



PERFORMANCE
PHILOSOPHY

GILBERT SIMONDON'S 'TRANSDUCTION' AS RADICAL IMMANENCE IN PERFORMANCE

PAULO DE ASSIS ORPHEUS INSTITUTE

0. Introduction

Transduction is Gilbert Simondon's key concept for understanding processes of differentiation and of individuation in a number of fields, including scientific disciplines, social and human sciences, technological devices, and artistic domains. Originating from the sciences and crucially developed in its philosophical implications by Simondon, *transduction* refers to a dynamic operation by which energy is actualized, moving from one state to the next, in a process that individuates new materialities. This chapter appropriates this concept for musical practice, aiming at establishing a foundational conceptual layer for a broader research effort that crucially includes artistic practice—both composition and performance—as its starting and end points. After an introductory depiction of what transduction might mean for a music performer, this paper focuses on the presentation of different definitions of transduction, mainly stemming from Simondon himself, but including two further extensions: one to Deleuze's concept of *haecceity* (and via Deleuze, to my own *micro-haecceity*), the other to Brian Massumi's notion of *corporeality*. Keeping in mind the potential of these definitions for the making of music, this essay explores eight different, yet complementary ways of thinking transduction, which are presented in a growing scale of complexity from the incandescent light bulb (3.1) to the intricacies of decision-making in living organisms (3.8), passing by the question of time and temporality (3.2), thermodynamics (3.3), information theory (3.4), a redesigned theory of haecceities (3.5), Riemannian topology (3.6), and corporeality (3.7). All these topics are presented here in short, as opening gates to wider fields of inquiry, suggesting future avenues of research, rather than claiming to offer finished thought.

The choice of the concept of transduction, written by a music practitioner within a publication dedicated to the notion of immanence in philosophy and in the arts has a twofold motivation. On the one hand, it is an affirmation that artist researchers have a genuinely transdisciplinary approach, what allows them, at some points of their trajectories to synchronise efforts with philosophers, scientists, historians, or technicians. On the other hand, transduction is a term that radically relates to immanent processes of differentiation and individuation; it is a concept that emerges from a total immersion in an energetic realm made of potentials, a concept that stresses the unnecessary of any transcendental system of reference and coordinates, that is to say, it is a concept that emerges from, and relates to pure immanence.

1. Relaying flows of intensities in music

Imagine a young pianist just about to enter the stage in order to perform Brahms' piano concerto nr. 2 in b flat major, op. 83. The performance will start in a few minutes, the musicians of the orchestra are already seated in their playing positions, the conductor will soon touch her shoulders as a sign to go on stage, and our soloist's mind is probably fully concentrated on the first two pages of the score, on the piano's dialogue with the horns, followed by the daunting cadence which leads to the entry of the full orchestra. In this particular moment, in the very last seconds before going on stage, the whole concerto—all its pitches, rhythms, overall form, instrumental colours, dynamic ranges, tempi, pedalling, fingerings, gestures—all those things are vividly present in the pianist's body and mind, being concretely felt as a huge field of *virtuality*. A virtual that is not to be understood in terms of virtual reality, but, on the contrary, as something absolutely real, something that exists and that is perceived in this very moment—just before starting the performance—as tension, as an infinite reservoir of possible actualisations, some of which will happen, and which will start happening as soon as the conductor beats the first bar. For a musician, this is one of the best situations to feel, to grasp, and to understand the complex relations between the Deleuzian concepts of the *virtual* and the *actual*.¹ Everything a musician knows and feels about a given musical work is viscerally present in such moments as highly energetic clouds of potentialities. As soon as the pianist starts performing—physically touching the keyboard, attentively listening to the orchestra, punctually looking at the conductor—all those potentialities go through a process of synthesis, leading to the radical here-and-now of every single fraction of a second, which one by one, one after the other, in closest vicinity and rapid pace, are producing concrete *actualisations* of forces and materials. Once the concert officially starts, what our young pianist and the listeners are experiencing in real time is the passage from a 'just already' constituted assemblage of forces, intensities, and energies to another one, still in the process of being constituted. Something—a force, a signal—is being transmitted from one instant to the next, at light speed, without any break or loss of energy. A continuous process of differentiation is happening and taking place in front of our eyes and hears. This process happens 'operationally': something is at work, something is emerging from a vast field of preindividual and impersonal tensions, which constitute the 'metastable horizon' of the piece and of the performers, an operation that leads to the emergence of new tensions, which are generated in the radical here and now of the performance, without univocal determinism or absolute predictability. At the interstices between what the performer

intends, what really occurs, and what is intended immediately afterwards, an impulse of virtuality runs from one actualization to another. Flows of intensities unfold throughout time in the specific here and now, in the highly accelerated and hyper-energized *erewhons* of music performance. It is this particular process of musical making, communication, transmission, and emergence of intensities that I propose to call 'performative transduction'—appropriating for musical practice a term introduced by the French philosopher of science Gilbert Simondon in the 1950s.

Simondon's overarching goal was the development of a dynamic theory of technology, replacing ontology by ontogenesis and structure by embryogenesis. His effort resonates with, and has been inspirational to my own ongoing work towards a dynamic theory of musical works and their performance. Simondon's concept of transduction is extremely promising for musicians because it seems to have the potential to afford new ways of thinking, problematizing, and doing artistic activities based upon intense temporal processes, such as music performances and compositions. Both in the moment of composing or in the act of performing, but also while simply reading a score or studying a sketch, several transducers and transductive processes can be identified. The main transducer (interface), however, is a human body (notating a score, playing an instrument, vibrating vocal cords), a complex living organism inhabited by diverse layers of information and by innumerable drives, which working together shape the actual rendering of musical events. Considering bodies, instruments, body-instruments, scores, recordings, concert halls and audiences as different types of transducers, this chapter aims at laying the ground for a novel approach to music making, defining an experimental regime characterized by ensembles of transducers and their respective relaying of affects and intensities. Such approach enables and enhances a decisive shift from the static opposition between 'work' and 'performance', between 'score' and expected 'image of work', between archetypal generalities ('the work') and contingent particulars ('performances'), to a zone that is energetic and molecular.

The appropriation for music of Simondon's concepts and terminology further enables an urgently needed move away from historically situated, but problematically still operative formalistic and subjectivity-based approaches to music. On the one hand, music theory is dominated by formalism, dialectically separating form from matter (hylemorphism), focusing on fixed structures (*res extensa*, which remains the preferred field for analysis and historiography) while underestimating energetic potentials (*res intensa*, which constitute the working habitat of composers and performers), ignoring the energetic conditions and entropic processes that lead to the shaping of any given musical form and expression. Formalism relies more on moulding—"an abstract conception that opposes matter to form" (Sauvagnargues 2016, 70)—than on modulation—"a continuous assumption of form between properties of material and the concrete action of form" (Sauvagnargues 2016, 70). In this sense, it is important to stress that this chapter is part of a bigger effort to look into *genetic operations*, into the *processes of individuation* of musical works, and into a *new image* of musical objects based upon the notion of multiplicity, an effort that ultimately criticizes generic structures or archetypal images of musical works.

On the other hand, questions about subjectivity have a propensity to ignore or exclude the non-human component of any transductive process. Studies on subjectivity tend therefore to be

human, all too human. Any individual involved in a performance is modulating through a complex set of disparate elements, solving and resolving on the spot diverse disparate inconsistencies of the materials, operating instant synthesis (actualizations) out of a cloud of really existing pre-individual singularities (the virtual). As Simondon demonstrates, the individual, “whether it concerns a subject or a being of any kind, is never given substantially, but is produced through a process of individuation” (Sauvagnargues 2016, 63). Transduction allows for a perspective where musical objects and music performers are being individuated at the same time, liberating the works from structural fixity and the performers from psychological subjectification. Instead of operating out of a centralized, controlling consciousness, the performer appears as the (human and non-human) link between the impersonal and pre-individual diversity of the virtual components of any given work and its actualization in sound and gesture. Beyond subjectivity, the notion of transduction enables the inclusion of a non-human perspective on the processes of relaying flows of intensities in music.

2. Simondon's concept of transduction

Simondon defined transduction in a number of ways, illuminating this concept from different angles. In its simplest technical formulation a *transducer* is a technical object, a continuous electric relay that operates as a modifiable resistance between a potential energy and its concrete place of actualization, whereby the resistance can be modulated through the means of information, which remains external both to the potential energy and to the actual energy. *Transduction*, in turn, is a process whereby a disparity is topologically and temporally restructured across some interface or ensembles of interfaces. In the place of pre-existent or pre-formed individuated terms (based upon the dualism form-matter), Simondon radically focuses on the processes of ‘in-formation’, claiming that any event or any individual is not just a result, but a milieu of individuation.

Transduction is Simondon's key concept for understanding processes of individuation in a varied number of fields, including scientific disciplines such as physics, biology, histology, ethology, crystallography, psychology; technological devices such as motors, electric tubes, lamps, telephones, mills, turbines, and cars; and artistic domains—an aesthetic extension of his system, which Simondon sketches in the third section of his 1958 thesis, *On the Mode of Existence of Technical Objects* (cf. Michaud 2012, 121). The reasons for such impressive versatility are certainly not univocal, but one can think of some aspects that might contribute to it. First, Simondon's project is radically oriented towards a logic of creation: things and subjects are never considered as pre-constituted, and the ‘good form’ is never stabilized (cf. Garelli 2013, 16), remaining suspended between structure and energy, in a metastable balance. Second, the very notion of transduction thematises the event, insisting on the emergence of the new, on those components of any agency or assemblage that have the potential to change them, to disrupt habits, stratifications, or any other forms of rigidity. Third, its focus on energetic processes and flows carries a vitalist dimension, generating sequences of becoming, a becoming-intensity, whereby intensity itself can be defined as the creative vector of the dissolution of individuation: becoming-something is not becoming-*this*, but always becoming-something-*else*. All these aspects reinforce

a modal perspective on the world, opposed to rigid essentialist or substantialist accounts, making the notion of transduction easily applicable in any given field of inquiry.

3. Simondon's various definitions of transduction

Every philosophical concept has its own precursors, predecessors, lineages of formation, and different definitions. Concepts are operative in specific contexts, and they may go out of use, disappear for a while, and reappear later on, on a different context, relating to different sets of problems. Like cells, organisms, and machines, concepts also have their own embryogenesis, being the modal and temporary result of an individuating process. They also partake in the virtual/actual couple, and they also participate in transductive operations. On the 10th of November 1981, during the first session of his seminar on cinema, held at the University Paris VIII, in Vincennes, Gilles Deleuze made an important observation about the 'thickness' of concepts:²

A philosophical idea is always an idea with diverse layers and levels. It is like an idea and its projections. I mean, it has many levels of expression, of manifestations. It has a thickness. A philosophical idea, a philosophical concept, is always a thickness, a volume. One can take it at one level, then at another, and still at another one; that is not contradictory. But the levels are very different from each other. (Deleuze 2006, 0'55"-1'26", my translation)³

Simondon's concept of transduction is a good example of such thickness of a concept. Simondon himself offered diverse definitions of transduction, illuminating every time a particular perspective, or addressing discipline-specific examples and problems. In what follows, I will briefly present some of the different definitions of transduction provided by Simondon. Additionally, I present two further extensions: one to Deleuze's concept of *haecceity* (and via Deleuze, to my own *micro-haecceity*), the other to Brian Massumi's notion of *corporeality*.

3.1. Discharge (potentiality)

On the simplest technical level, Simondon defined a transducer as a continuous electric relay that operates as a modifiable resistance between a potential energy and its concrete place of actualization (cf. Simondon 2013, 82). It is possible to modulate that resistance through the means of information, which remains external both to the potential energy and to the actual energy (cf. Simondon 1958, 143).⁴ In this simple and eminently technological definition, transduction is presented as a *discharge* of energy from a field of potentialities toward a particular emergence of an event. Significantly, in this definition, the transducer doesn't belong either to the domain of the potential nor to that of the actual energy: it works as the mediator between these two domains, as the fringe of indeterminacy between them; and the indeterminacy results from information, which is a condition for actualization to happen (cf. Simondon 1958, 143).⁵ It is in this sense that Brian Massumi could conclude that:

[...] transduction [is] the transmission of an impulse of virtuality from one actualization to another and across them all. Transduction is the transmission of a force of potential that cannot but be felt, simultaneously doubling, enabling, and ultimately counteracting the limitative selections of apparatuses of actualization and implantation. (Massumi 2002, 42–43)

With the expression “a force of potential that cannot but be felt”, Massumi refers to the absolute reality of that “potential”: all forces that constitute Simondon’s potential energy are real and do exist “in this world”. Sometimes they are perceived as tension, other times they remain disclosed to our senses, but are measurable with technical apparatuses.

The incandescent lamp is probably the simplest example of a transducer as a continuous electric relay. Electric current is available in the electric circuit as potential energy; the moment one switches the lamp on, a part of that potential energy is discharged into the bulb, which converts only 5% of the total energy into visible light (the rest is dispersed as heat). The goal of the incandescent light bulb is to produce light, but the concrete transductive process generates light and heat, counteracting the material limitations of the tungsten filament, eventually destroying it by burning it. It is the modulable resistance—the complete set of filaments, materials, sustainers, and gases inside the bulb—that changes, generates, and varies the actual rendering of energy as light. All those materials are not ‘electric current’, nor are they ‘light’, they are just the transducers, mediating between electricity and luminosity.

3.2. Passage (temporality)

A more general and broader definition of transduction is to be found in Simondon’s collected essays *Sur la Technique* (2014), where—in the context of discussing notions of technical progress—transduction is presented as the passage from a constituted ensemble towards another one in the process of being constituted: “le passage d’un ensemble constitué à un ensemble à constituer” (Simondon 2014, 452).⁶ What is striking in this definition is the fundamental inclusion of time and temporality as quintessential to the transductive operation. Transduction happens in time, it is a process, an operation with a temporal and energetic direction (even if not precisely determinable). And this temporal dimension unfolds from one point to the next, in closest vicinity from one another, but not in a full continuum: “En ce sens est transductif ce qui se transmet *de proche en proche*, ce qui se propage avec éventuellement amplification” (“In this sense transduction is something transmitted *little by little*, something that propagates, eventually, in amplified form”, Simondon 2014, 452, my translation and emphasis). “De proche en proche” means ‘gradually’, ‘little by little’, ‘slowly’, ‘progressively’, ‘in succession’. Simondon couldn’t be clearer about the essential feature of transduction, namely its *processuality*. This reflection lies at the heart of Simondon’s project: more important than discussing what things ‘are’ is to consider how they come to be what they are, and what futures they entail. Every present, every ‘here and now’, every event—but also every material construction—is infinitely divided into past and future.

These two first definitions of transduction—the intensive *discharge* of discrete units of potential energy, and the temporal *passage* from one state to another—reveal the underlying presence of different kinds of tensions, of different *fields of problematicity*. On the one hand—energetically—not all the potential energy is actualized in the here and now of the event; there are always ample amounts of potential energy that remain *possibilities*, even if they are real (as possibilities); but they are not concretized.⁷ On the other hand—temporally—not all the innumerable constituents of the pre-life of a thing or event can be actualized in their *concretizations*. The transductive process leads to ever-changing states that are, at the same time and without contradiction, *more* and *less* than their past or future potentials: *less*, because they cannot contain all virtual possibilities; *more*, because they generate new, unpredictable, and unforeseeable new tensions, new potentials that require further processes of equilibrium. If transduction involves a *reduction* of the potential(s) to its ongoing actualization, it also comprises a future increase of tensions (unpredictability), which will reinforce the field of the virtual.

3.3. Energy (thermodynamics): potential, scales, entropy

In contrast to classical theories of form such as the *Gestalttheorie*, which describes stabilized forms, or the hylemorphic scheme, with its clearly distinguishable pair of form and matter, Simondon proposes a view of forms and matters that fundamentally include the energetic dimension, fully loaded with transductions ‘still to come’ (*transductions à venir*). From the very first pages of his ‘Introduction’ to *L’individuation* (Simondon 2013), Simondon argues that the hylemorphic and the monist schemes never take into account the *energetic conditions* of the constitution of form and matter themselves, which are inhabited by powerful energetic potentials and by shape-giving informational structures. A metastable system displays a complex balance between two major processes: degradation of energy (entropy) and generation of structural order (negentropy). In his thinking of individuation, both physic and psychic, Simondon considers ‘being’ not as a substance, matter, or shape, but as a system in tension, oversaturated, something more than one single unity:

Pour penser l’individuation il faut considérer l’être non pas comme substance, ou matière, ou forme, mais comme système tendu, sursaturé, au-dessus du niveau de l’unité, ne consistant pas seulement en lui-même, et ne pouvant pas être adéquatement pensé au moyen du principe du tiers exclu; l’être concret, ou être complet, c’est-à-dire l’être préindividuel, est un être qui est plus qu’une unité. (Simondon 2014, 25)

To think about individuation, one must consider Being not as a substance, or matter, or form, but as a system in tension, oversaturated, above the level of a unity, not constituted only in itself, and not satisfactorily grasped through the principle of the excluded third: the concrete being, or the whole being—that is, a pre-individual being—is a being that is more than one unity. (My translation)

Simondon’s critique to modes of thought exclusively based upon stable forms of equilibrium, which impose ‘being’ and exclude ‘becoming’, led Simondon to a definition of ‘metastability’ grounded upon three basic notions from thermodynamics: (1) the potential energy of a system; (2)

the orders of magnitude (*ordres de grandeur*) of a system (including intensive and extensive variables, and the modulation from micro- to macro-scales); and (3) the growth of entropy (energetic degradation of the system). It is based upon this tripartite set of reference that Simondon explores the ideas of 'preindividual', 'metastable system', 'oversaturation', 'processes of differentiation' and 'individuation'. A form considered totally 'stable', or 'finished', corresponds to the highest possible level of negentropy, defining an immovable stratum. Opposed to this, in any given metastable system there are flows of oversaturated potential energies of diverse orders, that at some point (structural germ) produce an overvoltage of the system, wherefrom the energy deteriorates (entropy) leading to processes of differentiation and individuation (negentropy).

3.3.1. Potential energy

In the conventional usage of the term in physics, 'potential energy' refers to the *possible* or the *virtual* (in the traditional sense of 'not being real', or remaining as pure 'possibilities'). Often, Simondon refers to this understanding, and David Scott (2014) pointedly described the divergence of this conception to the Deleuzian notion of the virtual (where the potential possibilities are real, in spite of remaining non-actualized). Apparently, a crucial distinction between Simondon and Deleuze is latently present here, involving the concept of the 'virtual'. On the one hand, "Simondon quite definitely rejects the notion of the virtual" (Scott 2014, 17),⁸ but, on the other, he introduced a crucial qualifier, namely the 'real potential', indicating that the potential 'actually exists' (cf. Barthélémy 2012, 225). As Simondon wrote: "The potential, conceived as potential energy, is *real*, because it expresses the reality of a metastable state, and its energetic situation" (Simondon 2013, 547, quoted in Barthélémy 2012, 225). The real potential is fundamental for the definition of a metastable system: it is the potential that gives it the possibility of a becoming, the possibility of shifting phases from one state to the next. An individuation starts with an imbalance between potentials of energy, from which an individual emerges progressively, as the solution to a problem that is itself of a different nature. As Beistegui wrote: "An organism is always more than its organized and fully differentiated reality. This excess signals a virtual reality that can be observed at the embryonic stage" (Beistegui 2012, 170).

3.3.2. Orders of magnitude (scales)

For Simondon any given portion of matter can only enter a process of new individuation if it is brought to a suitable energetic state. Against the hylemorphic scheme, which implies fixed forms and fixed matters, Simondon argues that "the coming-about of any entity equals the appearance of a metastable 'phase of being', which constitutes its own, new 'magnitude' (*ordre de grandeur*)" (Borum 2017, 99). The individuation process is thus based upon singular events that establish a link between different 'orders of magnitude' (today normally referred to as 'scales'). For example, when DNA is transferred from one bacterium to another by a virus, a process whereby foreign DNA is introduced into another cell via a viral vector, one has the passage of the scale of the virus to the scale of the bacterium, bringing the latter into a new form of individuation. Another example, provided by Simondon (2013) is the vegetative, which is presented as "an individual that puts in

relation the order of the cosmic grandeur of sunlight (necessary for photosynthesis) and the molecular order of mineral salts that nourish the vegetative” (Barthélémy 2012, 220). The crucial point is that Simondon was looking for the effects of the *relation* between orders of magnitude. For him, the individual *is* relation and not simply *in* relation to something external. The individual that enables these relations is actually defined by them: it is the relation between different orders of magnitude that make the individual what it is. Thus, any given individual can only emerge in intrinsic articulation with an associated milieu. No individual is autonomous. There is no autonomy. Everything is relation between diverse orders of magnitude: “There is individuation, because there is an exchange between the microphysical and the macrophysical level” (Simondon 1995, 148).

3.3.3. Entropy

A metastable system displays a complex balance between two major processes: degradation of energy (entropy) and generation of structural order (negentropy). Even if, according to the second law of thermodynamics, entropy can only increase, most of the existing systems are ruled by negentropy and by information. As Beistegui has put it:

A metastable system is a system that, whilst not contradicting the second law of thermodynamics, which stipulates that in the long term, all differences of energy will be cancelled, harbors within itself a sufficient amount of energy—of differences of potential—to create order. There is no form that presides over the organization of matter; there is simply a series of processes of in-formation through which matter organizes itself. (Beistegui 2012, 171)

Aware of recent developments in cybernetics and in information theory (and of the debates about the notions of entropy and negentropy, involving Norbert Wiener and Claude E. Shannon), Simondon differentiated himself from those traditions by affirming that “the differencing process can in no way be understood in quantitative terms, and is not susceptible to any kind of stable formalization” (Massumi 2012, 32). For Simondon, even if photosynthesis does coincide with the discharge of a measurable amount of energy, it crucially coincides with a passing of a threshold to a qualitatively new level of individuation. The qualitative threshold is what most matters to Simondon. No doubt that the system will degrade itself energetically, on the long run, but as long as the potential (virtual) energy is not fully exhausted, information will counteract that dispersion, vibrantly opposing *res intensa* to *res extensa*. Traditional physics of substances and matter had ignored the problems posed by energetic distributions, focusing too much on *res extensa* (cf. Garelli 2013, 14). With thermodynamics, Simondon found a way to more adequately address the information of events. An early draft to the introduction of *L’individuation à la lumière des notions de forme et d’information*, reveals Simondon’s precise positioning within cybernetic debates of the day:

Pour définir la métastabilité, il faut faire intervenir la notion d’information d’un système; à partir de ces notions et tout particulièrement de la notion d’information que la physique et la technologie pure moderne nous livrent (notion d’information conçue comme négentropie), ainsi que de la notion d’énergie potentielle qui prend

un sens plus précis quand on la rattache à la notion de négentropie. (Simondon 2013, 26)

In order to define metastability, it is necessary to include the notion of information of a system... particularly the notion of information provided by modern physics and pure technology (information understood as negentropy), as well as the notion of potential energy, which gains a more precise meaning when linked to the notion of negentropy. (My translation)

In the same lines, on the occasion of a public lecture at the French Philosophical Society (27.02.1960), Simondon offered a complete definition of transduction, including the “irreversibility of information” at its very core. Once the potential energy starts being liberated, it appears as a new structure, “qui est comme une résolution du problème; dès lors, *l’information n’est pas réversible*: elle est la direction organisatrice émanant à courte distance du germe structural et gagnant le champ” (Simondon 2013, 538, my emphasis). Entropy and negentropy define the fundamental coordinates of movement and directionality of the transductive operation.

3.4. Structural germs and singularities (structuration)

The affirmation of the complex processes of differentiation/individuation described so far raises the question of knowing what causes, what initiates, what sets them in motion. A totally stable system has no internal motion any longer; it is a stratum with the highest level of negentropy; on the other extreme a totally unstable, chaotic system has no structuring function, never concretizing all its potentials. But what causes a metastable system to start the transductive process? Simondon is extremely precise in identifying the initiator of this process: it is what he calls *structural germ* (cf. Simondon 2013, 77–84). Drawing on scientific studies of crystallization, Simondon recurs to the example of allotropic crystals (crystals that exist in two or more different forms, though in the same physical state) in order to present transduction as “the name given to the *ongoing actualization or structuring of the potentials* of a metastable system whose constitutive, heterogeneous orders have been brought into communication by a singularity functioning as a ‘structural germ’” (cf. Simondon 2013, 78, 82). This ‘germ’ is the point of departure of the whole subsequent transductive process. Containing a *singularity* (Simondon 2013, 77), this point has the capacity to break the metastable equilibrium of the system, enabling the propagation of a transformation that runs from point to point between the already transformed parts and those yet to be transformed. Every ‘future’ point is, therefore, a sort of ‘extension’ or ‘prolongation’ of the initial germ with its intrinsic singularity. As Simondon has put it: “... the individual results from a process of amplification that is triggered by a singularity within an hylomorphic situation, and it [the individual] prolongs this singularity” (Simondon 2013, 82, my translation).

Recapitulating: there is a starting germ, which contains a singularity; this singularity is then ‘prolonged’ throughout time, i.e., the singularity is *set-in-motion* for a segment of time, defining a surface of intensities. The singularity cannot be described in-itself, or abstractly, as Simondon consistently avoids any kind of ‘essence’. A singularity has only a local definition, given under

precise conditions, namely those that enable (or are enabled by) the rupture of the metastable equilibrium. The main point is that the starting germ is not a form or a matter, but a structural constitutive potential, that is, it carries some sort of *information*, which sets the basic conditions for an *event* to happen—often coming from an external system (as, for example, when DNA is transferred from one bacterium to another by a virus, a process whereby foreign DNA is introduced into another cell via a viral vector). As Simondon writes:

L'existence effective d'un état individualisé résulte du fait que deux conditions indépendantes se sont trouvées simultanément remplies: une condition énergétique et matérielle résultant d'un état actuel du système, et *une condition événementielle*, faisant le plus souvent intervenir une relation aux séries d'événements qui proviennent des autres systèmes. (Simondon 2013, 80, my emphasis)

The effective existence of an individuated being results from two conditions that are independent from one another and occur simultaneously: an energetic and material condition derived from the actual state of a system, and an 'evental' [from "event"] condition that most often includes a relation to other series of events, coming from other systems. (My translation)

This quote contains yet another crucial component of the transductive process. A metastable system is not only non-stable, but it is non-Unitarian, it is not One—there are always multiple 'series' of events going through it. It is a system capable of, and necessarily obliged to expand out of itself, to interact with other systems. It is not independent, nor autonomous. It cannot survive or subsist in exclusive relation to itself. It is a contained system: tense, oversaturated, superposed to itself, heterogeneous to itself. Being cannot be reduced to what it is; being is at the same time structure and energy (cf. Simondon 1989, 284), sign and potency, longitude and latitude.

The structural germ functions therefore as the component of an assemblage that sets it in motion, that *dramatizes* it. The distinction between the virtual and the actual is not unilateral, nor is it ontologically black-boxed. This distinction is processual and differential, making of the "*a priori* and the *a posteriori* a product of individuating processes rather than their condition" (Toscano 2012, 389). In this sense, individuation (with all its actualisations) can be thought of as *dramatization*: the sudden, unexpected, and effective formation and emergence of a percept. As Alberto Toscano (2012, 390) wrote: "Simondon's theorisation of pre-individual singularities remains formative". The structural germ operates as the agitator, the excavator, or the explosive trigger of a spatio-temporal metastable system. It opens up new spaces and times, revealing not only unpredictable futures, but also unsuspected pasts—things that had been there but never seen or heard before.

3.5. *Haecceity*: from *haecceitas* (Duns Scotus) to *eccéité* (Simondon) to *heccéité* (Deleuze and Guattari)

This dramatic opening of a new time-space of possibilities has strong resonances with Deleuze and Guattari's concept of *haecceity*, a concept that theorises the emergence of a singularity at any given scale and field, from molecular encounters, to geological clashes, landscapes, hours of the day, human thought, arts, and so on. Importantly, an *haecceity* does not refer to a fully qualified time-space, but to a radical spatio-temporal dynamism. As François Zourabichvili noted: "It does not combine two pre-existent time-spaces; on the contrary, it triggers their genesis. *Haecceity* is the binding element of heterogeneous dimensions of time, from which time-spaces are derived" (Zourabichvili 2011, 108, my translation).⁹ Thus, an *haecceity* is a passage, a singular point in time-space that dramatizes it, curving it, folding it, giving it transient form and temporal structure.

In *Memories of a Haecceity* Deleuze and Guattari (1987, 260–5) appropriated and refabricated the medieval concept of 'haecceitas' in order to suggest a mode of individuation that is not confused with that of a thing or a subject (cf. Sauvagnargues 2016, 65). In response to a clarification asked by the translators to the American edition of *Dialogues* (Deleuze and Parnet 1987) on the use of this term, Deleuze stated that "*Haecceitas* is a term frequently used in the school of Duns Scotus in order to designate the individuation of beings. [I use it] in a more special sense: in the sense of an individuation which is not that of an object, nor of a person, but rather of an event (wind, river, day or even hour of the day)" (Deleuze and Parnet 1987, 151–2). The difference to Duns Scotus' definition is crucial and can only be perfectly understood in light of Simondon's (apparent) misspelling of 'heccéité' as 'eccéité' (without 'h'), which gives the term a modal (and not essential) quality.¹⁰ In a famous footnote to *A Thousand Plateaus*, Deleuze and Guattari explained precisely this crucial difference:

Haecceity is sometimes written 'eccéity,' deriving the word from *ecce*, 'here is.' This is an error, since Duns Scotus created the word and the concept from *haec*, 'this thing.' But it is a fruitful error because it suggests *a mode of individuation* that is distinct from that of a thing or a subject. (Deleuze and Guattari 1987, 540–541, n. 33, my emphasis)

And they explain it further, in the main text:

A season, a winter, a summer, an hour, a date have a perfect individuality lacking nothing, even though this individuality is different from that of a thing or a subject. They are *haecceities* in the sense that they consist entirely of relations of movement and rest between molecules or particles, capacities to affect and be affected. (Deleuze and Guattari 1987, 261)

When appropriating this terminology to the performing arts (music, dance, theatre, or performance), and particularly when speaking of intense *haecceities* that are set-in-motion through highly informed 'structural germs', I propose the introduction of the notion of *micro-haecceity*, a temporal radicalisation of the concept, collapsing it into an infinitesimal fraction of a

second, into the radical here-and-now of the evolving performance. Such haecceities would be characterized by intensive negentropic properties, unfolding at very high speed. These kinds of haecceity do not suggest (stable) contemplation, but rather rash (metastable) actions. Deleuze's characteristic example of haecceity—Lorca's *At five o'clock in the afternoon*—has a scenic quality of setting up a particular landscape, time of the day, temperature, sunlight, inner memories, and so on. It implies a certain amount of time (a thickness of the 'present') to be fully apprehended. But the young pianist performing Brahms' second piano concerto from my starting example, is navigating high-speed successions of 'prolonged singularities'. There is no time for contemplation, things must happen in the unavoidable urgency and imperative sequentially of the here-and-now. Micro-haecceities are high-energy-loaded and high-speed-moving singularities that carry a force of potential from one metastable state to the next. They make up the visible or audible part of artistic transductive processes. In their functioning as radical becoming they never appear as stable 'beings', remaining an impulse of virtuality from one actualization to the next. If one thinks, or does, or experiences artistic performances with these operations in mind, the Deleuzian notion of 'capture of forces' becomes more graspable than ever: the virtual becomes actual in order to be instantly dissolved into the virtual again. Our pianist playing Brahms perfectly exemplifies such a capture: she is not merely reproducing a stratified pre-existing entity, but operating a capture of forces (from the virtual) that produces a new individuation (actual) as a highly intensive becoming, which immediately—as soon as it is generated—points forward to other virtual pre- and after-individualities. Micro-haecceities reveal, therefore, so much the non-deterministic pasts of its individuated constitutive forces and energies, as their unpredictable futures. By so doing, micro-haecceities reveal the making of art as a fundamentally problematic field—generating, and enhancing heterogeneous tensions that produce the conditions of their own (transient) resolutions. Thus, micro-haecceities, like Deleuzian haecceities, thematise the event: the emergence of a singularity and the passage from one milieu to another.

3.6. In-formation (topology)

With the definitions of transduction exposed so far, we have presented spatio-temporal energetic processes ranging from very simple electric discharges (the incandescent light bulb) to highly complex thermodynamic operations, including a link to Deleuze and Guattari's concept of haecceity. Thus, we have mainly remained within the realm of physical individuation, which corresponds, roughly, to one third of Simondon's overall project. In fact, Simondon proposed other ways of thinking transduction, including the individuation of biological organisms, and of psychic and collective agencies and assemblages. It is not possible to cover here all those aspects, but we shall mention one further quintessential aspect of transduction, namely its *topological* implications. As Jacques Garelli wrote in the introduction to *L'individuation à la lumière des notions de forme et d'information*:

[...] la transduction, étroitement solidaire de la décharge de l'énergie potentielle sursaturée d'un système métastable, va apparaître comme prise de forme et, à ce titre, au double sens *topologique* et *noétique* conjugué, 'in-formation'. (Garelli 2013, 15, my emphasis)

Transduction, intimately linked to the discharge of the oversaturated potential energy of a metastable system, will emerge as the shaping of a form and, thus, in a double sense—*topological* and *noetic*—as in-formation. (My translation and emphasis)

In the process of unfolding itself throughout time the transductive operation gives shape to a surface of immanence. Within the horizon of possibilities defined by its associated milieu and its multiple orders of magnitude, transductive processes do generate a specific space that can be mapped without recurring to external systems of coordinates. In parallel to the discharge of pre-individual potential energy, and to the interference between different scales, the transductive process *in-forms* a topological structure, generating a multi-dimensional shape. The information carried on through the transductive movements is not to be conceived as the mere transmission of a coded message—perfectly sent by a sender to a receiver—but much more as a ‘taking shape’ during the communication process itself. Information thus has two sides: a *noetic* side that carries the ‘structural germ’, and a *topological* side that renders this structural germ visible, audible, touchable, or perceptible in any other way. In its double function—noetic and topological—transduction integrates thought and becoming in one single dimension that is not external to its own terms.

While *deduction* needs an external principle to solve a local problem of a given field, and while *induction* (by definition) makes generalizations by retaining the common characteristics of all the terms of the field, *transduction* is the continuous creation of new dimensions within a system that establishes links and communication paths between its own disparate constitutive parts. Transduction engenders shapes and textures. It is in this sense that one can say that transduction points to a new concept of space based upon multiplicities, manifolds, vectors, and potentialities. It is not a matter of curves in a flat space, but of the curvature of the space itself. In the place of a transcendental space of reference—with its system of coordinates and its external/extensive properties—transduction creates a Riemannian surface, an immanent space with intensive, internal, and intrinsic properties. The structural germ carries a powerful vector of transport, whose precise speed and direction are the relentless masons of the unfolding form and structure. Where the hylemorphic scheme imposes a form on a matter within a metric Euclidean space of coordinates, Simondon’s transductive perspective enables multiplicities and differential manifolds to emerge within self-defined space-surfaces. Vectors and functions replace the traditional X-Y-Z system of coordinates. As Manuel DeLanda has put it,

while the points in a metric space are defined by a set X, Y, and Z values, presupposing a set of Cartesian coordinates and a transcendent global space in which the space being studied is inscribed, a differential manifold is a field of rapidities and slownesses, the rapidity or slowness with which curvature changes at each point. (DeLanda 2012, 227)

Topology becomes more relevant than geometry: the latter has to do with measurements and locations on an external system of reference, while the former disregards measurement, and deals

only with the structure of space qua space. Figures and shapes are not placed *in* space; they constitute spaces in/of their own. As Arkady Plotnitsky argued,

this view radically transforms our philosophy of space and matter, and of their relationships, by leading to a horizontal rather than vertical (hierarchical) science of space as a 'typology and topology of manifolds', which Deleuze and Guattari associate with the end of dialectic and extend to spaces that are philosophical, aesthetic, cultural or politic. (Plotnitsky 2009, 203)

Such can be the powerful consequences of a topological understanding of transduction, leading to a non-Euclidean mode of thought—enabling individuations to become space-surfaces of potentially infinite dimensions, and liberating relationships from any form of transcendental determination. The notion of a topological space of possibilities is what allowed Deleuze to overcome and replace the old dichotomy—that dominated philosophy from Aristotle to Kant and Hegel—between 'the general' and 'the particular', implying hierarchical (vertical) distributions of forms and matter. Beyond a system of categories, Deleuze's actual world is populated only by individual singularities, which result from transductive processes of individuation. The new spaces and their defining planes of reference or composition are deeply immanent and opposed to planes of transcendence, which always come from above, as if designed "in the mind of god [...] [and] involving the formation of subjects" (Deleuze 1988, 128). In contrast with this, a plane of immanence has no supplementary dimension. Such a plane "will be perceived [only] with that which it makes perceptible to us, as we proceed" (Deleuze 1988, 128). From a topological point of view, a plane of immanence and a plane of transcendence are fundamentally different—"we do not live or think or write in the same way on both planes" (Deleuze 1988, 128).

3.7. Somatic transduction (corporeality)

A further extension of the concept of transduction has been proposed by Brian Massumi, who, focusing on the human body, defined it as a 'transducer of the virtual':

In sensation the thinking-feeling body is operating as a transducer. If sensation is the analog processing by body-matter of ongoing transformative forces, then foremost among them are forces of appearing as such: of coming into being, registering as becoming. The body, sensor of change, is a transducer of the virtual. (Massumi 2002, 135)

Following this sentence, the body—every single human body—is not only the individuated ongoing result of transductive process: it is itself a transducer, it is itself part of diverse transductive chains of events. The human body is not any more the privileged place of an idealized subjective and uncorrupted 'I', but a conglomerate of molecules thorough which impersonal and pre-individual singularities have the chance to become actualized in specific events such as cell fecundation, embryonic stage, fluid- and organ-formation, nervous system, brain, heart, psychic and collective modes of individuation, noetic, cultural and artistic expressions, and so on and so forth. This wide ranging body is pre-human, human, non-human, and post-human; all at the same time, through

different processes of modulation and transduction. The crucial point is the death of the subject, which allows the body to embrace energetic processes that enable unpredictable events to happen—no one will ever know what a body can do. Especially because it is not dependent on any idealized ‘will’ of the subject.

In music, be it in the act of composing or performing, the main interface or transducer between the innumerable incompatible potentials and their effective, acoustic concretization is precisely the human body. A body radically energized, activated by desire production, set-in-motion by diverse simultaneous impulses, attentively listening to its own ongoing manifestations, loving what it does, hating what it does, and continuing in the uncertainty of the future. It is a transducer within a metastable system, but it is itself another metastable system. With the human body we enter a realm of transducers of transducers, something like an *ensemble of transducers*. A performer’s body is “a body that beats” (Barthes 1985, 299), an excited body just about to explode, just about to initiate an energetic discharge from the uncontainable tensions of music and somatic intensities to newly individuated tensions and sensations. Instead of a logic of sense (with clear forms and matters), the artist’s body operates as a transducer within a logic of sensation (immersed in intensive transductive processes).

The body that notates a score, vibrates its vocal cords, plays an instrument, or conducts an orchestra is a complex organism, inhabited by diverse layers of information, which modulate and shape the actual rendering of musical events. As every musician knows ‘no one knows what a body can do’, but beyond this Spinozian claim, one can affirm with Deleuze that “[...] no one knows ahead of time the affects one is capable of; it is a long affair of experimentation, requiring a lasting prudence—a Spinozian wisdom that implies the construction of a plane of immanence or consistency” (Deleuze 1988, 125). It is the construction of such planes of composition, of unprecedented assemblages of forces and intensities that moves the desiring body in the first place. Linguistic metaphors, structural analysis, or semiological studies cannot explain or interpret such productions of desire. Signs, forms, and forces are not to be ‘interpreted’, but transduced and reassembled in a vital relation that allows the artist to become an experimenter, or, as Anne Sauvagnargues beautifully named it, an *operator of forces*:

Un groupement de forces, une interprétation des forces, dirait Nietzsche, c’est-à-dire un mode d’affection: le signe est la force en tant qu’elle est non pas interprétée, mais éprouvée dans une relation vitale qui permet à l’artiste d’être un expérimentateur, un *opérateur de forces*. En cela consiste l’invention de formes nouvelles, qui lie l’art à l’exploration des marges et en propose une théorie intensive. (Sauvagnargues 2005, 54; my emphasis)

A grouping of forces, an interpretation of forces, says Nietzsche; in other words, a mode of affection. A sign is a force as long as it is not interpreted, but it is felt in a living relation that allows the artist to be an experimenter, an operator of forces. This is where the invention of new forms takes place, which binds art to the exploration of margins about which it posits an intensive theory. (Sauvagnargues 2013, 33)

If we think with Simondon and use his terminology, such forces are to be captured from the tendentially inexhaustible reservoir of potential energy and from the negentropic loaded information of the structural germs. Once set in motion, the capture of forces prolongs itself, originating specific individuations of (new) forces and textures. More than for any other kind of individual, the human body reflects what Simondon expressed in general terms about universal individuals: “The individual, by its energetic conditions of existence, is not only inside of its own limits; *it constitutes itself at the limit of itself and exists at the limit of itself*; it comes out of a singularity” (Simondon 1995, 60; my emphasis). A sentence that comes close to the famous Spinozian definition III from his *Ethics*: “By substance I mean that which is in itself and is conceived through itself” (*Per substantiam intelligo id, quod in se est et per se concipitur*; *Ethics*, I, 3),¹¹ an affirmation that had the potential to exclude transcendence from the realm of things.

3.8. Permanent transduction: ‘being-in-the-world’ and *fluctuatio animi*

The particular specificity of living organisms, and what differentiates them from purely technical objects is that their transductive modes of individuation actually never stop (except with death, of course). While technical objects can cease their individuating processes, living organisms (for Simondon and Deleuze) are individualities that simply do not cease the individuating process: they are in a state of *permanent transduction* (cf. Borum 2017, 114, footnote 12). The example of brick fabrication shows how the transduction happens “when the heat from burning and the pressure from the mould cause the clay molecules to simultaneously take on a collective individuality, held together by potential energy” (Borum 2017, 114). Once moulded, transduction finishes, and the brick stops being individuated. In case the internal resonance is incomplete, the brick will crack in the burning process, not achieving an individuated state. With living organisms transduction never stops due to their fundamental and necessary metastability as a complex system inhabited by a permanent structural germ, namely DNA. Additionally, another dimension comes into play: living organisms not only emerge as solution or resolution of pre-individual tensions, or of impersonal structural germs, they also evolve with and within processes of decision-making-processes whereby the resolution “is not a *solution*, but a *decision*” (Stiegler 2012, 187). Within somatic transductions there is a special type of ‘structural germ’, which is motivated by decision and proactive action in the midst of doubt and uncertainty. Simondon referred to it as *fluctuatio animi*, a term of obviously Spinozian lineage:

This condition of the mind arising from two conflicting emotions is called ‘vacillation,’ [Lat. *fluctuatio animi*] which is therefore related to emotion as doubt is related to imagination, and there is no difference between vacillation and doubt except in respect of intensity. (Spinoza 2002, 288 [*Ethics*, III, Prop. XVII, Scholium])

Simondon recurs to the Spinozian notion in relation to the innumerable ways of ‘being in the world’. The notion of ‘adaptation’ gains an important weight as a qualifier of living forms of individuation: “adaptation is a permanent ontogenesis” (Simondon 2013, 211, my translation). Being in a world that does not coincide with itself, which can only be but apprehended through a fundamental ‘disparation’, living organisms have to take decisions in order to survive, acting resolutely in the

midst of chaos and uncertainty. Such action doesn't happen at one single level or field of potentialities, but at many different levels and scales at the same time. As Simondon wrote:

La *fluctuatio animi* qui précède l'action résolue n'est pas hésitation entre plusieurs objets ou même entre plusieurs voies, mais recouvrement mouvant d'ensembles incompatibles, presque semblables, et pourtant disparates. Le sujet avant l'action est pris entre plusieurs mondes, entre plusieurs ordres; l'action est une découverte de la signification de cette disparation, de ce par quoi les particularités de chaque ensemble s'intègrent dans un ensemble plus riche et plus vaste, possédant une dimension nouvelle. (Simondon 2013, 210)

The *fluctuatio animi* that precedes any resolute action is not a hesitation between different objects or different paths, but rather between a changing collection of incompatible sets, nearly identical but still disparate. Before acting, the subject is suspended between diverse worlds, diverse orders; his action is a discovery of the meaning of this fundamental disparity, of the reason why the particles of every set join together in a richer, more far-reaching set, gaining a new dimension. (My translation)

4. Conclusion

This chapter was conceived as a contribution to the establishment of foundational ground to my ongoing theoretical and artistic work towards a dynamic theory of musical works and their performance. Gilbert Simondon's concept of transduction plays a major role in this theory, offering a varied set of operational strategies, and suggesting new modes of conceptualizing and doing musical performances (including composition). Crucially, it enables musical studies to move beyond formalist, analytical, historiographic, organological, or philological approaches (which deal with *res extensa*), but also away from sociological, psychological, and subjectivity-based investigations (that are concerned with a *human, all too human* 'I'). With transduction the energetic dimension and the non-human parts of intensive musical processes gain visibility and can be addressed. To compose or to perform a musical work is to enter transductive processes, whereby the human body implicated in such activities sometimes functions as a transducer, other times as the individuated entity within the bigger event of ongoing music making.

Within the overall project of Simondon to articulate a theory of individuation for physical matter, biological organisms, psychic and collective agencies, technology and the arts, the latter gain a privileged position. Pre-individual clouds of potentiality are present in all modes of individuation, but the artistic ones make them experienceable, or at least almost experienceable. If individuation comes from an infinite set of possibilities to a finite emergence of an event, this event perforates the here-and-now of the empirical present, projecting it into new fields of future infinite possibilities. As Deleuze and Guattari famously proposed: "art wants to create the finite that restores the infinite: it lays out a plane of composition that, in turn, through the action of aesthetic figures, bears monuments or composite sensations" (Deleuze and Guattari 1994, 197).

Simondon's notion of transduction allows us to think of the plane of artistic creation as the material individuation of complex assemblages of forces, and not as the deterministic or aleatoric stratification of the monist and hylemorphic conceptions. Between art and philosophy, "the role of art turns out to be crucial and paradoxical: it is from art, in so far as it is real experience, that philosophy awaits theoretical renewal, but this renewal is not produced conceptually: it is elaborated on the plane of artistic work" (Sauvagnargues 2016, 68). It is from here that I started, as a performer, and it is from here that I wish to continue: from the production of artistic works, assemblages, and events, offering the artistic pendant to this essay. And in this sense, this chapter is simply a transient individuation within a longer transductive process.

Notes

¹ *Actual* and *virtual* describe the fundamental domains of Gilles Deleuze's differential ontology, and they have been present in Deleuze's terminology since his first published texts on Henri Bergson (1956). According to Anne Sauvagnargues (2003, 22), "the actual designates the present and material state of things, while the virtual refers to everything which is not currently/presently here (including incorporeal, past, or ideal events)" (2003, 22, my translation). It is the exchange and communication between the actual and the virtual that enable a dynamics of becoming as different/ciation and creation.

² Deleuze was about to present Bergson's concept of 'intuition' and the sentence I am quoting here was a kind of spoken footnote that prepared the audience for the density and thickness of Bergson's concept.

³ Original: "Une idée philosophique, il me semble, c'est toujours une idée à niveaux et à paliers. C'est comme une idée qui a ses projections. Je veux dire, elle a plusieurs niveaux d'expression, de manifestation. Elle a une épaisseur. Une idée philosophique, un concept philosophique, c'est toujours une épaisseur, un volume. Vous pouvez les prendre à tel niveau, et puis à un autre niveau, et à un autre niveau, ça [ne] se contredit pas. Mais c'est des niveaux assez différents" (Deleuze 2006, 0'55"-1'26").

⁴ Original: "On peut définir un relais continu comme un transducteur, c'est-à-dire comme une résistance modulable interposée entre une énergie potentielle et le lieu d'actualisation de cette énergie : cette résistance est modulable par une information extérieure à l'énergie potentielle et à l'énergie actuelle" (Simondon 1958, 143 [2012, 197]).

⁵ Original: "[...] le transducteur ne fait partie ni du domaine de l'énergie potentielle, ni du domaine de l'énergie actuelle: il est véritablement le médiateur entre ces deux domaines, mais il n'est ni un domaine d'accumulation de l'énergie, ni un domaine d'actualisation: il est la marge d'indétermination entre ces deux domaines, ce qui conduit l'énergie potentielle à son actualisation. C'est au cours de ce passage du potentiel à l'actuel qu'intervient l'information; l'information est condition d'actualisation" (Simondon 1958, 143 [2012, 197]).

⁶ This sentence was part of Simondon's reply to a question posed by Anita Kéchickian, in her interview from 1981, published in a reduced version in the journal *Esprit* (1983) and as *Sauver l'objet technique* in Simondon 2014 (447–454).

⁷ This is a point of contention that involves the notions of 'potential' and 'real potential', which will be addressed in the next section. With his notion of 'potential' Simondon seems to exclude the Deleuzian 'virtual', but not so with his 'real potential', which comes closer to the Deleuzian understanding of the 'virtual'.

⁸ Scott continues: "The taking of form is the passage from real metastability to a stable state. But this operation, for Simondon, has nothing to do with the notion of virtuality, which he argues is composed by an imagined ideal state ("Good Form"). In other words, completely opposite to Deleuze, who worries that one might confuse virtual and the possible [Deleuze 1994, 211–15], Simondon finds them to be synonymous" (Scott 2014, 17).

⁹ Original: "L'heccéité n'est pas un espace-temps qualifié mais un pur dynamisme spatio-temporel, qui ne combine pas empiriquement deux espace-temps préexistants mais préside au contraire à leur genèse. Elle est la mise en communication des dimensions hétérogènes du temps, d'où dérivent les espace-temps" (Zourabichvili 2011, 108).

¹⁰ Whereas Duns Scotus' *haecceitas* is "a non-qualitative property responsible for individuation and identity, [which is] supposed to explain individuality" (Cross 2014, §1), Simondon's *eccéité* is modal, pointing to a never-finished process of emergence or appearance ('here is'). But Simondon keeps the Duns Scotian focus on the 'thisness' (a *haecceitas*, from the Latin *haec*, meaning 'this') as opposed to a 'whatness' (a *quidditas*, from the Latin *quid*, meaning 'what') (cf. Cross 2014, §1). For a detailed introduction on Duns Scotus' theory of individuation see Gérard Sondag 2005.

¹¹ Reflecting on modes of performance of immanent expression, Arno Böhler inspiringly interpreted this famous sentence by Spinoza as follows: "For Spinoza, substance does not exist *in* something *else*. It exists, rather, *in itself* such that it conceptualizes itself *from within itself*" (Böhler 2014, 171).

Works Cited

- Barthélémy, Jean-Huges. 2012. "Fifty Key Terms in the Works of Gilbert Simondon." Translated by Arne De Boever. In *Gilbert Simondon. Being and Technology*, edited by Arne De Boever, Alex Murray, Jon Roffe, and Ashley Woodward, 203–231. Edinburgh: Edinburgh University Press.
- Barthes, Roland. 1985. "Rasch." Translated by Richard Howard. In *The Responsibility of Forms. Critical Essays on Music, Art and Representation*, 299–312. Berkeley/Los Angeles: University of California Press.
- Beistegui, Miguel de. 2012. "Science and Ontology: From Merleau-Ponty's Reduction to Simondon's Transduction." In *Gilbert Simondon. Being and Technology*, edited by Arne De Boever, Alex Murray, Jon Roffe, and Ashley Woodward, 154–175. Edinburgh: Edinburgh University Press.
- Böhler, Arno. 2014. "Staging Philosophy: Toward a Performance of Immanent Expression." In *Encounters in Performance Philosophy*, edited by Laura Cull and Alice Lagaay, 171–196. London: Palgrave Macmillan.
https://doi.org/10.1057/9781137462725_9
- Borum, Peter. 2017. "The Notion of 'Singularity' In The Work of Gilles Deleuze." *Deleuze Studies* 11 (1): 95–120.
<https://doi.org/10.3366/dls.2017.0253>
- Bowden, Sean. 2012. "Gilles Deleuze, a Reader of Gilbert Simondon." In *Gilbert Simondon. Being and Technology*, edited by Arne De Boever, Alex Murray, Jon Roffe, and Ashley Woodward, 135–153. Edinburgh: Edinburgh University Press.
- Chateau, Jean-Yves. 2014. "Présentation." In Gilbert Simondon, *Sur la technique*, 1–21. Paris: Presses Universitaires de France.
- Cross, Richard. 2014. "Medieval Theories of Haecceity." In *The Stanford Encyclopedia of Philosophy* (Summer 2014 Edition), edited by Edward N. Zalta. <https://plato.stanford.edu/archives/sum2014/entries/medieval-haecceity/>
- De Assis, Paulo. 2017. "Rasch²⁴—The Somatheme." In *Discipline and Resistance: Artists and Researchers at the Orpheus Institute*, edited by Jonathan Impett. Leuven: Leuven University Press (in print).
- De Boever, Arne, Alex Murray, Jon Roffe, and Ashley Woodward, ed. 2012. *Gilbert Simondon. Being and Technology*. Edinburgh: Edinburgh University Press.
- DeLanda, Manuel. 2012. "Deleuze, mathematics, and realist ontology." In *The Cambridge Companion to Deleuze*, edited by Daniel W. Smith and Henry Sommers-Hall, 220–238. Cambridge: Cambridge University Press.
<https://doi.org/10.1017/CCO9780511753657.011>

- Deleuze, Gilles and Claire Parnet. 1987. *Dialogues*. Translated by Hugh Tomlinson and Barbara Habberjam. New York: Columbia University Press.
- Deleuze, Gilles, and Felix Guattari. (1972) 1983. *Anti-Oedipus: Capitalism and Schizophrenia*. Translated by Robert Hurley, Mark Seem, and Helen R. Lane. Minneapolis: University of Minnesota Press.
- . (1980) 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. Translated by Brian Massumi. Minneapolis: University of Minnesota Press.
- . 1994. *What is Philosophy?* Translated by Hugh Tomlinson and Graham Burchell. New York: Columbia University Press.
- Deleuze, Gilles. 1988. *Spinoza: Practical Philosophy*. Translated by Robert Hurley. San Francisco: City Light Books.
- . 1994. *Difference and Repetition*. Translated by Paul Patton. New York: Columbia University Press.
- . (1981) 2006. *Gilles Deleuze. Cinéma*. Audio recording of the course on cinema from 1981 (Paris VIII), selected and edited by Claire Parnet and Richard Pinhas (6 CDs). Paris: Gallimard. CD1, Track 2 ("L'intuition de Bergson", 10.11.1981).
Also available online at http://www2.univ-paris8.fr/deleuze/IMG/mp3/01_10_11_81_502_1A.mp3; transcribed by Fanny Douarche at http://www2.univ-paris8.fr/deleuze/article.php3?id_article=17 (§12).
- Didi-Huberman, Georges. 2011. *Atlas ou le gai savoir inquiet*. Paris: Minuit.
- Duns Scot. 2005. *Le principe d'individuation*. Edited by Gérard Sondag. Paris: Vrin.
- Garelli, Jacques. 2013. "Préface. Introduction à la problématique de Gilbert Simondon." In Gilbert Simondon, *L'individuation à la lumière des notions de forme et d'information*, 9–19. Grenoble: Jérôme Millon.
- Massumi, Brian. 2002. *Parables for the Virtual. Movement, Affect, Sensation*. Durham/London: Duke University Press.
<https://doi.org/10.1215/9780822383574>
- . 2012. "Technical Mentality Revisited: Brain Massumi on Gilbert Simondon. An interview with Arne De Boever, Alex Murray and Jon Roffe." In *Gilbert Simondon. Being and Technology*, edited by Arne De Boever, Alex Murray, Jon Roffe, and Ashley Woodward, 19–36. Edinburgh: Edinburgh University Press.
- Michaud, Yves. 2012. "The Aesthetics of Gilbert Simondon: Anticipation of the Contemporary Aesthetic Experience.", translated by Justin Clemens. In *Gilbert Simondon. Being and Technology*, edited by Arne De Boever, Alex Murray, Jon Roffe, and Ashley Woodward, 121–132. Edinburgh: Edinburgh University Press.
- Plotnitsky, Arkady. 2006. "Manifolds: on the concept of space in Riemann and Deleuze." In *Virtual Mathematics: The Logic of Difference*, edited by Simon Duffy, 187–208. Manchester: Clinamen.
- . 2009. "Bernhard Riemann." In *Deleuze's Philosophical Lineage*, edited by Graham Jones and Jon Roffe, 190–208. Edinburgh: Edinburgh University Press.
- Sauvagnargues, Anne. 2003. "Actuel/Virtuel." In *Le vocabulaire de Gilles Deleuze*. Les Cahiers de Noesis, nr. 3: 22–29.
- . 2005. *Deleuze et l'art*. Paris: Presses Universitaires de France.
- . 2013. *Deleuze and Art*. Translated by Samantha Bankston. London and New York: Bloomsbury.
- . 2016. *Artmachines. Deleuze, Guattari, Simondon*. Translated by Suzanne Verderber with Eugene W. Holland. Edinburgh: Edinburgh University Press.
- Scott, David. 2014. *Gilbert Simondon's Psychic and Collective Individuation: A Critical Introduction and Guide*. Edinburgh: Edinburgh University Press.
- Simondon, Gilbert. (1954–1958) 1989. *L'individuation psychique et collective*. Paris: Aubier.
- . (1964) 1995. *L'individu et sa genèse physico-biologique*. Grenoble: Jérôme Millon.
- . (1958) 2012. *Du mode d'existence des objets techniques*. Paris: Aubier.
- . (1954–1958) 2013. *L'individuation à la lumière des notions de forme et d'information*. Grenoble: Jérôme Millon.
- . (1953–1983) 2014. *Sur la technique*. Paris: Presses Universitaires de France.

- Sondag, Gérard. (1992) 2005. Introduction to *Le principe d'individuation* by Duns Scot, 7–70. Paris: Vrin.
- Spinoza, Baruch. 2002. *Complete Works*. With translations by Samuel Shirley, edited by Michael L. Morgan. Indianapolis/Cambridge: Hackett Publishing Company.
- Stiegler, Bernard. 2012. "The Theatre of Individuation: Phase-Shift and Resolution in Simondon and Heidegger." In *Gilbert Simondon. Being and Technology*, edited by Arne De Boever, Alex Murray, Jon Roffe, and Ashley Woodward, 185–202. Edinburgh: Edinburgh University Press.
- Toscano, Alberto. 2009. "Gilbert Simondon." In *Deleuze's Philosophical Lineage*, edited by Graham Jones and Jon Roffe, 380–398. Edinburgh: Edinburgh University Press.
- Zourabichvili, François. 2011. "Deleuze. Une philosophie de l'événement." In *La philosophie de Deleuze*, edited by François Zourabichvili, Anne Sauvagnargues and Paola Marrati, 1–116. Paris: Presses Universitaires de France.

Biography

Paulo de Assis studied piano, composition, musicology, and architecture. He authored two books (*Luigi Nonos Wende*, Wolke Verlag; and *Domani l'Aurora*, Olschki, Florence), and edited ten volumes, including *Experimental Affinities in Music* (Leuven University Press, 2015), and *Virtual Works—Actual Things* (LUP 2017, in print). Active both as a performer and researcher he is the Principal Investigator of the European Research Council project Experimentation versus Interpretation (musicexperiment21.eu), and chair of the International Conference on Deleuze and Artistic Research (dare2017.org).

© 2017 Paulo de Assis



Except where otherwise noted, this work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).