

Theaters of Individuation

Gilbert Simondon and the Interrelations of Ethics, Techniques,
and Ontology

Johannes F.M. Schick

In a central passage in *L'individu et sa genèse de physico-biologique* Gilbert Simondon uses “theater” as a metaphor to describe the process of individuation: Individuals are “theaters of individuation.”¹ This metaphor is telling with regard to his understanding of agency in general and his conception of the human in particular. A theater entails more than the performance on stage and the crowd that fills the auditorium. It is a conglomerate of complex operations that entail the play, the architectural construction of the theater, stage machinery and its interaction with actors, props, etc. Many of these processes and operations remain hidden from the eye of the beholder, but are essential to the success of a show: A lighting

¹ Gilbert Simondon, *L'individu et sa genèse de physico-biologique* (Presses Universitaires de France, Paris, 1964), 69.



technician has to set the right atmosphere on stage, props have to be prepared and costumes to be knitted. But even here, we are far from giving a fully-fledged account of the practices that are at work in a theater. We are merely describing a couple of human practices. One could even go further and turn from the social, psychological and aesthetic practices to the physiological, physical and chemical operations that lie underneath these practices.

One could claim that this is only due to the perspective one chooses and that, when extended endlessly, the metaphor of theater loses its meaning. But the crucial point of the metaphor of the theater is for one, that all these practices – despite their differences – take place simultaneously under one roof and are therefore somehow related to one another. Furthermore, all of these practices are ‘staged’ when we turn our attention towards them and begin our description. The interesting questions are therefore: how are they related to each other, how do they differ from each other and how do we get from one perspective to the other?

For Simondon “theater” is more than just metaphor. The “theater of individuation” describes the ontological situation of an individual in the making. Each individual – be it a human subject or a technical object – is embedded in a milieu and consists of a multiplicity of elements that interplay with each other. This interplay between the different actors and props on stage and the surroundings is the essence of the practices that any processual ontology seeks to address.

The metaphor of theater expresses therefore simultaneously the need for a genuinely philosophical method that provides the means to grasp adequately the operations and the practices unfolding “on stage”. Practices mediate sense. They transport, share and distribute the *logos*,² interpreted as a metaphysical force inherent in all beings, among the different actors and objects constituting the theatrical scene. The metaphor of the theatre of individuation already hints at Simondon’s ontological and methodological understanding of ‘analogy’: ‘analogy’ signifies a practice of mediation. Thus, Simondon develops his method in understanding ‘analogy’ both as a methodological tool and an ontological phenomenon by the help of which operations on the different ontological levels can be interrelated.

My article will therefore move from the ‘internal theater’ (the individual as a subject) to the ‘external theatre’ (the technical object). The ultimate aim of my argument is to show how ‘in-

² The *logos* is here not merely referring to rationality, but to its understanding as a cosmic principle. Although Simondon rather turns to the Anaximander and the *apeiron*, when referring to metaphysical principles, it is adequate to speak of the *logos* at work on every ontological level that can be described. It serves merely as a principle that allows description of anything at all.

ternal' and 'external' theaters are intimately linked to and rely upon each other. Both are based on a *physis* – animated matter – allowing for transformations to take place.

A constant architectural process is at work on multiple stages and theaters of individuation. The individual constructs and builds structures in its milieu. Simultaneously, it is structured by the milieu. While transforming its milieu the living being is transforming itself. This constant process of individuation is characterized by an ongoing recursive causality with the natural milieu and continued via the technical object. Thus, the technical object has to be understood as an *analogical being* mediating between human beings and nature. Technical objects are therefore themselves virtual theaters of individuation that are actualized by human practices.

In summary, my article is an attempt to explain the four following theses regarding Simondon's conceptualization of the theater of individuation:

- (1) The individual is an absolute starting point. A principle prior to the individual cannot be epistemologically achieved. Yet the individual is not only a starting point in a heuristic sense but also in a metaphysical and ontological sense. It is always involved in creating, structuring and inventing its relation with its milieu. Human individuals do so via *analogy*. They search relations that are similar to their own mental functioning and realize them within nature. Knowledge has to be understood as a specific kind of individuation, i.e. as an action of a living being which is structuring its milieu. Simondon develops therefore an *allagmatic method of analogy* in order to address the plethora of practices on the different ontological levels.
- (2) The individual is *building* structures within itself and outside of itself: The individual individuates constantly and thus remains alive. It transforms itself and its milieu simultaneously. When the ability to transform and to build structures is lost, the individual dies.
- (3) Technical objects are themselves individuals and milieus. The application of the method of analogy allows one to describe technical objects in the same terms as living beings. Techniques³ are thus described out of the perspective of the 'living being'. The *allagmatic method of analogy* allows to move from one ontological level to another. It signifies the capacity to create technical individuals and is the condition of possibility for symmetrization of living beings, technical and non-technical objects on an operational level.

³ I use the concept "techniques" instead of "technology" because Simondon imagined technology as a, or *the*, science of the humanities.

- (4) Ultimately, the philosophy of Simondon is resulting in an ethical attitude towards materiality and technical objects based on the ontological principle of *openness*. This ethical principle also applies to the structure of technical objects. Technical objects should be open objects instantiating participation. This last point exemplifies how Simondon conceives even technical objects as theaters of individuation building and prolonging socio-technical networks.

The Allagmatic Method of Analogy

Simondon calls his method *allagmatic*. It is derived from the Greek verb *allagmein* and signifies *change, exchange* and the *operation of change*.⁴ The allagmatic method is thus the “method of operations” and it is “symmetrical to the theories of structures in the particular sciences.”⁵ Whereas the sciences deal with structures, the allagmatic method searches for the realms where operations take place. A fundamental trait of the allagmatic method is therefore that it comprises two modes: On the one hand, it has as its object operations, on the other hand it has to be itself an operation that provides communication between formerly separated levels of being. The danger, if it was only taking operations as objects, would be that the dynamic aspect of the operation itself would be lost and only structures would remain. How can such a specific method be developed?

Operations are usually conceived of in terms of two separate states: a state before and after the event of the operation. To understand an operation as operation requires however to account for the interval between these two separate states. Any methodological approach to a phenomenon creates already an interval between the researcher and its phenomenon. A specific phenomenon can also be approached using different methods. A hermeneutic approach to emotions is significantly different to a neurobiological approach. Therefore, intervals exist even between the particular sciences.

Simondon is interested in these intervals existing between all agents within being. An interval implies a relation and therefore an operation.⁶ Intervals in mathematics and music necessitate the mediation of two separate states. Already for Plato this mediation between two separate states is achieved by analogy. The analogy is conceived of as “the fairest of bonds is

⁴ Jean-Yves Chateau, *Le vocabulaire de Simondon* (Paris: Ellipses, 2008), 11.

⁵ Gilbert Simondon, *L'individuation à la lumière des notions de forme et d'information* (Grenoble: Éditions Jérôme Millon, 2013), 529.

⁶ Idem.

that which perfectly unites into one both itself and the things which it binds together.”⁷

Simondon’s method has certain ontological postulates.⁸ His first methodological step to approach the dynamic aspects of being searches for a domain where *operations* take place and where access to these operations is provided. If this domain exists and if it can be found, it can serve as an absolute starting point for a philosophy of operations. Simondon identifies the individual as such a domain:

Se demander ce qu’est l’être, c’est se demander comment s’articulent le fonctionnement, c’est-à-dire le schématisme hologique d’un être, et la structure, c’est-à-dire la systématique analytique du même être: le schématisme chronologique et la systématique spatiale sont organisée ensemble dans l’être. Leur union fait l’individualité, l’individu étant un domaine de convertibilité réciproque d’opération en structure et structure en opération: l’individu est l’unité de l’être saisi préalablement à toute distinction ou opposition d’opération et de structure. Il est ce en quoi une opération peut se reconvertir en structure et une structure en opération; il est l’être préalablement à toute connaissance ou à toute action: il est le milieu de l’acte allagmatique.⁹

The individual is characterized as “being before any knowledge and action”. It is primary to any specific form of praxis and theory. It is the place where any kind of operation, be it theoretical or practical, occurs. It is the domain where operation and structure are intrinsically linked and can be converted into each other. As a concrete being it undermines the classical distinctions between structure and operation, subject and object or theory and praxis. It is thus the point of departure for any process of individuation that can be grasped.

This opens the way for the second step of Simondon’s method. In order to answer the question *what* being in general might be, one has to focus on the question of *how* a being operates. The self is the very first being one experiences. But rather than proposing a theory of knowledge that restricts itself to introspection, Simondon searches for operations on every level of being. Similar to Aristotle, Simondon begins his search for operations on the most basic level to gradually move from the physical, to the biological, to the psychological and finally to the social individuation. His second methodological step is therefore to identify the processes of one ontological domain and then to proceed making analogies with another

⁷ Plato, *Timaeus*, Loeb Classics (Cambridge, MA: Harvard University Press, 1929), 59.

⁸ Simondon, *L’individu et sa genèse de physico-biologique*, 267.

⁹ Simondon, *L’individuation à la lumière*, 535.

domain.¹⁰

It is, however, important to note that Simondon does not want to reduce one domain to another, but rather identifies processes in order to show the essential contrasts between the different domains of being. Turning to the individual allows this differentiation, since individuality itself is defined on every level as a specific kind of praxis and refers to the relation of structure and operation within each being. The question ‘what is a being?’ has therefore to be converted into the question ‘how does a being act/operate?’. Epistemology and ontology are therefore intrinsically linked:

Mais toute théorie de la connaissance suppose une théorie de l’être; la méthode analogique est valable si elle porte sur un monde où les êtres sont définis par leur opérations et non par leur structures, par ce qu’ils font et non par ce qu’ils sont: si un être est ce qu’il fait, s’il n’est pas indépendamment de ce qu’il *fait*, la méthode analogique peut être appliquée sans réserves. Si au contraire un être se définit par sa structure autant que par ses opérations, la pensée analogique ne peut atteindre tout la réalité de l’être. Si enfin c’est la structure, et non l’opération, qui est primordiale, la méthode analogique est dépourvue de sens profond et ne peut avoir qu’un rôle pédagogique ou heuristique. La question première de la théorie de la connaissance est donc métaphysique: quelle est la relation de l’opération et de la structure dans l’être?¹¹

Simondon is not simply arguing over and against a seemingly trivial epistemology of the “hard sciences”, but is rather pointing out that each and every theory of knowledge presupposes an ontology. The ‘hard facts’ of science signify the result of individuation, i.e. a structure. The aim of the scientist is to produce a concrete and stable structure, which adequately described reality. This means that ontology can be reductive and limited, but also that within this limited framework it produces specific results that are not independent of the presupposed ontology. (1) As already mentioned, for Plato the analogy is a cosmic principle that allows the Demiurge to structure the world of things.¹² But if for Plato the Demiurge is a fea-

¹⁰ I am aware that Simondon also uses the word ‘transduction’ (and even more prominently) to describe this method. But in my opinion, both analogy and transduction can refer to the same process. They signify different perspectives that can be taken. Transduction is the more general concept, referring to processes in general. Analogy is the specific epistemological tool human beings apply to address operations on all ontological levels.

¹¹ Simondon, *L’individuation à la lumière*, 534.

¹² See Wolfgang Kluxen, “Analogie,” in *Historisches Wörterbuch der Philosophie: Völlig neubearbeitete Ausgabe des ‘Wörterbuchs der philosophischen Begriffe’ von Rudolf*, ed. Joachim Ritter, Vol. 1 (Basel,

ture of a transcendent being, for Simondon the 'demiurgic' principle is an ability of individuals. The individual creates order and structures within being and among beings. (2) Beings are essentially constituted by their practices. The essence of a being is what it does. This means that it is determined not from the outside, by an observer, but by its internal functioning. The operations that are at work within a being and the operations of a being in interaction with its milieu are of interest to the philosopher. The traditional table of categories may suffice to determine what a being is, but it cannot account for how a being operates. It classifies stable properties, but it does not classify the transformative and dynamic aspects of a being. A being can be located and certain aspects of it can be described, but the description of the operational mode of the individual falls short. (3) Essentially, this means that praxis, i.e. the operations of an individual, is prior to its structures. (4) The fundamental question is thus, how do operation and structure relate to each other?

Structure and operation are not the elements of a binary logic. Rather than having structure or operation, structure and operation are complementary to each other. They are related to one another within being. The creative act is in itself simultaneously constituted by structure and operation. Depending on which aspect one focuses one's attention, you either contain or abandon the structural or the operational element.¹³

Simondon argues that to describe his objects adequately, the scientist has to take into account himself and his actions. The example Simondon offers is the practice of geometry: Drawing a parallel line, the mathematician is interested solely in the structural element of the act. His attention is focused on the drawn line and the relation of this line to another straight line. But one is not limited to this perspective. It is also possible to focus on the operational aspects of the act: bodily and mental gestures interpenetrate each other and are executed simultaneously while the mathematician is drawing parallel lines:

Ce geste de tracer possède son schématisme propre. Le système dont il fait partie est un système opératoire, non un système structural; ce geste procède en effet d'une volition qui est elle-même un certain geste mental; il suppose la disponibilité d'une certaine énergie qui se trouve libérée et commandée par le geste mental à travers tous les maillons d'une chaîne de causalités conditionnelles et complexes. L'exécution de ce geste met en jeu une régulation interne et externe du mouvement dans un schème opératoire de finali-

1971), 215.

¹³ Simondon, *L'individuation à la lumière*, 529.

té. Ainsi, la géométrie et l'allagmatique prennent des voies divergentes es le début même de leur activité.¹⁴

While in the former case the geometrical structure is prominent and operations are merely the background for the parallel line, the relation of figure and ground is turned upside down in the latter: here, actions and operations are spotlighted. Different objects are formed, if the attention is turned towards the operations that are constitutive for the actions. An analogy mediates between both perspectives: the being of the parallel line is in neither case separated from the action of drawing. Even if the parallel line is considered merely as an abstract, mathematical entity it comprises a mental gesture which is in itself an act.

This does not imply a reductionist position which would identify the mental gesture with a material one, but rather shows how the methodological use of the analogy moves from one level of description to another. Yet, on both levels the *logos* is present and effective.

Each of the possible perspectives are certain forms of individuation and differentiate the path that the *logos* follows. They both are part of (1) an operative system that relies on (2) a certain kind of energy and (3) executes an operational schema which implies an internal and external regulation. The essential property of the act, for Simondon, does not result from the differentiation in perspectives, but rather from the fact that structure and operation are simultaneous within the act, and that the act is enabling structures and operations via a potentiality that lies within it. The mediation through analogy is always relating two separated domains to each other and is thus inventing new perspectives.

The method of analogy is a constructive, scientific practice. Simondon's constructivism is, however, far from being reductive. He neither claims that the so-called 'hard sciences' represent simple facts of reality nor that they create their theories detached from any ontological reality. In fact, the sciences create their objects *with* reality:

L'activité scientifique a véritablement constitué du concret à partir de l'abstrait, car le concret qui vérifie les hypothèses est un concret d'une espèce particulière : ce n'est pas celui d'un *fait*, mais celui d'un *effet* qui n'existerait pas en dehors de l'univers de pensée et d'action créé par ce développement même de la science. C'est en ce sens que la démarche scientifique est auto-justificative, non-logiquement, mais réellement, en construisant son objet avec le réel.¹⁵

¹⁴ Ibid., 530.

¹⁵ Ibid., 524 ff.

Scientific practices produce effects in reality. The researcher creates a universe of thought and action and invents new pathways in being with his method. The practices of science are a mode of action of living beings. Structurally they do not differ from actions, but they can be distinguished according to their specific operational mode. The sciences must work with analogies. Science distills structures in this way and creates its object *with* and *in* the world.¹⁶

This implies that the ontological structure of the world allows the scientist to construct and invent within the world. Simondon therefore defends a minimal ontology of creativity:

La méthode *analogique* ou *paradigmatique* [...] ne se fonde pas sur un postulat ontologique qui serait par exemple la rationalité du réel, ou une loi universelle d'exemplarisme, de type platonicien, ni non plus un monisme panthéistique implicite; elle se fonde au contraire sur la recherche d'une structure et d'une opération caractéristique de la réalité qu'on doit nommer individu; si cette réalité existe, elle peut être susceptible de formes et de niveaux différents, mais on doit autoriser le transfert intellectuel d'un domaine à un autre, au moyen des conversions nécessaires; les notions qu'il faudra rajouter pour passer d'un domaine au domaine suivant seront alors caractéristiques de l'ordre de réalité qui fait le contenu de ces domaines. L'ontologie de l'individu sera dévoilée par le devenir de son épistémologie, et les principes d'une axiologie possible naîtront de cet examen, dans la mesure où il fournira un fondement à une postulation de valeur capable d'intégrer en un acte unique d'autoconstitution une conscience de la réalité ontologique et de la signification épistémologique.¹⁷

Although this quote is another example of the difficult philosophical style of Simondon, his method is quite traditional in its operative steps: (1) Each domain of being and the operations that take place there have to be described comprehensively. This comprehensive description provides the means to discern the essential qualities of the operations of an individual. (2) One has to distinguish the concepts necessary to describe each domain and the transition from one ontological domain to another. Concepts always refer to the content of each and every domain. As soon as a new concept is introduced a qualitative leap is made. Concepts thus represent the differences between the various domains of being. (3) Ultimately, Simondon is searching for the mode of existence of the individual: its epistemology and its ontology. The epistemology of the individual has to be taken in a broad sense. It signifies firstly the way in which an individual relates to itself and to its milieu. The epistemology of the

¹⁶ See Paul-Antoine Miquel, *Le vital. Aspects physiques, aspects métaphysiques* (Paris: Kimé, 2011).

¹⁷ Simondon, *L'individuation à la lumière*, 525.

individual is the latter's practice creating values that anchor the individual in its relation with the milieu (*le devenir de son épistémologie*). Values are not necessarily moral ones; rather they are normative structuring patterns of reality in one way or another. Asking for the epistemology of an individual is asking how an individual structures its actions and experiences in exchange with its milieu. Researching this recursive relation of an individual with its milieu requires one to make a new effort regarding each individual which is being researched. Each individual has to be understood through an epistemological act that creates an analogy between the individuation of the researched individual and the self of the researcher. Knowledge - in a scientific sense - can only accompany the individuation of other beings. In order to grasp the act of individuation one has to individuate knowledge itself:

L'individuation du réel extérieur au sujet est saisie par le sujet grâce à l'individuation analogique de la connaissance; mais c'est par l'individuation de la connaissance et non par la connaissance seule que l'individuation des êtres non sujets est saisie. Les êtres peuvent être connus par la connaissance du sujet, mais l'individuation des êtres ne peut être saisie que par l'individuation de la connaissance du sujet.¹⁸

Simondon stresses the ontological quality of knowledge as an act. To answer the question of what a being is, means therefore already to act and to define a being within the limits of one's epistemological categories. An answer to the question about how a being acts, although restricted to the same epistemological categories seeks to comprehend analogically the praxis of the being in question.

This refers to the twofold sense of an individual that I mentioned at the outset of this paper: purely epistemologically speaking, it is impossible to access a state that lies before the subject. So far, this is merely a Kantian position. Knowledge is relative to its conditions of possibility. But knowledge as act is an *arche*, a *beginning* that has ontological significance. It creates something in being. It is architectonic. In order to grasp this fundamental act, knowledge has to become the subject and object of itself simultaneously. Once this perspective is taken, the very operation of knowledge is revealed and acted out in its relation to its milieu. Analogy serves then as a tool that distinguishes and relates epistemological individuation to other forms of individuation.¹⁹

¹⁸ Gilbert Simondon, *L'individu et sa genèse de physico-biologique*, 24.

¹⁹ Subject and object are thus in a relationship that relies on their internal structure: "S'il était vrai que l'organisation ne se perd ni se crée, on aboutirait à cette conséquence que l'organisation ne peut que se transformer. Un type de relation directe entre l'objet et le sujet se manifeste dans cette affirmation,

The core argument of Simondon is that the operational mode of beings – the *how* of their actions – is the very essence of their being. The constructive aspect of science is therefore according to Simondon ontologically inseparable to the being performing this particular kind of action: The scientist as a living being.

The Living Being as Theater of Individuation

The operational understanding of individuation leads to a peculiar definition of the individual. The philosophical tradition from Plato and Aristotle to the psychology of *Gestalt* explained the individual in terms of stability. Individuals were considered as *stable* forms that are the final results of the interplay of form and matter. This conception of the individual goes back to the hylomorphic schema which leads to a “false representation” of the individual:

Le schéma hylémorphique n'est pas seulement inadéquat pour la connaissance du principe d'individuation; il conduit de plus à une représentation de la réalité individuelle qui n'est pas juste : il fait de l'individu le terme possible d'une relation, alors que l'individu est, au contraire, théâtre et agent d'une relation; il ne peut être terme qu'accessoirement parce qu'il est théâtre ou agent, essentiellement, d'une communication interactive.²⁰

Rather than being a stable result, where transformations do not any longer take place, Simondon conceives of the individual as *agent* and *theater* of individuation. This twofold role defines the *essence of the individual*. The individual is therefore neither form nor matter. Simondon turns the classical distinctions upside down: The individual is only *per accidens* a term, i.e. an end the process of individuation arrives at. The stable aspects of a being do not provide specific differences for individuals. In fact, it is the ability to communicate actively which constitutes an individual.

Furthermore, the stable form is no longer an information that contains potentiality and can initiate further individuations. It lacks the potentiality of the individual to transform itself. Individuals have therefore to be thought of in terms of *metastability*, rather than in terms of stability.

The metastable state is the state of a system which still allows for transformation.²¹ The

car la relation entre la pensée et le réel devient relation entre deux réels organisés qui peuvent être analogiquement liés par leur structure interne” (Ibid., 141).

²⁰ Ibid., 69.

²¹ Ibid., 89ff.; Norbert Wiener, *Cybernetics or Control and Communication in the Animal and the Ma-*

prototypical example of Simondon is the process of crystallization. A seed crystal provokes the crystallization only if it meets a supersaturated solution. The metastable solution is a necessary condition of crystallization. The solution has to be in a state that contains potential energy. The crystal seed individuates this solution and transforms it into crystals. The process is stopped as soon as the solution is no longer in a metastable state. The process can however be reinitiated if the solution is brought once again on this level of energy. Crystallizations occur only in systems that show tension of potential energy.

The individual is thus no longer defined as the stable form, which would be the final result of an individuation, but rather the process of individuation itself. This perspective allows Simondon to conceive of individuals on different ontological and epistemological levels. During the process of crystallization the crystal is already an individual, but not in terms of assembled crystallized molecules. In order to be conceived as a physical individual, physical individuals are conceived in their becoming a stable entity. A physical individual is on its way towards individuation. It exists in its relation with the milieu, which is constituted at the borderline (*limite*) between physical individual and the milieu. Physical individuals exist thus at *their limit*:

La substance serait un individu physique totalement résonant par rapport à lui-même, et par conséquent totalement identique à lui-même, parfaitement cohérent avec lui-même et un. L'être physique doit être considéré, au contraire comme plus qu'unité et plus qu'identité, riche en potentiels; l'individu est en voie d'individuation à partir d'une réalité préindividuelle qui le sous-tend; l'individu parfait, totalement individué, substantiel, appauvri et vidé de ses potentiels est une abstraction; l'individu est en voie de devenir ontogénétique, il a par rapport à lui-même une relative cohérence, une relative unité et une relative identité.²²

Instead of talking about substances, Simondon introduces the notion of potentiality to address the phenomenon of individuation. Even on a physical level there is potentiality. Individuality is neither an ideal nor a material quality; it rather refers merely to the immanent capacity of transformation. This capacity is neither transcendental nor materialistic. It rather refers to the law of entropy, the concept of metastability and the concept of the field: physical individuals exist as long as they contain potential energy.

chine, 2nd edn. (Cambridge, MA: MIT Press, 1961), 58ff.

²² Simondon, *L'individu et sa genèse de physico-biologique*, 126ff.

The individual as a system falls apart as soon as this energy is exhausted. In the terms of thermodynamics, the system arrives at a stable state, but transformations are no longer possible. The molecules are separated from each other and the field no longer contains any tension.²³

Unity and identity of a physical individual are therefore relative to the milieu with which they form a system. One can even speak of a *radical liminality* of the physical individual, since the process of individuation takes place on the borderline (*limite*) between the crystal and the milieu. The crystalline structure spreads out and transforms the milieu. Once the process occurred the individual crystal and the milieu are separated. The physical individual receives information only once and individuates itself.²⁴

The living being is on the other hand a true theater of individuation. It is a system that individuates itself simultaneously with its milieu.²⁵ The essential difference between the physical and the living individual is therefore drawn according to their activity: Whereas the physical individual receives information only once and individuates itself accordingly, the living being is as theater of individuation involved in a permanent activity of individuation:

Le vivant conserve en lui une activité d'individuation permanente; il n'est pas seulement résultat d'individuation comme le cristal ou la molécule, mais théâtre d'individuation. Aussi toute l'activité du vivant n'est-elle pas, comme celle de l'individu physique concentrée à sa limite; il existe en lui un régime plus complet de résonance interne exigeant communication permanente, et maintenant une métastabilité qui est condition de vie.²⁶

Instead of being radically liminal, the living being entertains a recursive relation with its milieu. The individuation changes not only the milieu but also the living being itself. It resonates within the living being. This internal resonance signifies the specific mode of how information is received and processed.²⁷ The difference between the physical and the living being lies in the capacity to receive or to absorb information.²⁸ Whereas a physical being receives information once, a living being absorbs information and transforms itself accordingly.

Henri Bergson, in his description of the activity of the living being as being a dark zone of

²³ Wiener, *Cybernetics*, 58.

²⁴ Simondon, *L'individu et sa genèse de physico-biologique*, 132.

²⁵ Gilbert Simondon, *L'individuation psychique et collective à la lumière des notions de Forme, Information et Métastabilité* (Paris: Aubier, 2007), 35.

²⁶ Simondon, *L'individu et sa genèse de physico-biologique*, 9.

²⁷ *Ibid.*, 131.

²⁸ *Idem.*

indeterminacy, brings forth a similar argument.²⁹ The living being absorbs stimuli rather than returning them immediately as the billiard ball in a strictly Newtonian universe does. The experience of pain is for Bergson the expression of not being able to absorb stimuli anymore. The living being is in danger of being disintegrated and has therefore to react against the stimuli in order to claim its position in the world.³⁰

The living being instantiates a recursive relationship with the world, and that energetic exchange with its milieu changes the inner structure of the living individual. The living individual has a unity, but this unity is relative both to its interior and to its exterior milieus. The living being has according to its complexity a plurality of milieus in its interior and its exterior. It is a *theater of individuation* which is constantly (re)defining its relationship with its milieu:

Si l'individu est saisi non comme terme d'une relation, mais comme résultat d'une opération et comme théâtre d'une activité relationnelle qui se perpétue en lui, il se définit par rapport à l'ensemble qu'il constitue avec son complémentaire, qui est du même ordre de grandeur que lui et au même niveau que lui après individuation. La nature dans son ensemble n'est pas faite d'individus et n'est pas non plus elle-même un individu : elle est faite de domaines d'être qui peuvent comporter ou ne pas comporter individuation.³¹

The recursive causality of the individual in and with its milieu is of high importance especially for human beings. Human beings do not only structure a natural habitat and are structured by their surroundings, but they also create entirely new technical environments. Individuating themselves and creating something of the same magnitude/dimension means to find and to create relations in being. This is precisely what is meant when the sciences create 'reality effects'. Its activity is not arbitrary. It deals with an inert and abstract matter that replies to the activity of the scientist and plays an active role in the realization of a phenomenon. Materiality is always "vibrant".³² This potentiality of matter also applies, when artificial things such as technical objects are created. "Living matter" carries information and provides the background for the invention of technical objects.³³

²⁹ Henri Bergson, *Matière et mémoire: Essai sur la relation du corps à l'esprit*, pref. Camille Riquier, ed. Frédéric Worms (Paris: Presses Universitaires de France, 2008 [1896]), 35ff.

³⁰ *Ibid.*, 56.

³¹ Simondon, *L'individu et sa genèse de physico-biologique*, 73.

³² See Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010).

³³ Gilbert Simondon, *Du mode d'existence des objets techniques* (Paris: Aubier, 1958), 59ff.

The process of individuation is prolonged by means of networks of technical objects. The conception of nature being constituted of multiple areas of being in which individuation can take place, leads thus to a dynamic and recursive understanding of technology. Technical objects are specific ontological entities that relate different realms of being with each other. In this sense they are the result of an analogy and are *analogical* beings:³⁴ they allow for translation and transition from one area of being to another. If living beings are theaters of individuation, then technical objects are the props that fill the stage and allow new individuations to take place. The props however also change the status of the actors on stage. They define the paths and possibilities of the actors. It is therefore important to understand how technical objects act in their relation with human beings in order to understand how *analogies are performed on stage*.

Technical Objects as Analogical Beings

Nous sommes des êtres naturels qui avons dette de *techné* pour payer la *physis* qui est en nous; le germe de *physis* qui est en nous doit se dilater en *techné* qui est autour de nous. On ne peut accomplir son essence sans faire rayonner les organisateurs que l'on a en soi.³⁵

The ontological status of man leads to a peculiar situation. Human beings are always involved in further individuations in order to realize the 'seed' of *physis* that lies within them. The creative output of man relies on *techné*³⁶ as anchor-point where man's action can enter into social and technical networks of practices. Human beings are therefore embedded into technical networks in which they can realize themselves. Nevertheless these technical networks are not necessarily of the post-industrial age, but are rather an essential component of any human society. The debt to technique (*techné*) is made to pay tribute to nature (*physis*).

Technical objects are the result of human invention. Simondon conceives them as crystallizations of human gestures and thus continues the tradition of Marcel Mauss who claims, in his

³⁴ Technical objects as *analogical beings* must not be understood in difference to *digital objects*. Analogical refers in this context to Simondon's philosophical method. A computer can be an analogical being as well as a record player.

³⁵ Gilbert Simondon, *Sur la technique* (Paris: Presses Universitaires de France, 2014), 24.

³⁶ Simondon turns against the traditional distinction between *techné* and *episteme*. According to him, the first technicians had a scientific/epistemic interest; today, engineers have seemingly lost this interest and are merely specialized workers. The true technical activity, however, is located in the sciences (Simondon, *L'individuation à la lumière*, 340).

famous essay “Techniques du corps,” that the human body is the first human technical instrument.³⁷ Yet Simondon goes further than Mauss. On the one hand, his philosophy of technology is embedded in and relies upon his complex ontology of individuation. On the other, it is focused on *industrial objects* where functionality is no longer dependent upon the human body as its source of energy.³⁸ This independence calls the ontological status of technical objects into question: in what sense are technical objects crystallizations of human gestures and what follows from such a definition? What is the specific character that allows technical objects to evolve and to have their own inner logic?

Technical objects are the result of an invention and thus solutions to problems of *incompatibility*.³⁹ This incompatibility already begins on the level of the living individual.⁴⁰ The milieu in which the individual lives is not static and homogenous. It is itself changing constantly and thus entails unpredictability. The actions of living beings in their milieu try to stabilize the relations with it as much as possible. But, as noted earlier, the milieu must not reach an absolute stable state, since this would render the survival of the living being in the milieu impossible, while in that case all potentiality would have been lost in the milieu. A balance between stability and reliability of practices and the potentiality to transform and change these practices has to be achieved in order to maintain the living relationship with the milieu. Technical objects mediate the relationship of the living being and the milieu. This aim of this mediation is to create networks, and a harmonious relationship between nature and human needs:

Il n’y aurait pas de réseau s’il n’y avait pas une certaine structure naturelle, d’une part, un certain besoin humain, d’autre part, ensuite l’invention d’une relation harmonieuse entre cette nature, et ce besoin humain. Le réseau, c’est la rencontre de la possibilité technique

³⁷ Simondon, *L’individuation à la lumière*, 340; Johannes Schick, “Die Philosophie verlassen, um das ‘Ganze’ zu erreichen,” in *Begeisterung und Blasphemie: Zeitschrift für Kulturwissenschaften*, ed. Erhard Schüttpelz and Martin Zillinger (Bielefeld, 2015), transcript, 257-59; Marcel Mauss, “Les techniques du corps,” in Marcel Mauss, *Techniques, technologie et civilisation* (Paris: Presses Universitaires de France, 2012), 365-94.

³⁸ Simondon, *Sur la technique*, 33, 302.

³⁹ Gilbert Simondon, *Imagination et Invention* (Chatou: Les Éditions de la Transparence, 2008); Johannes Schick, “Die Erfindung der Offenheit. Kreatives Handeln im Ausgang von Gilbert Simondon,” in *Die innere Logik der Kreativität*, ed. Johannes Schick and Robert Hugo Ziegler (Würzburg: Königshausen und Neumann, 2013), 153-79.

⁴⁰ “Le problème [...] du sujet et celui de l’hétérogénéité [...] entre l’individu et le préindividuel; Ce problème est celui du sujet en tant que sujet: le sujet est individu et autre qu’individu; il est incompatible avec lui-même” : Simondon, *L’individuation psychique*, 108.

et de l'existence naturelle.⁴¹

The first and foremost incompatibility of human beings consists in the difference of their own needs from those of natural structures. Human beings must adapt to their environment. The invention of technical objects creates a *network* relating human needs with natural structures. Technical possibilities meet the natural existence in the nodal points of the network. Here, technical objects embody the *topos* where information is processed, exchanged and produced in a recursive interplay of cognitive, material, vital and natural features. Concentrating on the operational mode of technical objects that consists in providing links between human needs and natural structures, the strong distinction between operation and structure is dissolved. Technical potentiality actualizes itself in exchange with its existence in nature.

This interplay continues and mirrors the ontological status of human beings. As the living being constitutes and is constituted by its milieu, the technical object has an analogous relationship as mediator between human beings and the natural environment:

Nous pouvons créer des êtres techniques parce que nous avons en nous un jeu de relations et un rapport matière-forme qui est très analogue au rapport entre objet technique structuré et milieu naturel. L'objet technique individualisé est un objet qui a été inventé, c'est-à-dire produit par un jeu de causalité récurrente entre vie et pensée chez l'homme.⁴²

The technical object is analogous to the ontological situation of man. It results from the interplay of life and thought which are the two components of a recursive causality. This 'feedback-loop' is also at stake within the technical object. A technical object is confronted with two environments that are not necessarily compatible with each other. On the one hand, it consists of technical elements that constitute the "technical milieu" and on the other hand it is exposed to the natural environment.⁴³ The technical milieu defines the relationship of the parts amongst each other. Technical objects consist of different parts that can be replaced without damaging the whole. This does not apply to living organisms in the same fashion. In contrast to technical objects living beings are *concrete* from the very moment of their existence. Technical objects have the *tendency to evolve* from an *abstract* state to a *concrete* state.⁴⁴

⁴¹ Simondon, *Sur la technique*, 438.

⁴² Simondon, *Du mode d'existence des objets techniques*, 74f.

⁴³ *Ibid.*, 68ff.

⁴⁴ *Ibid.*, 60.

This specific understanding of *abstract* and *concrete* goes back to Bergson's understanding of matter. Bergson claims that man conceives of matter using his intellectual faculties as being abstract and consisting of *partes extra partes* without having any interior organizing principle.⁴⁵ According to Bergson, objects are thus distinguished and discerned. The intellect (*intelligence*) is only capable of representing this discontinuous aspect of matter clearly, but it does not have the means to understand continuity and becoming.⁴⁶

This critique of the intellect is accompanied by Bergson's conception of man as *homo faber*: the intellectual understanding of matter results from the technical nature of man. Man is a tool-making animal who constructs artificial objects, be they material tools, such as a hammer, or ideas, such as the categories of human understanding.⁴⁷ However, it is impossible to understand movement, time or any living organism with by intellectual faculties alone.

Simondon adopts this perspective but modifies it significantly. Although one can find in Bergson a conception of matter that entails potentiality,⁴⁸ technical objects are conceived of as static entities and not as dynamic systems analogous to living beings. Whereas Bergson claims that the tool-making faculties that understand the world transform dynamic processes into stable entities, Simondon points out that the invention of a technical object not only mediates the relation to the world but also instantiates a process of becoming that is not entirely in the hands of its creator:

L'objet technique n'existe pas seulement par le résultat de son fonctionnement dans les dispositifs extérieurs [...], mais par les phénomènes dont il est le siège en lui-même : c'est par là qu'il possède une *fécondité*, une *non-saturation* qui lui donne une postérité.⁴⁹

The technical object participates in *physis* and is made out of a material with specific properties providing the conditions of possibility for its functioning. Material properties are therefore not arbitrary; they play an essential role in the development and the evolution of technical objects.

⁴⁵ Henri Bergson, *L'évolution créatrice*, ed. Arnaud François and Frédéric Worms (Paris: Presses Universitaires de France, 2007), 155.

⁴⁶ Idem.

⁴⁷ *Ibid.*, 140.

⁴⁸ In fact, there exist two possible readings of Bergson. One can interpret Bergson's conception of matter in a dualistic fashion (matter is animated by spirit). It is also possible to defend a position that understands the dualisms of mind and matter as methodological steps to reveal the interpenetration of matter and spirit on the level of experience.

⁴⁹ Simondon, *Du mode d'existence des objets techniques*, 52.

The abstract technical object consists of multiple parts that are exterior to each other.⁵⁰ It becomes more and more *concrete* and *organized*, i.e. similar to an organism, where the different parts serve different functions at the same time and entertain an intrinsic relationship with each other:

Concret, c'est *concretum*, c'est-à-dire quelque chose qui se tient et en quoi, organiquement, aucune des parties ne peut être complètement séparée des autres sans perdre son sens.⁵¹

This genetic perspective of the technical object is only possible before the background of Simondon's "allagmatic method of analogy". As mentioned earlier, the scientist moves from the abstract to the concrete to create 'reality effects.' The scientific object is also the result of a recursive process which moves from the abstract to the concrete and back. But in contrast to the technical object the scientific object relies on the methodological framework of a science and is created to research a singular effect and its conditions comprehensively, whereas the technical object is synthetic in its application relating different structures and sciences with each other.⁵²

Technical Objects and an Ethics of Openness

The synthetic process of becoming concrete has to be understood in analogy to living beings. Understanding technical objects from the vantage point of living beings neither drifts off into apocalyptic nightmares of animated machines taking over the world, nor does it reduce technical objects to mere means to an end. The aspiration to follow technical objects in their evolution is driven by an anthropological and ethical interest. Techniques have *meaning* and express *life*: "Même si les techniques n'avaient ni utilité ni fin, elles auraient un *sens* : elles sont dans l'espèce humain le mode le plus concret du pouvoir d'évoluer; elles expriment la *vie*".⁵³

⁵⁰ Simondon, *Du mode d'existence des objets techniques*, 40.

⁵¹ Simondon, *Sur la technique*, 432.

⁵² This does not mean that interrelations between the sciences are not in themselves technical (i.e. psychology can use methods from other disciplines to study a genuinely psychological discipline). According to Simondon the theory of information mediates between the different sciences, between the techniques and between science and techniques (Simondon, *Du mode d'existence des objets techniques*, 154-55). It is not surprising that cybernetics was from the very start an interdisciplinary endeavor.

⁵³ Simondon, *Sur la technique*, 321.

Simondon's philosophy of technology refers to a "vitalist" tradition (Bergson, Canguilhem etc.⁵⁴), on the one hand, and to an anthropological tradition on the other (Mauss, Haudricourt, Leroi-Gourhan). To understand techniques as an expression of life should not be mistaken as an esoteric claim: Technical objects are the result of 'social' actions, since they are actions of human beings. Within the realm of the social, technical objects transform and structure human practices.

These practices of human beings in the world are by definition actions of living beings and hence expressions of life on a biological level. The difference to the so-called "vitalists" such as Driesch and Bergson is that Simondon does not formulate a strong metaphysical principle hinting at a teleology in the universe. In fact, he defends a *minimal ontology* by pointing out the necessity of metaphysics for epistemology and ethics. Without ontology and metaphysics an epistemology remains the hostage of a skepticism that cannot explain any transformation. Without an ontological principle – however minimal it might be – ethical actions do not have any point of reference to evaluate actions.

The ethical principle is derived out of his ontology: Living beings have to maintain their metastability to remain alive. They have to build *open* systems with their milieus and *create sense*. Openness is therefore a value in itself, since it is the basis upon which beings remain alive. This ethical principle does not, however, rely upon a binary logic that establishes the categorical opposition of good and bad. It rather creates infinite degrees of values. In referring ethics to an ontology of openness Simondon stands in the tradition of Socrates:

Une société dont le sens se perd parce que son action est impossible devient communauté par conséquent se ferme, élabore des stéréotypes; une société est communauté en expansion, tandis qu'une communauté est une société devenue statique; les communautés utilisent une pensée qui procède par inclusions et exclusions, genres et espèces; une société utilise une pensée analogique, au sens véritable du terme, et ne connaît pas seulement deux valeurs, mais une infinité continue des degrés de valeur, depuis le néant jusqu'au parfait, sans qu'il y ait opposition des catégories du bien et du mal; pour une société, seules les valeurs morales positives existent; le mal est un pur néant, une absence, et non la marque d'une activité volontaire. Le raisonnement de Socrate οὐδεις ἐχῶν

⁵⁴ I am aware that vitalism is a concept far too broad and of ill repute in the scientific discourse and is far from covering the philosophical depths of the positions of Bergson, Canguilhem, and others. Vitalism signifies in this context an epistemological and metaphysical precaution: human beings are not capable of adopting a perspective that is not itself an expression of vital capacity. Objective knowledge is the achieved through actions of living beings, or, to speak with Simondon, the result of an individuation.

ἀμαρτάνει, selon lequel nul ne fait le mal volontairement, est remarquablement révélateur de ce qui est la véritable conscience morale de l'individu et d'une société d'individus; en effet, comme la conscience morale est auto-normative et auto-constitutive, elle est par essence placée dans l'alternative ou bien de ne pas exister, ou bien de ne pas faire le mal volontairement; la conscience morale suppose que la relation à autrui est une relation d'individu à individu dans une société.⁵⁵

Simondon opposes community and society by attributing to each of them a particular style of applying the intellect. While the community is characterized by categorization and tends to be "closed", a society applies analogical thinking "in the proper sense of the word", i.e. ontologically, and remains constantly open to various processes.⁵⁶ Analogy is contrasted to the binary logic of inclusion and exclusion. It avoids xenophobia, since even if an individual is an other, it expresses as individual and living being an analogous ontological tension as the human subject. This does not mean that otherness is reduced to the logic of an absolute subject, but it is conceived of as a relation between individuals. Ethics consists in the refusal to become an absolute individual and in the maintenance of internal and external tension. Ethics expresses thus the sense of a continued individuation.⁵⁷ It enables one to relate technical objects, living beings and human beings as theaters of individuation. On stage, ethics provides agents who are conceived of as individuals containing, realizing and fostering potentiality.

This relation with both the internal and the external must be created through actions of living beings. Actions are understood as inventions of openness via analogy. Simondon points out that a community does not allow for actions, since it is defined by a binary logic merely discriminating between good and bad. An action, as it is defined by Simondon, always surpasses the actual state of mind and state of the art. Decisions within the framework of a readymade table of categories, would merely stabilize a community, but would not lead to the perpetuation of the capacity to transform itself. Concerning techniques, this means that new techniques realized through a major technical gesture (*geste technique majeur*) are a risk, a dangerous undertaking, a bet regarding the future; and they are not even immedi-

⁵⁵ Simondon, *L'individuation à la lumière*, 337.

⁵⁶ The categorical distinction between "closed" and "open" objects, systems, societies and "static" and "dynamic" goes back to Bergson's 1932 *Les deux sources de la morale et la religion*. In that, societies seem to develop from a closed, static, primitive religion to an open, dynamic religion. Simondon is more reluctant than Bergson to promote any sort of teleology inherent in the evolution of societies.

⁵⁷ Simondon, *L'individuation à la lumière*, 325.

ately useful.⁵⁸ As adventurous endeavors they threaten a community in questioning its binary logic. Technical – and scientific – progress transform the relationship of man with its milieu:

Le geste technique ne s'épuise pas dans son utilité de moyen ; il aboutit à un résultat immédiat, mais il amorce une transformation du milieu, qui réagira sur les espèces vivantes, dont l'homme fait partie. [...] Il ne s'agit donc plus ici d'une technique comme moyen, mais plutôt comme acte, comme phase d'une activité de relation entre l'homme et son milieu ; au cours de cette phase, l'homme stimule son milieu en introduisant en lui une modification ; cette modification se développe, et le milieu modifié propose à l'homme un nouveau champ d'action, exigeant une nouvelle adaptation, suscitant de nouveaux besoins ; l'énergie du geste technique ayant cheminé dans le milieu revient sur l'homme et lui permet de se modifier, d'évoluer.⁵⁹

It would be a foregone conclusion to characterize Simondon's ethics as a blind embrace of modern techniques. Although the technical gesture is able to transform man's relationship to the world and is able to open a closed community, it also implies new constraints which arise out of the modified relation with world. Together with new technical objects, a new need of adaption and new desires are created that are prone to exploitation.

This entails a peculiar ethical attitude towards not only the other human being, but also towards nature and materiality. The human being as theater of individuation participates in *physis* as well as other beings that inhabit the milieu. The tribute to *techné* that was invoked at the beginning this part of the article has to be amended according to the *physis* of which human beings and their milieu are made. This means that technical objects are equipped with potentiality. It is this potentiality that has to be maintained, honored and respected. Instead of being *homo faber*, Simondon's conception of man can be conceptualized as *homo coordinans*. Man is in the midst of material and technical objects. His function is to *coordinate* the network of technical objects.⁶⁰ In difference to the unilateral actions of the *homo faber*, Simondon stresses the independence of technical objects and the recurrent influence of technical objects on what it means to be human: man is coordinated in the strict sense of the word. Technical objects are also structuring human practices.

The ontological status of man *in* and *with* the world as part of ongoing processes of individuation, challenges the classical relation towards materiality and technical objects. Simon-

⁵⁸ Simondon, *Sur la technique*, 321.

⁵⁹ Simondon, *Sur la technique*, 320.

⁶⁰ Simondon, *Du mode d'existence des objets techniques*, 13.

don demands an epistemological-ethical attitude towards material things.

Instead of a Conclusion: Technical Objects as Theaters of Individuation

The sense of technical objects can only be fully grasped if we understand their inner technological. This means that using them is not enough to see them for what they really are. The epistemological challenge of technical objects consists in attempting to reinvent them. This re-invention is achieved by realizing the analogy between the mental operational mode of the human being and the physical operational mode of the technical object. The crystallization of a human gesture in technical objects allows for this reinvention. Strictly speaking, a technical object is never out of date, since it can be actualized by a human being. This actualization involves more than the mere usage. Technical objects can be used for other purposes than intended.⁶¹ This abuse of the object would reduce it to mere means without understanding the inner logic of it. An ethical attitude towards techniques is interested in *praxis* of machines⁶² and attempts to accompany its *genesis* via analogy:

La machine est un geste humain déposé, fixé, devenu stéréotypie et pouvoir de recommencement. [...] La relation analogique entre la machine et l'homme n'est pas au niveau des fonctionnements corporels. [...] En fait, la véritable relation analogique est entre le fonctionnement mental de l'homme et le fonctionnement physique de la machine. Ces deux fonctionnements sont parallèles, non dans la vie courante, mais dans l'invention. Inventer, c'est faire fonctionner sa pensée comme pourra fonctionner une machine, ni selon la causalité, trop fragmentaire, ni selon la finalité, trop unitaire, mais selon le dynamisme du fonctionnement vécu, saisi parce que produit, accompagné dans sa genèse. La machine est un être qui fonctionne. Ses mécanismes concrétisent un dynamisme cohérent qui a une fois existé, qui a été pensée. Le dynamisme de la pensée lors de l'invention, s'est converti en formes fonctionnantes.⁶³

⁶¹ Obviously, this can also lead to new inventions.

⁶² Simondon distinguishes between instruments, tools and machines. Although all of them can be technical objects and can be part of technical networks, they differ in how they relate human beings to their environment. Instruments are directed towards perception, whereas tools manipulate (in the literal meaning of the word) matter and are directly linked to human beings (or animals) as their source of energy. Machines, however, run to a certain extent on their own. Once activated, a motor will run as long as it has enough fuel. The human being does not interfere as source of energies (Simondon, *Du mode d'existence des objets techniques*).

⁶³ Simondon, *Du mode d'existence des objets techniques*, 191.

This passage shows clearly how Simondon thinks about the relationship between human beings and technical objects. Techniques have to be understood in their functional vitality. He is not proposing a symmetry of human and technical actors à la Latour, since technical objects are “not reduced to agency” to borrow a phrase of Timothy Ingold.⁶⁴ Technical objects remain in the realm of artificiality and are not concrete in the same manner as living beings. In focusing on the operations and practices with and within technical ensembles, Simondon locates technology within the vital networks of human beings. Technical ensembles are thought from the vantage point of the living being and thus as part of the human milieu.

This vitality refers to a dynamic understanding of being and provides the metaphysical possibility for technical objects. Furthermore, it expresses the philosophical challenge of grasping this dynamic process intuitively and to develop a perspective spreading beyond causality and finality. Technical objects and human beings participate in the movement of becoming and build together a unity in the intuitive act of invention. Simondon does not by accident identify technical objects with crystallizations of human gestures. This analogy has to be once again understood in its full ontological impact: Reinventing a technical object and using it again – recycling it – resumes the process of crystallization and mobilizes the technical object.

The function of human beings is thus to maintain the metastability of technical networks and the virtual presence of human gestures within them. For the *homo coordinans* in the era of information and “digital objects” this means to understand the operations within technical environments and to make sense of them. Technical objects install operations within being that are dynamic and function due to an animated matter.

Homo coordinans actualizes the potentiality of technical ensembles and furnishes vital machines by the maintenance of the latter’s functionality. This maintenance is a praxis in the trivial, mundane sense as well as in a philosophical temporal sense: machines are kept up to date, they are kept in the *present*. The *homo coordinans* is the vital mediator within the technical universe creating a reciprocal, vital relation with the world through the technical universe. She creates sense in referring the technical universe to the natural world.

Yet *homo coordinans* is not merely a descriptive concept. The far more important aspect of it is its ethical demand for a (re)newed relationship with the material and technical world. As mediators in the midst of technical objects, the ethical aim of men is to create meaning in the universe. Only by overcoming the alienation of technical objects from human beings, caused by the reduction of technical objects to utensils, may a true understanding of ma-

⁶⁴ Tim Ingold, *Being Alive. Essays on Movement, Knowledge and Description* (New York: Routledge, 2011), 215.

chines and of man himself be achieved:

L'individu humain apparaît alors comme ayant à convertir en information les formes déposées dans les machines ; l'opération des machines ne fait pas naître une information, mais est seulement un assemblage et une modification de formes ; le fonctionnement d'une machine n'a pas de sens, ne peut donner lieu à de vrais signaux d'information pour un autre machine ; il faut un vivant comme médiateur pour interpréter un fonctionnement en termes d'information, et pour le reconvertir en formes pour une autre machine. L'homme comprend les machines ; il a une fonction à jouer entre les machines plutôt qu'au-dessus des machines, pour qu'il puisse y avoir un véritable ensemble technique. C'est l'homme qui découvre les significations : la signification est ce qui fait qu'un événement a valeur d'information.⁶⁵

Human beings, as coordinators of technical network are translating mere signals into qualitative information. Human beings, as the creators of technical objects, are by-and-by responsible for the latter's functionality. Simondon compares the relationship between human beings and technical objects with the relationship of a conductor with his orchestra.⁶⁶ Although each of the musicians can play on her own, the conductor is necessary to give meaning to the whole. The conductor is at the same time dependent on her orchestra as she is creating signification with it. Human beings are therefore necessary to transform mere signals into veritable information. The noise an orchestra produces when every musician plays simultaneously for herself is transformed into piece of art when someone understands the parts each musician plays, interprets them and refers them to each other.

The conductor invents thus while being in the midst of his orchestra together with its musicians the musical theme. Even though the conductor does not produce *ex nihilo* a piece of music and relies on the musical script, she interprets the musical piece anew. She has to rely on the musicians, their instruments and the staging of the event. The network of these technical objects, instruments and musicians provides the background for the invention of the piece of music on stage.

Invention is not only the act of a genius who creates something absolutely new, nor is it the mere, trivial participation in Heraclitus' river. Invention signifies an ideal of knowledge symmetrizing human beings and technical objects in an act of analogy. Although machines might never have the same degree of concreteness as living beings do, they are also irreduc-

⁶⁵ Simondon, *Du mode d'existence des objets techniques*, 190.

⁶⁶ *Ibid.*, 12.

ible to finality or utility: Machines are analogical beings. They create information that can only be translated into meaning through human beings and can only be understood through their mental activity. The inventive activity of the mind is instantiating thus an analogy with the machine.

Analogical relations crystallize the human gesture in the machine, and gestures transform themselves within the process of concretization. The technical object results from a praxis of transformation that continuously creates and changes reality. It therefore challenges man to constantly transform his relation with himself and the milieu by inventing the technical being anew:

Par-là, l'être technique se convertit en civilisation; par ailleurs, un être technique, même peu intégré dans la communauté, vaut comme objet à comprendre; il exige un type de perception et de conceptualisation qui vise à comprendre l'être technique en le recréant; l'être technique existe donc comme un germe de pensée, recélant une normativité qui s'étend bien au-delà de lui-même. L'être technique constitue donc de cette seconde manière une voie qui transmet de l'individu à l'individu une certaine capacité de création, comme s'il existait un dynamisme commun à toutes les recherches et une société des individus créateurs d'êtres techniques.⁶⁷

The *homo coordinans* is challenged to be conscious of the virtuality of technical objects and the gestures they embody. Technical objects are never completely out of date: they contain are always apt to be reinvented in actualizing their inherent potentiality. This conception implies a certain obligation towards materiality, in order to preserve the normativity of the technical individual as virtual invention in being.

The crystallized gesture is not only connecting man with the technical realm, but also instantiating the possibility of a communication between individuals creating a society. This feature of technicity has to be understood in terms of information: A gesture is always the carrier of information and is executed by living beings. As such it can be appropriated, reinvented and communicated. The technical object mediates between human and non-human actors in space through time. In this perspective, it becomes itself a theater of individuation that fosters further acts of invention, individuation and communication. As crystallized human gesture it carries a certain kind of openness with it.

Evidently, this openness can be obstructed, when the user is no longer able to partic-

⁶⁷ Simondon, *L'individuation psychique et collective*, 267.

ipate in the maintenance of the technical object. This being the case with most technical objects in the world of globalized capitalism shows that Simondon's philosophy points towards an ethics allowing the *homo coordinans* to participate in the natural and technical becoming via practices of information. But it would be far too easy to shift the blame on historical developments. The ethical attitude Simondon demands always begins with the individual.⁶⁸ It is therefore not surprising that man's relation with materiality and technical objects is exemplified by the artisan:

Dans la véritable puissance de l'homme habile, il y a une relation de causalité récurrente. Le vrai technicien aime la matière sur laquelle il agit; il est de son côté; il est initié mais respecte ce à quoi il a été initié; il forme un couple avec cette matière, après l'avoir domptée, et ne la livre qu'avec réserve au profane, car il a sens du sacré. L'artisan, le paysan éprouvent encore de nos jours répugnance à livrer au commerce certains ouvrages ou produits qui expriment leur activité technique la plus raffinée et la plus parfaite : cette prohibition de la commercialité, de la divulgation, se manifeste par exemple dans les exemplaires hors commerce qu'un imprimeur, un éditeur et un auteur peuvent donner d'un livre. Elle se manifeste aussi chez le paysan pyrénéen qui offre à son visiteur, chez lui, certain aliment qu'il ne laisse ni acheter, ni emporter.⁶⁹

It might seem strange to consider material things as holy if one reduces them to their physical attributes. This reduction forgets however the technical activity contained in these objects. In referring more or less implicitly to Durkheim's distinction of the holy and the profane, Simondon points out that material things are holy, because they are essential constituents of a society instantiating participation.⁷⁰

The example of the peasant in the Pyrenees is telling: Simondon is describing a social situation which receives its quality, because the products in question cannot be bought or made for "take away." The food is in this case the material object mediating between differ-

⁶⁸ Simondon is however not unaware of the importance of social structures. He regrets for instance that a true and solid technological education is amiss which is necessary for the development of a technical mentality. Teaching at a *lycée*, he himself gave courses dealing in practical and theoretical manner with technical mentality. An article treating the theoretical and practical teaching and learning contents can be found in Simondon, *Sur la technique*, 203-32.

⁶⁹ Simondon, *Du mode d'existence des objets techniques*, 132.

⁷⁰ Émile Durkheim argues that societies emerge when the distinction between the holy and the profane is made in *Les formes élémentaires de la vie religieuse: le système totémique en Australie* (Paris: Presses Universitaires de France, 1961 [1912]).

ent social actors. It dissolves the distinction between form and matter in having not only material but also social qualities.⁷¹

Intuitively, food is an example that is quite easy to understand, since sharing food establishes social ties among individuals. But a more radical interpretation is possible here: it seems that it is not the “sharing” that establishes the social ties, but the food itself has the ontological property to generate a social situation.⁷²

This emphasis of the ontological properties of food might provide the link to technical objects. Technical objects contain (1) gestures that lead to practices, (2) an inner logic and functioning that relates different realms of being with each other and (3) mediate the relation between man and nature. All these properties cannot be reduced to a logic of categorization, but refer to the relational aspect of being.

The philosophy of Simondon is an attempt to provide a theory of relations. Each and every individual has to be understood according to their *praxis*. The focus on practices allows Simondon to move his method of analogy from one level of being to the next. The analogy itself is therefore a movement by means of which the relational aspect of being can be grasped. Simultaneously it seems that analogical thinking and creating analogical beings is the *proprium* of human beings whose function it is to play an active part in the ongoing individuation of becoming.

When answering to the principle of openness, the creation of relations with technical objects realizes the essence of individuality. Technical objects that result from respect towards materiality have to be *open objects*, as the situation of love, or couple, being formed between the artisan and his products engineering and technology have to be committed to this task which is at the same time ethical and ontological:

Pour cela, il faut réformer non point seulement notre regard, pour le purifier, mais il faut réformer aussi l’opération technique: elle doit viser à constituer un objet ouvert, perfec-

⁷¹ Mario Schmidt, ‘Edo ergo cogito – Ich esse also bin ich,’ in *Begeisterung und Blasphemie*, eds. Schützel and Zillinger, transcript, 251-5; Marcel Mauss, “Les techniques du corps.”

⁷² This seems to be the case for the Luo in West Kenya: Mario Schmidt and Sebastian Schellhaas were invited into the home of a Luo during an ethnographic study. They did not share food at a table with their host, but were rather eating in a separate room. It seemed that eating together was unnecessary, since social relations are logically prior to individuals and mediated by processes of simultaneous eating and feeding. See Mario Schmidt and Sebastian Schellhaas, “‘Together as One’ – On Social Oneness, Culinary Metaphors and the Presence of the Not-Yet Born in Western Kenya,” *American Ethnologist* (currently under review).

tible et néotechnique, c'est-à-dire dépositaire d'un potentiel évolutif; cet objet ne doit pas être chose vendue, possédée, mais chose qui institue une participation.⁷³

The openness of technical objects is described more closely in the article *La mentalité technique*.⁷⁴ The crucial point of Simondon's argument is that in order to foster the ethical relation towards materiality and technique (the technical mentality), the technical object itself has to have the structure of a network. The post-industrial technical object, Simondon tells us, consists of two layers: It has a stable core that is as stable and permanent as possible and a second layer that allows for exchange of parts. This means that the core of a technical object has to be as concrete (according to Simondon's definition) as possible whereas the relation of the other layer remains open. The exchangeable parts participate in the ongoing process of technical invention. The technical object is therefore not only structure, but also a dynamic mode of operation (*régime*). Participation is therefore reciprocal: The open object participates in socio-technical networks and the *homo coordinans* can participate in organizing participation and keeping it alive.⁷⁵

Only if objects are open and entail the capability of fostering new inventions and further individuations, the technical object becomes a theater of individuations. As theater of individuation it is at the same time actor and prop that regulates, mediates and informs practices of the other actors on stage. Technology is conceived in analogy to vitality. The ethical challenge is therefore simultaneously ontological. Human beings have to understand themselves as participating in socio-technical networks. The human task as coordinator is not to oppress and to subordinate technical objects and living beings in the network, but rather to realize their potentiality as theaters of individuation. The participation in the dynamics of being of any given agent allows for an open relation beyond nature and culture towards the technical and the non-technical world.

Yet, this attitude is not advocating an ontological spiritualism or techno-animism longing for an essence of being beyond concrete existence. The living human subject should rather aspire to create openness and, according to the social situation, to realize itself as "theater and agent of individuation," and thus as a personality.

⁷³ Simondon, *Sur la technique*, 364.

⁷⁴ Simondon, *Sur la technique*, 295-313.

⁷⁵ A recent attempt of such an open object is the 'phone bloks' project of the Dutch designer Dave Hakkens, which exemplifies perfectly the idea of an open object, and the difficulty of realizing the idea.

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