobbes's *Leviathan* embodied this irresistible force in a powerful automaton, an artificial body politic that offered a solution, at the same time epistemological and political, to the problem of the production of order (Shapin and Schaffer, 2011: 92–109). In my view, this understanding of politics as a disciplinary practice grounded on the implementation of mechanical science is the prototype of all technocratic projects. Theoretically speaking, it was a betrayal of materialism that reduced the political stakes of

materialism to the foundational exigencies of Descartes's dualist metaphysics.[2]

Thanks to the reader's benevolence and some time travel, in what follows I will be able to take this scheme as a model for my reading of Simondon's critique to Norbert Wiener's concept of information, and hence of his theory of government. During the 1950s Simondon worked intensively on the concept of information under the guidance of Jean Hippolyte, explicitly framing his research as an attempt to 'reform' Wiener's concept of information in view of the conceptions of relationality and indeterminacy conveyed by his interpretation of quantum theory. For Simondon information emerges within a *relation* between two systems, it does not pre-exist them, it is *not entirely determined* by their initial status, and it contributes to shape and change the systems involved. In a word, information *cannot* be understood in mechanical terms (Bardin, 2015: 25–31). This work culminated in Simondon's organization of the prestigious international conference of Royaumont dedicated to 'The Concept of Information in Contemporary Science', in which he also introduced Wiener's paper 'Man and Machine' (Simondon, 1965). In several of his interventions during the conference Simondon stressed that the potentialities of the concept of information to serve both the natural and social sciences were limited by its substantialist and determinist characterization when conceived (as in Wiener's case) according to the technological model of cable transmission. Put simply, the substantialist and deterministic concept of information adopted by Wiener was, according to Simondon, the result of the projection of a technological model on the reality – and, we may add, materiality – of information processes.

From this perspective, Simondon's philosophy can support a general critique of the re-emergence of the preoccupations of early-modern ontoepistemology and axiontology within cybernetics. In view of Simondon's critique, Hobbes's and Wiener's general theories of processes (physical, biological, technical, psycho-social) are both based on 'the best science available' (mechanics or theory of information), and they display an analogy of operations: a) their *ontoepistemology* reduces matter-in-motion and information to passive 'objects' by projecting on them mathematical determinism in order to found absolute knowledge; b) their *axiontology* prescribes the paradoxical notion of the 'value' of a neutral *and* technocratic political power that grants dynamic stability to the body politic. In short, Wiener's cybernetics can be said to revive Hobbes's mechanical materialism, substituting, as the basic element of scientific analysis, matter with information (and Euclidean geometry with advanced algebra), and providing the same answers to our two questions: (1) How do we theorize the natural and the social, and their knowledge together? Through a unified mathematical science of deterministic processes. (2) How do we relate science and politics? By establishing a technocratic relation between science and political organization.

The cybernetic concept of *machine à gouverner*[3] perfectly summarizes this position: its model for social systems is an *automaton* whose dynamic functioning according to established principles aims at the self-preservation of political order. This homeostatic and deterministic model dominates Hobbes's *Leviathan: Or the Matter, Forme, & Power of a Common-Wealth Ecclesiasticall and Civill* as well as Wiener's *The Human Use of Human Beings: Cybernetics and Society*, and ultimately leads to the same authoritarian and technocratic solution to politics conceived as a problem of foundation and preservation of the body politic by the government of human nature. This should be achieved through the implementation of a scientific model in which automatism and social reproduction are privileged over invention and social experimentation. I believe that these two projects are grounded on the same 'reductive' misconception of materialism. Whether reducing material reality to the first principles of Euclidean geometry or to the first principles of the cybernetic theory of information, in both cases we are dealing with a programmatic cancellation of the complexity and the surprising inventive possibilities of matter. In both cases scientific models are projected on matter with the intent of disciplining its behaviour, and making it comply with the abstract laws of reason that allow for its mastery and 'technocratic' organization.

Two quotes are emblematic of these connected projects, both of which show how a deliberate cancellation of the materiality and contingency of becoming is the precondition for these scientific models to work in their purity, and testify to the untamed resistance of matter (human matter included) to its scientific 'rationalization'. When he was laying the foundations of the new mechanical science Galileo made it clear that 'as far as matter is concerned, its contingency affects the abstract propositions of the geometer; and being these [propositions] so distorted that no perfect science is thus possible, therefore the mathematician is relieved from considering them' (Galileo, 1964–8: 100). In a similar vein, more than 300 years later Ashby explained that before establishing the cybernetic principles of a self-organizing system one had to 'realize that two factors must be *excluded as irrelevant*. The first is "materiality" [...] Also, to be excluded as irrelevant is any reference to energy' (Ashby, 1962: 260–1). Now, if a 'reduction' of matter to its all too human formalizations is what we aim to reject in both the ontoepistemological and the axiontological domain, we should run the political risk of providing the formula of a consistently *historical* materialism. And this is where Simondon's philosophy of individuation enters our story at last.

Simondon's Philosophy of Individuation as a New (Historical) Materialism?

So far I have argued that the deterministic materialism of both early modern mechanics and most of cybernetics is insufficient for a materialist

axiontology as long as it deals with universal laws of matter and informa-
tion in a sense that is strictly modern, namely based on the projection of an
abstract concept of deterministic rationality on the alleged a-historical
passivity of matter. This is an operation whose model is, in Simondon's
words, still inscribed in the 'hylomorphic schema', that is Aristotle's dual-
ist opposition of active form to passive matter. That is the model against
which Simondon elaborates his philosophy of 'ontogenesis' or 'individu-
ation',[4] rejecting all sorts of metaphysical dualisms, and primarily the
'opposition between the inert and the living deriving from the hylomorphic
schema' (Simondon, 2005: 323). This project broadly concerns the com-
plex and systemic processes within which individuals are generated at all
levels: physico-chemical, biological, technical and psycho-social. I will
briefly introduce Simondon's project here by going back one more time
to our keywords 'ontoepistemology' and 'axiontology', and phrasing the
problem as follows: Can we draw an axiontology on the basis of an
ontoepistemology conceived as individuation? How does this help avoid
the technocratic project carried on within modern materialism, as it were,
from Hobbes to Wiener? In other words, what normative consequences
can we draw from authentically materialist ontoepistemological premises
against mechanical materialism?

In *Epistemology of Cybernetics* Simondon claims that cybernetics con-
tains a 'unipolar axiology' (such as Spinoza's doctrine, he adds) and yet it
cannot provide an 'axiontology' (Simondon, 2016a: 177–99).[5] This is
because the normativity entailed by the cybernetic concept of society is
unsurprisingly close to Hobbes's imagination of the body politic as an
automaton endowed with 'artificiall life' (Hobbes, 2012: 16), whose
necessity we can scientifically demonstrate through civil science 'because
we make [it] ourselves' (Hobbes, 1839–45: 184). For Simondon, Wiener's
theory is still *deterministic* and *ahistorical* and therefore aims at pure
automatization. Allegedly neutral, it is in fact committed to ethical and
political normalization because, ultimately, it leaves no space for the
emergence (invention) of new norms:

> Norbert Wiener seems to put forward an unnecessary assumption
> [*postulat de valeurs*], namely, that proper homeostatic regulation is
> an ultimate end of societies and the ideal that should drive every act
> of government. In fact, just as the living rely on homeostases for
> developing and becoming instead of remaining perpetually in the
> same state, in the act of government there is also a force of absolute
> origination [*force d'avenement absolu*], which, although relying on
> homeostases, uses and exceeds them. (Simondon, 2017: 151)[6]

Simondon's concept of 'act of government' is evidently quite far from the
understanding of politics as a problem to be solved on the basis of
an established concept of human nature, shared by Hobbes and

Wiener. By 'act of government' Simondon does not mean an act aimed at the production and preservation of the artificial body politic in accordance with norms deduced from a given political anthropology, but rather a gesture of 'invention' based on the understanding of politics as a problematic field in which a solution cannot be planned from the outset. Political normativity is thus conceived as the outcome of a process of experimentation within a field of political struggles in which the very notion of human nature is at stake (Bardin and Rodriguez, 2018: 59–61). From Simondon's perspective, the problem with Wiener's theory, as with much of modern political theory, is that it is abstract and apparently neutral, and in fact intrinsically normative and inherently violent. Because it cannot deal with the singularity of ontogenetic processes (i.e. processes of individuation), its claim for universality is soon converted into a project of techno-political construction of universality at the expense of the singularity of all actual processes of psychical and collective individuation. As Simondon explained, there can be no space for axiontology before Aristotle's rejection of a 'science of the individual being' is overcome (Simondon, 2016a: 198). This notion of a 'science of the individual being' is quite tricky to say the least, and I believe it can only be squared if we take Simondon's theory as properly 'axiontological', that is capable of 'introducing to the theory of knowledge as well as to the theory of values' (Simondon, 2005: 565). This interpretation is certainly problematic, yet I find it quite challenging because it obliges us to question Simondon's philosophical enterprise in a very political sense.

We might indeed ask ourselves what kind of political act Simondon's oeuvre implies: How does it work socially, what kind of political effects is it expected to produce? Although we cannot tell this story in full now, we can go back to our terminological landmarks once again, and take the chance to define Simondon's philosophy as (1) *ontoepistemological* [(a) ontologically historical and (b) epistemologically reflexive] and (2) *axiontological*. This will show something more about a possible connection between Simondon and new materialism.

1.a) Simondon's philosophy is *ontologically historical* because Simondon's concepts of 'historicity' and 'singularity' extend beyond strictly 'human' processes to organic as well as to physical processes. All processes of individuation, at all levels, have a 'margin of indeterminacy' because they are triggered by 'historical and local' 'singularities' (Simondon, 2005: 81). At the physical level there are 'historical singularities brought about [*apportées*] by matter' (Simondon, 2005: 57). In crystallization, for example, 'there is [...] an historical issue in the occurrence of a structure in a substance: the structural germ has to appear' (Simondon, 2005: 79), and 'the individuation of an allotropic form starts from a singularity of historical nature' (Simondon, 2005: 90). At the biological level, 'the individualisation of the living being is its real historicity' (Simondon, 2005: 268). At the psychical level, 'we

believe any thought, precisely as far as it is real, is a relation, i.e. it entails an historical aspect in its genesis' (Simondon, 2005: 84), and this of course includes all forms of knowledge, science and philosophical thought. Finally, at the social level 'there is historicity of the emergence of values like there is historicity of the constitution of norms' (Simondon, 2005: 333). Consequently, at all levels, individuation cannot be deterministically planned, although its conditions of possibility can be settled for allowing it to emerge after a historical 'trigger' [*amorce*] provided by the encounter of an individual structure and a system.[7]

1.b) Simondon's philosophy is *epistemologically reflexive* because the circular connection between nature and discourse (Simondon, 2016a: 193) cannot rely on an overarching totality or achieve any final synthesis. Simondon's well-known claim that the knowledge of individuation 'can only be grasped through the individuation [i.e. the ontogenesis] of the subject's knowledge' (Simondon, 2005: 36) might of course be taken, in its form, as a quite Hegelian claim. However, what in my view makes it a genuinely materialist statement is the fact that, even in the most abstract theorization, even when a general theory of information is concerned, Simondon admits that philosophy can never provide the ultimate formula of the ontogenetic processes it relies on, because 'information is the formula of individuation', and therefore 'it cannot preexist' the very individuation out of which it is generated (Simondon, 2005: 31). In Simondon's theory of individuation 'knowledge is contemporary to the individuation of the known and the knower', which makes of each *act* of knowledge an ontoepistemological process of individuation emerging from physical, biological, technical and psychosocial processes and returning to them ('reflexively') in the form of an act of knowledge, and is in this sense ontologically singular and historical. This materialist conception of reflexivity challenges the abstract universality implicit in all sorts of ontological and epistemological dualisms: 'I do not think I can maintain the opposing dualism between subject and object, but, on the contrary, must consider it as expressing the result of a [...] process of individuation. It is the word *ontogenesis* that summarises the question' (Simondon, 2019: 585). On this basis, Simondon even doubts that ontogenesis can ever be 'axiomatized'. Given that a 'logic' of ontogenesis is always embedded in the ever 'becoming' subject-object relation it emerges from, no universal logic can be formulated. However, this very 'ontoepistemological' becoming is what prompts the recurrent 'reflexive' emergence of 'philosophical thought':

> It might be that ontogenesis cannot be axiomatised. This would explain the existence of philosophical thought as perpetually marginal in relation to all the other studies. Philosophy would be the kind of thought set in motion by the implicit or explicit research of ontogenesis in all orders of reality. (Simondon, 2005: 229)

2) Simondon's philosophy is *axiontological* because it is inherently normative, i.e. a normativity is inscribed in each 'historical' process of individuation including each ontoepistemological 'reflexive' formulation of it. But how do we formulate this normativity in terms that are not abstract and a-historical? I really have an open question here. As said, I am confident that Simondon's concept of individuation as ontogenesis may provide a rather satisfactory answer to our first question: How do we theorize the natural and the social, and their knowledge together? Yet what if there was no possible answer to our second question: How do we relate science and politics? This question could be essentially – I mean *by definition* – an open question, *if* we provide a 'historical' materialist answer to the first one. We might think that any answer will do, insofar as it would be itself a further process of individuation. However, 'open' does not mean indeterminate, merely defensive and entailing no action, which would bring us to some postmodern version of the Cartesian rejection of a science of morality, *de facto* freeing political voluntarism and authorizing all sorts of established economic and political power in the name of an absolute will to crush the resistance of matter. On the contrary, 'open' means here experimental, and committed to the necessity of action on the side of matter. Let me phrase this as follows: an axiontology coherent with a materialist ontoepistemology will work at the ethical and political levels *clinically*, it will be experimental and capable of deciding case by case, and it will be – far from being apparently neutral – explicitly *normative*. With a paradigmatic reference to a technical process in quantum mechanics (which has more than an assonance with Karen Barad's ontoepistemological project), Simondon hints at the political nature of philosophical thought as the propaedeutical and 'kinematic' process of posing a problem. Philosophy is taken here as a clinical method of definition of a problematic field in which problems can only be *politically* solved, without relying on ready-made theoretical solutions:

> To better pose such problems, [man] must be able to conduct himself like a *regime selecting device*, which analyses data according to the mode best suited to the information received [. . .] Just as a single laser beam [*faisceau*] can simultaneously trace two different curves, by the method of quantum uncoupling in a double-slit experiment [*découpage en pointe*] and through a constant movement that goes from one curve to the other in a very short time [. . .] according to a regime whose ability to grasp each problem is perhaps the highest task philosophy can assume. (Simondon, 2015: 23)

Such a *method*, or rather *operation*, or, even better, such a 'gesture', will require individual formulations and individual answers, or – to put it in 'post-Simondonian' terms – it will require axiontological *decisions*, and a

crucial decision in political theory has to deal, implicitly or explicitly, with a philosophical anthropology.[8]

My guess is that only from this perspective can we assess the political stakes of Simondon's powerful as well as fashionable concept of the 'transindividual' today, and, if we still want to call ourselves humanists as Simondon did, we should probably run the risk of clarifying what kind of humanity we are politically fighting for, both epistemologically and politically. When Simondon writes about the human he always refers to a work in progress, and sometimes goes so far as to blur the boundaries of the human as such. For Simondon, the 'transindividual' defines a 'field' made of relations *and* processes in which psychical *and* collective individuation can 'normally or exceptionally' take place, and this field is not species-specific: 'it is not a matter of a nature, an essence, serving to found an anthropology: it is just a threshold which is crossed. Animals are better endowed for living than for thinking, human beings better for thinking than for living. Both of them live and think, normally or exceptionally' (Simondon, 2005 [1958]: 165). Whether he speaks of processes of psychical and collective individuation in which physical, biological and technical processes are involved as well, or some sort of 'progress' of humanity as a whole, he consistently refutes the idea of a human 'ontology' in terms of a human identity to be known and reproduced, or even preserved. The ethical and political stakes of this ontoepistemological decision can be appreciated in a passage in which Simondon appears to explicitly contrast his understanding of the individual *as individuation* to Wiener's understanding of the individual as isolated and self-reproducing. This is Wiener in *The Human Use of Human Beings: Cybernetics and Society*:

> There are local and temporary islands of decreasing entropy in a world in which the entropy as a whole tends to increase, and the existence of these islands enables some of us to assert the existence of progress. (Wiener, 1968: 11)

Thus, instead, Simondon in the concluding pages of *Individuation*:

> To postulate that [...] there are no lost islands in becoming, no domains eternally closed in themselves, and there is no absolute autarchy of the instant, is to claim that each gesture has a meaning as information and it is symbolic in relation to life and to the totality of lives. (Simondon, 2005: 333)

What Simondon elsewhere evokes as a 'perpetual *nekuia*' (Simondon, 2005: 250) of the dead clearly shows here to be far from a celebration of islands of 'stability'. Simondon's philosophy of individuation is instead committed to 'metastability'. In the first occurrence of the term

in his writings, Simondon attributes the concept of 'metastability' to Wiener's definition of the 'evolutionary phase' entered by industrial society in the 20th century (Simondon, 2014a: 236). However, he explicitly draws the term from thermodynamics, and employs it throughout his philosophy of individuation to define systems not on the basis of their stable 'form', but in relation to the potential energy involved in their precarious but still lasting equilibrium. Again, like 'historicity', 'metastability' relates to the openness of systems at all levels and carries ontological, epistemological *and* political meaning: it is 'axiontological'. More specifically, in Simondon's philosophy 'metastability' refers to a mode of 'resolution of tensions' implying 'values' alternative to the values dictated by 'stability' and the preservation of identity at all costs. In view of the entropic tendency of all systems, stability is in fact a self-defeating attempt to preserve in its current form what can only continue through change and invention, and this leads to a slow and certain end: 'death is neither the resolution of all tensions nor the solution to any problem' (Simondon, 2005: 206). In Simondon's philosophy of individuation this is not only the acknowledgement of a general feature of systems in the light of thermodynamics, it is also the endorsement of a value learned from the study of material, biological, technical and psychosocial processes of individuation: 'The decisive individuation is the one that maintains tensions in a metastable equilibrium rather than exhausting them in a stable equilibrium' (Simondon, 2005: 206).

There is a price to pay, of course, for this axiontology. This means abandoning the modern project based on the undisputed value of 'stability', that is the production, preservation and reproduction at all costs of biological, psychical and social identities. Endorsing Simondon's bet for 'metastability' is certainly a risky and non-humanistic *decision*, the effects of which we cannot, by definition, foresee. What is sure is that this decision marks a path that leads to a different passion for reason, in which being 'rational' means being open to the complexity of natural systems and the singularity of all processes of individuation, rather than closed to their reassuring representation provided by the techno-political construction of universality. This is Simondon's axiontological invitation to abandon the 'rationalistic' control of nature (human nature included) and embrace the 'rational' celebration of the agency of matter, whose pendant is a shift of political thinking from politics conceived as a problem to be solved to politics as an arena of strategic experimentation.

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Notes

1. The concept of 'allagmatics' is central to Simondon's two programmatic texts *Allagmatique* and *Analyse des critères de l'individualité*, first published in the 1995 (posthumous) edition of *L'individu et sa genèse physico-biologique*, moderately diffused in *L'individuation* (Simondon, 2005) and then disappears from his writings. We cannot say for sure whether Simondon's idea of allagmatics corresponds to the theory of individuation he elaborates during the 1950s, but this is my hypothesis (cf. Bardin, 2015: 13–18). What we know for sure is that the 'allagmatics' he has in mind should be 'scientific and philosophical' study of the structures and processes generating the 'individuated being' (Simondon, 2016a: 198–99, 2005: 565).

2. Again, Simondon got it right when he saw Descartes's ontology as entailing a technocratic normativity: 'The cartesian continuum [...] is not only a metaphysical statement: it is also the axiom – at the same time ontological and axiological – founding a way of thinking whose basic schemas coincide with those of a purely technical operation of construction' (Simondon, 2014b: 104).

3. The expression first appeared in the article 'Une nouvelle science: la cybernétique – Vers la machine à gouverner', published in the newspaper *Le Monde* on 28 December 1948. The author was – quite critically – introducing to the French audience the publication of Wiener's *Cybernetics or Control and Communication in the Animal and the Machine* in Paris, with the publisher Hermann.

4. Simondon uses the terms 'individuation' and 'ontogenesis' interchangeably (cf. Merleau-Ponty, 1959: 41).

5. However close Simondon's philosophy may be to Deleuze's reading of Spinoza (Scott, 2017), there is no way to *directly* interpret Simondon as a Spinozist. Étienne Balibar has recently pointed out that Simondon 'generally refuses to situate himself on the [Spinozian] terrain of philosophical anthropology' (Balibar, 2018: 6). Indeed, it was early noted by Filippo Del Lucchese (2009) that Simondon's sparse remarks show a quite unelaborated interpretation of Spinoza's philosophy. In *Individuation* Spinoza is pictured as a 'holistic' thinker to be criticized for his reduction of individuality to substance as a whole. As most of these readers have rightly intuited, Spinoza can, however, be used as a key to the understanding of Simondon's search for a relational and processual ontology.

6. One might say that, while in *Individuation à la lumière des notions de forme et d'information* Simondon explicitly aims at 'reforming' the cybernetic concept of information, in *Du mode d'existence des objets techniques* – though in a more 'implicit' fashion – he is challenging the (pseudo)cybernetic idea of *machines à gouverner*.

7. In this sense the 'idea of the individual as a ''theatre'' rather than an ''agent'' of individuation' (Toscano, 2006: 150) fits more Deleuze than Simondon. For Simondon the individual is both 'agent' (as a structure) and 'theatre' (as a system) of individuation. In this sense he claims, for instance, that 'the living is both the agent and the theatre of individuation' (Simondon, 2005: 29). For the inception of Deleuze's employment of Simondon's concepts, see Deleuze's (1966) review of Simondon's *The Individual and Its Physico-Biological Genesis*. Cf. also Andrew Iliadis (2013: 95ff).

8. See also Karen Barad's notion of apparatuses as 'boundary-making practices' (Barad, 2007: 148, 169 ff.).

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