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THE LIVING DIFFERENCE. MORPHOLOGICAL ISSUES IN RUYER, SIMONDON AND DELEUZE

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1. Fortunes of the morphological idea

If we can discuss a subterranean morphological tradition in France, it is only by approximation. Following such a tradition means understanding a philosophical impulse, a grounding idea or intuition, that raises in Goethe's thought as the question of a specific kind of knowledge and stems from the necessity of understanding the living form before and beside its biological definition. This idea inspired a peculiar turn of the post-Kantian undertaking, insofar as the knowledge of the living form evokes the reunion of the conditions of experience with the causes of reality. Indeed, understanding a form means connecting to its specific becoming, to its *vivum*; and this cannot be accomplished other than by corroborating the continuous act of genesis, therefore by constituting oneself as a co-cause of uncodifiable results. The morphological sight is about participation in an act of inner vision, in incorporeal upheavals – as the "living" corresponds to an ideal dimension that belongs to the corporeal as both its rhythmicity and its effectuality: the «life of the essence» as the essence itself [Van Eynde 2005, 108]. More or less explicitly, all these solutions tend to a metaphysical view in which the Being is the concrescence of reality and knowledge takes form as – in Schelling's words – «the empiricism extended to unconditionality» [Moiso 1998, 75]. Here, the utopia of a «purely heterological knowledge» [Derrida 1967/1980, 189] corresponds to participation in nature's archetypal power. Of such magnitude is the legacy of *Goethezeit* [see for example Poggi 2000; Breidbach & Vercellone 2010].

It is interesting to notice how this philosophical enterprise reappears in original terms in the middle of the 20th century in France, as Merleau-Ponty, in *The Visible and the Invisible*, reflects upon a «Being» that is «*what requires creation* for us to experience it» [Merleau-Ponty 1964/1968, 197], Gilbert Simondon seeks the reunion of the «*condition of possibility* of knowledge» with the «*causes of existence*» [Simondon 2005, 257, my translation], and Deleuze, very similarly, tries to solve the «wrenching duality» between the «conditions of experience in general» and the «conditions of real experience» [Deleuze 1969/1990, 260] through a «superior empiricism» in which «the concept is identical to the thing» [Deleuze 2002/2003b, 43]. The spirit of those years is reflected in an atmosphere of renewed metaphysical assertiveness.[1] The rise of a post-critical paradigm reintroduces the idea of a living transcendental, be it Flesh or Nature as «wild Being and Logos» [Merleau-Ponty 1964/1968, 169], a principle of individuation as the trans-objective genesis of the Being (Simondon) or a process of becoming caught in its differentiation (Deleuze). Such perspectives aim at that «life of the essence» which is the form intended as its power of appearance, constituting the radicality and the unconditionality of experience: generativity as the only possible generality [see Barbaras & Milan 2001]. This great attempt has been recognized as the effort to make the morphogenetic order of nature transcendental [Malabou 2014/2016]. It remains inexplicable, especially in its surprising relations to the philosophical achievements of *Goethezeit*, if not traced back to two cores of thought, Henri Bergson's metaphysics of life and Georges Canguilhem's philosophy of the living, as two major historico-philosophical attractors.

Bergson's thought will be decisive for more than one of the following generations, even if as a heritage to repudiate [Bianco 2016]. Its in-

[1] Ruyer, Simondon and Deleuze can all be considered "post-critical metaphysicists". The «*dogmatisme hypothétique*» proclaimed by Ruyer in his doctoral thesis [1930, 5] will evolve into a full-fledged mythological dogmatism. During a memorable discussion with Paul Ricoeur, Simondon [1960, 188] defines his philosophical perspective a «transobjectivism»; the first part of his work on individuation is indeed bluntly metaphysical. Deleuze revealed that in his youth he considered himself as the «most naïve» among his colleagues [1990/1995, 88] and he is now recognized unanimously as a 20th-century metaphysicist.

fluence is of utmost importance for what concerns our subject: Bergson was in fact the most important French philosopher of his time to take an interest in the problems of theoretical biology beyond Darwinism (mostly received through Spencer) and to come into contact with the German tradition in the field of *Lebensphilosophie*. *Creative Evolution* (1907) approaches the great flourishing of 19th-century German biology, through theories such as August Weismann's, Hans Driesch's, Theodor Eimer's, Johannes Reinke's; Bergson retrieves the French vitalist and life sciences tradition from the Montpellier School to Claude Bernard and inserts this large number of authors in a consistent – and later dominant – philosophical framework worthy of contemporary sciences. Bergson's philosophy comes to Haeckel in Jena, to Simmel in Berlin, to Driesch in Heidelberg and to Scheler in Göttingen, with numerous reciprocal influences [Zanfi 2013]. It can be stated, then, that Bergson receives, elaborates and dialogues with a tradition that had never severed ties with the biocentrism of the *Goethezeit* and with the vitalist tradition itself. Thanks to the importance of his reflection, Bergson will decisively contribute to revitalizing ancient problems under the aegis of the status of the living and of «integral experience»; although his successors will often point out his philosophical failures and hide the significance of his influence. It would be no historical inaccuracy to affirm that the 20th-century French philosophy of life takes as its springboard «the failure of Bergsonism» as much as his achievements [Barbaras 2008].[2]

Georges Canguilhem, instead, was the one philosopher to devote his research to the problems of the living and to vitalism «as a permanent exigency» [Canguilhem 1965/2008, 62]. Canguilhem's approach to Bergsonism can be divided in three different phases, as summarized well by Bianco [2013]. After a first rejection, not far from Merleau-Pon-

[2] From a theoretical viewpoint, this failure is linked with the "pureness" of Bergsonian vital principle, i.e. with the background spiritualism that leads him to subordinate the inorganic along with all the mechanical processes, and to emphasize an abstract idea of Life, originally deducted from consciousness. Simondon shares Canguilhem's aversion to Bergson as a philosopher of the «pure process», of the continuous flux, but he shows having read him carefully. Ruyer often takes divergent positions from Bergson, especially on the theme of perception. Only Deleuze will restore Bergsonian philosophy almost completely, though with considerable elaborations.

ty's and Sartre's criticisms, he deals more thoroughly with Bergson's philosophy during the 1940s and he finally defines his reading in two lectures of the 1960s, later gathered in *La vie et le concept*. In general, Canguilhem's attention to the living does not derive directly from Bergson, but allows him to restore Bergsonism in light of some common grounds.[3] His mediation holds the merit of shifting the focus from the Bergsonian metaphysics of life to the living singularity in itself. By focusing on the problem of the organism[4] and its specific *logos*, Canguilhem gives French historical epistemology a breakthrough towards «biological philosophy» as a philosophy of the living form, drawing directly – just like Merleau-Ponty[5] – from the morphological tradition (von Weizsäcker, Buytendijk, Goldstein, von Uexküll) and facing specific issues such as the conceptual status of the pathological, the physiological notion of reflex, or the concept of *milieu*. In Canguilhem's view, morphogenesis is recognized as the living's only norm, to which the formation of concepts itself must be traced back. Biological knowledge is such that «it is the *pathos* which conditions the *logos*» [Canguilhem 1966/1991, 222]; in general, as Foucault puts it, «forming concepts is one way of living, not of killing life» [Canguilhem 1966/1991, 21], since life is defined by its creative auto-normativity.

Once having linked Bergson's and Canguilhem's theories to some of their scientific references, it is easier to understand how the specu-

[3] One possible link between Canguilhem's research and the Bergsonian legacy – considered as relatively independent from Bergson's philosophy – could be recognized in the field of theoretical psychiatry, a not strictly philosophical area where Bergson's ideas exerted a deep and wide influence, in figures such as Pierre Janet, Eugène Minkowski, Constantin von Monakow and Raoul Morgue [see Babini 1990].

[4] Between the 1920s and the 1930s, organicism established itself as the leading paradigm in biology, overcoming the feud between vitalists and physicalists [Mayr 1997, 16-17]. One of the most relevant organicist scholars of the first half of the century, the neurologist Kurt Goldstein, was a major source of both Canguilhem and Merleau-Ponty.

[5] Merleau-Ponty's reflection, coeval to Canguilhem's, comes autonomously to a morphological (and specifically *naturphilosophisch*) comprehension, drawing directly from authors like von Weizsäcker, Buytendijk and Kurt Goldstein, and deals with Bergsonism as well. His interest for the living, however, remains inseparable from the phenomenological tradition and subordinated to it.

lative migration took place: authors like Driesch, von Weizsäcker, von Uexküll, Buytendijk and Goldstein (to name only the most important) are dense with echoes of a tradition that goes back to the age of Goethe throughout the history of life sciences. Hans Driesch above all had already carried out a profound work of reconstruction of such a tradition, starting from Stahl (and therefore from Leibniz) up to the «neo-vitalistic» conception of his time, passing through Wolff and Blumenbach, Kant and the nature-philosophers, the consolidation of physiology and the physicalist tradition [Driesch 1905]. The morphological idea, in this sense, corresponds to the survival of certain issues: the problem of living individuality, perfectly sketched by Driesch himself during his Gifford Lectures [1908] and the ensuing lessons at London University [1914]; the problem of what "living" is, whether a property, a force, or a structure, and the consequent problem of the duality between life in general and living singularity (seen as an organism or not); lastly, the relation between life and human knowledge, or the possibility of an *in actu* understanding that does not reduce its object to a collection of *data*, hence to the laws of identity and causality.[6] The actual subject of a philosophy of the living is a paradoxical and impossible one as such, as it is not objectual: it is the impersonal act in which the living consists, the act of generation or genesis, the morphogenetical *a priori*.[7]

These were the problems of Goethe, and of Kant in the *Kritik der Urteilskraft* and in the *Metaphysische Anfangsgründe der Naturwissenschaft*; then of an entire generation of scientists and philosophers. These problems formed the core of gestating German biology [Zammito 2018] and survived through both materialist and vitalist trends in theoretical biology, up to their elaboration in 19th-century philosophy. The condi-

[6] These three issues are easily recognizable as aspects of the same phenomenon. «A finite living being partakes of infinity, or rather, it has something infinite within itself» which ensures that it eludes the mereological inquiry [Goethe 1988, 8]. The epistemological consequence is that «a living thing cannot be measured by something external to itself» [*ibid.*]; the ontological consequence, instead, is that «no living thing is unitary in nature; every such thing is a plurality» [Goethe 1988, 64]: not a plurality of parts, but rather a plural whole, a manifold totality.

[7] Whence the most important statement of philosophical morphology: the substitution of the morphogenetical process of formation for the individual form, of *Gestaltung* for *Gestalt* [Goethe 1988, 63-64].

tions of knowledge were clearly adequate, in the France of the first half of the century, to produce such a fruitful resumption. Suffice it to look at the number of sources, both biological and philosophical, used by another thinker of the generation of Merleau-Ponty and Canguilhem – a much more isolated, but not less significant figure who orientated his research towards the problems of the living during the 1930s, Raymond Ruyer (1902-1987). The references made on the pages of *Néo-finalisme* [1952a] count works by Bertalanffy, Driesch, Waddington, Goldstein, von Uexküll and Darlington, studies devoted to animal mimicry, and wide-ranging theoretical works by French scholars.[8]

Ruyer is in all respects a solitary figure, who is only in present times receiving the attention that he deserves. Nonetheless, he played an active part in the philosophical elaboration of an epistemology of quantum physics (and in the peculiar vitalism that many quantum physicists, like Niels Bohr, were developing at the time); he was also one of the first philosophers to reflect upon the significance of cybernetics. After some first works of mechanist orientation, Ruyer built a metaphysics of life-forms becoming influenced by Whitehead and Samuel Alexander, especially in *Néo-finalisme* [1952a] and *La genèse des formes vivantes* [1958, 1967]; through an understanding of the life of matter and systems, he theorized in favor of a «true form» by facing one of deepest problems of morphology, that of auto-normativity. His initial theses benefited of an in-depth elaboration of the processes described by embryology, a real science guide until his last book, *L'embryogenèse du monde et le Dieu silencieux* (1983-87, published in 2013). Deleuze was a careful reader of Ruyer, from *Difference and Repetition* to the last pages of *What is philosophy?* [Deleuze & Guattari 1991/1994, 213], where Ruyer is declared the last representative of a vitalistic metaphysics of becoming and the only philosopher who understood the concept of form.

We can affirm that Deleuze (1925-1995) himself was a brilliant morphologist *malgré soi*. It has been established that Deleuze is in great debt to both Bergson's philosophy of life and to many coeval reflections on life sciences [see Pearson 1999]; he refuses the tradition-

[8] For example *L'autonomie de l'être vivant* by Louis Bounoure [1949], *Invention et finalité en biologie* by Lucien Cuénot [1941], *La science des monstres* by Étienne Wolff [1948] (Ruyer's companion in captivity during the war).

al concept of form and often criticizes Goethe, but faces most of the philosophical issues linked to the living, using many authors ascribable to the above-mentioned tradition (let us just name the re-elaboration of Dalcq's embryology and of August Weismann's Neo-Darwinism in *Difference and repetition*, the interpretation of von Uexküll's ethology and of Saint-Hilaire's transformism in *A Thousand Plateaus*, or the reconstruction of Leibniz's philosophy of nature in *The Fold*). Finally, he builds a greatly relevant theory of the living based on the concepts of genesis and affect.[9] The form, as has already been noted [Buydens 1990], ends up constituting a spectral presence in Deleuze's philosophy, whereas its actual enemy is organicist structuralism. A perspective centered on form as the ever-individuating, in any case, has never been contrary to the morphological assumption: in fact, the action and the status of the "force" as well as the inextricability of form and force have always been part of the problematic field revolving around the living [see Moiso 1999]. As regards the stress on speculative creativity and its power to trace back the conditions of reality by taking active part in them, Deleuze's «transcendental empiricism» can be seen as a real heir of Goethean empiricism (though under the auspices of Bergsonism).

Another essential source of Deleuze's philosophical fortune are the works of Gilbert Simondon (1924-1989), whose influence has been acknowledged since *Difference and Repetition*.[10] Only quite recently reappraised as an autonomous thinker, Simondon is author of a complete and original philosophy of the living, ingeniously extended to technical objects and becomings. Not unlike Ruyer, he sees in quantum physics and in cybernetics the chances for a new perspective on reality (but unlike Ruyer, with whom he enters discussions, he grants greater im-

[9] It is difficult to separate, from a certain point onwards, Deleuze's philosophy from Félix Guattari's contribution. However, there are numerous shifts of focus in the works written by Guattari alone in the same period: in *Chaosmosis* [1992], for example, genetic becoming is considered more from the perspective of production of subjectivity and of the chances of political resistance to codification, with greater interest in a redrafted systems theory.

[10] Simondon and Deleuze are practically the same age and they were both disciples of Georges Canguilhem, but Simondon came to write his most important work in 1958, whereas Deleuze wrote his first masterpiece (which is *Difference and Repetition*) ten years later, in 1968.

portance to the latter [see Bardin 2010/2015, 30-31]). His doctoral thesis on individuation (1958, entirely published only in 2005) presents a massive criticism of history of metaphysics, whose biggest unthought is the priority of relations upon structures: whence the sheer morphological project of substituting the notion of form with a concept of the living act of morphogenesis. From Simondon's relational metaphysics of individuation emerges the project of a new criticism – mindful of Bergson's notion of intuition – that will flourish in Deleuze's philosophy [see Sauvagnargues 2012; Alloa & Michalet 2017]. In the Simondonian masterpiece of 1958, *L'individuation à la lumière des notions de forme et information*, form is the concept to designate the constant *prise-de-forme* of the Being as creative and material semiosis without origin.

French «biophilosophy» [Gayon 2010] or «*philosophie biologique*» [Lecourt 2018][11] stands out from a more general "philosophy of biology" due to its assertiveness, which could be mistaken for a naïve, pre-critical metaphysical gesture [see Wolfe & Wong 2015]. In fact, this school of thought participated in a larger effort towards what we have mentioned as «post-criticism». Nowadays an analogous trend is deepening the link between the never-ending overcoming of Kantian transcendentalism and the categories of the living, in authors such as Catherine Malabou, Renaud Barbaras, Pierre Montebello, Iain Hamilton Grant; so that we can observe the 1950s-1960s «*moment du vivant*» [Worms 2009] from the viewpoint of a similar one [Worms 2013; Arnaud & Worms 2016]. Ruyer's, Simondon's and Deleuze's speculations on the living assume ever greater significance then, not least in relation to current life sciences [DeLanda 2002; Marks 2006; Protevi 2006, 2012, 2013; Koutroufinis 2014]. We have tried to emphasize the thread linking this particular moment, which we are going to explore theoretically, to a more dispersed, yet specific tradition that we have placed under the name of "morphological idea". A narrowing of the focus is motivated by the fact that even more than the idea of life, the one of form still raises a certain amount of interest, both in current philosophy and theoretical

[11] This category was used by Canguilhem [1957] in a review of Ruyer's book *Éléments de psychobiologie*, titled *Note sur la situation faite en France à la philosophie biologique*, but it has already appeared in the work of a most interesting philosopher of Bergson's time, *Éléments de philosophie biologique* by Félix Le Dantec [1907].

biology [see Vercellone & Tedesco 2020]. It would be utterly inaccurate to understand 20th-century French biophilosophy as merely derivative of the 19th-century German tradition, without considering the autonomy of French theory of life – let us just think of the Montpellier School (Bichat, Cabanis, Bordeu, Barthez), of French materialism (Maupertuis, Buffon, Diderot, and La Mettrie), and of such important figures as Louis Pasteur and Claude Bernard – and the long-standing and complex osmosis between the two traditions. Nonetheless, all the hopes of a newly found non-«biochauvinist» [Wolfe 2015] or «critic» [Worms 2018, 188] vitalism lie – this is our opinion – in the fortunes of an enriched, reformed morphology.

Many changes in today's life sciences lead one to reconsider the ban on vitalism, but as a back-up paradigm for the explanation of "the living" and its morphogenetic processes, beyond any temptation of biocentrism, hypostatization, or spiritualization. The current "vital turn" encourages one to comprehend and privilege the strategies of the living as models of creative consistence; this very sense of the current trends can be traced back to French biophilosophy as a sort of renewed morphology. Morphology, in its widest sense, corresponds to the problem of the consistency of becoming, hence to the problem of genesis – even as regards those "structural" solutions that should have solved the age-old problem of living individuality, like cellular theory and organicism [Moiso 1999]. Beyond the simple study of configurations as opposed to the anatomical study of internal structures and to the physiological study of living functioning, philosophical morphology's traditional domain extends by vocation to a philosophy of genesis. The theoretical path of this article will focus on outlining this aspect through the biophilosophical thesis of Ruyer, Simondon and Deleuze. These authors hold the fundamental merits of correcting the hierarchical centrality of organism in light of the priority of processes over structures, and of liberating vitalism from spiritualist reductionism through a broadened materialism. The issues of temporality, spatiality, and individuality will be taken as frames of reasoning.

2. Ecstatic and melodic temporality

Biological time has usually been ignored by philosophy of science in favor of its physical notion [Bouton & Huneman 2017]. In a morphology understood as ontology of becoming, the temporal dimension of form is the first problem to address. The oxymoron of morphological development is that of a non-sequential situation in which the result does not linearly follow the starting conditions, in which a genesis therefore takes place by virtue of a difference; a situation that nonetheless composes a recognizable rhythm, a nonpunctual path, a regime of stylistic orientations. There is a question of temporal *punctum*, writes Viktor von Weizsäcker in *Gestalt und Zeit*, and a question of temporal rhythm. This is the very problem displayed by embryogenesis: life is capable of rebuilding itself and of increasing in information through nonlinear paths, regulating a creative composition according to a not-entirely programmed norm and a seemingly oriented process of expression, in which the program is one with its own inflection. It is difficult to define, thus, *when* a genesis takes place. Just like the rise of epigenetics paved the way for Romantic vitalism, the philosophical implications of modern embryology – opposed to the emerging field of molecular biology – provided a starting point for our set of authors' speculations.[12] Ruyer has specifically reflected upon the impossibility of reducing an embryo's development to mechanist causality. The kind of causality that he calls «*de proche en proche*», by contiguity and juxtaposition (and therefore essentially spatial), reduces any becoming to identifiable parts in order to connect them by means of linear causality, like objects moved by Newtonian laws of motion. This kind of mechanist explanation has never been sufficient for explaining genetical processes, which are based on a *conatus* recognizable only *post festum*.

Especially in *Néo-finalisme* [1952a] and *La genèse des formes vivantes* [1958], Ruyer describes the life of matter as intrinsically processual: every existence is activity and every real entity, insofar as it is a «form», is «*forme-activité*» [Ruyer 1952a, 162]. The movement is not

[12] Karl von Baer, father of modern embryology, was indeed a disciple of Karl Friedrich Burdach, the one who tried to realize the Goethean project of morphology as an actual science. Von Baer maintained in many ways the morphological approach.

the property of a structure, it is instead constitutive of a structure. First comes the «sense», which is the spontaneous activity of forming, inherent to bodily structures as their non-psychological memory.[13] One must imagine «*une sorte de mélodie mnémique, immédiatement inhérent au tissu vivant, combinant son action avec celle des régulateurs secondaires, et présidant au jeu des relais chimiques*» [Ruyer 1952a, 46]. The genetical passage from one developmental stage to another is conceivable, then, through the concept of an immanent rhythm of matter, irreducible to a physical energy or to a single instant: like a melody, it corresponds to a whole domain, «*un certain rythme prolongé d'activités*» [Ruyer 1952a, 158-59], that belongs to a non-actual dimension of reality and keeps acting in every atom as a power of *liaison*. The mnemic potentials must interact, on a material level, with physico-chemical affects, which operate as triggering signals of the theme and regulate its unfolding within the space-time (for instance through genes).[14] But the actual path has always to be improvised: the whole precedes the parts as their relational and directional regime without causing them in a proper sense, since it is not external to them. In fact, the theme does neither resemble nor precede its realizations, which means that the process of actualization has an axiological status: it is never only a functioning operation, but rather an invention (since the previous stage does not necessarily imply the following).[15]

The accent is put on the activity in itself as a presence of the form

[13] In *Difference and Repetition*, Deleuze decomposes Ruyerian memory in three passive syntheses (biological present, reminiscence, and creation), making Ruyer's theory less vague and more complex. Already since *Bergsonism*, Deleuze designates with the Ruyerian term of «reminiscence» the active and virtual nature of the past.

[14] Ruyer argues against molecular genetics as a computational paradigm incapable of explaining the developmental processes and a new kind of preformism. He instead considers the genes not as direct causes in the morphogenesis, rather as occasional vehicles, signals useful to guide the process, simple means, as much as embryological inductors. Similarly, Simondon [2005, 180-182] underlines the equal value or the coextensivity of *soma* and *germen* in the construction of the living and links morphogenesis to non-codifiable informative dynamics.

[15] «*Le passage des potentiels dans un monde d'individus actualisateurs est une opération enrichissante, une nouveauté incessante, toujours un effort et parfois un drame. Ce n'est pas une vaine redite*» [Ruyer 1952b, 418].

inherent to the structure, i.e. on its semantic status, its constitutive life. The temporal essence of things emanates from their non-temporal dimension. What is left unthought is the genetic event, that is when and where exactly life melds with matter. Albeit, as we have seen, it is wrong to start with such a duality (since matter is intrinsically alive, and life is material), one can conceive a specific point where the line bends: the moment of the force, the affect, the consistency of application of the flux. Such a genetical moment must be external to the series of points, as the unquantifiable source of quantification, neither discrete nor continuous but rather "ecstatic". The affect corresponds to the ecstasy of matter made ideal.

This dualism of vertical instant and horizontal rhythm can be described well with the categories of Deleuzian philosophy. Deleuze retrieves the notion of melody from Ruyer,[16] generally associating it with the concept of rhythm. Deleuze distinguishes between a rhythm which is «a regular division of time, an isochronic recurrence of identical elements», and a rhythm where «tonic and intensive values […] create distinctive points, privileged instants which always indicate a poly-rhythm» [Deleuze 1968/1994, 21]. The distinction is drawn between repetition as a measure of the identical and repetition as «difference without concept», that forms a landscape of heterogeneous singularities, accents, points of valence, zones of expression. As in Ruyer, rhythm is both a force and an idea that produces synchronic environments of variations.

Deleuzian singularities are indeed the germinal instantaneities that fabricate chronic time. In *The Logic of Sense*, Deleuze describes the platonic ἐξαίφνης as an extra-temporal threshold or gradient, a non-subsistent interval: singularity constitutes the evenemential limit of the pure and incorporeal affect separated from body. Its consistency

[16] «What is primary is the consistency of a refrain, a little tune, either in the form of a mnemic melody that has no need to be inscribed locally in a center, or in the form of a vague motif with no need to be pulsated or stimulated» [Deleuze & Guattari 1980/1987, 332]. This is one of the passages where Deleuze refers explicitly to Ruyer. Analogous meanings of the concept can be found not only in Merleau-Ponty, who speaks of nature as a «melody that sings itself» [Ruyer 1952a, 217]; but also and foremost in Jakob von Uexküll, who first spoke of organic development as a melodic becoming, discovering «Nature as music» [Deleuze & Guattari 1980/1987, 314].

is of intensive nature: it is an effectivity rather than a physical reality. The problem of the affect – as in Spinoza and Nietzsche – is the problem of the existence of pure potency. A coherent vitalism must conceive the affect not from the viewpoint of an external observer, as action without being, but rather from the perspective of the affect itself, as being that is for itself and that does not "take action" [Deleuze & Guattari 1991/1994, 213]. Following this radical program, both Deleuze and Ruyer arrive at an absolutization of the sensation. A formation, thus, is not only when it affects a body, on the model of perception: the genetical affect is rather always for itself, it is auto-affection, eternal self-enjoyment. However, the opposite is also true: auto-affection is always a semantic pulsation, an event, as an «a priori form of time, which in each case fabricates different times» [Deleuze & Guattari 1980/1987, 349]. The idea of the movement is in every germinal point of the line, which is not individual, but singular, hence ubiquitous and diffused, and of the same nature as the whole; the point and the line cannot be abstracted, as they share a common ideal essence. Pulsation and rhythm represent two faces of the same *a priori* of time.

How do we "watch" a force, asks Deleuze, or how do we "listen" to a force [1981/2003a, 56]? We do not simply perceive its effects on dead matter: we enter the rhythm of its spontaneous organization, and we place ourselves at the level of the ideal material where it lives as pure sensation, shifting from vision to a sort of speculative tactility. The body, in fact, is of the same nature as the force. The question about the force, hence, is a question about generation of ideal materials. Every entity is, to different degrees, a prism of speed and interactions: it modulates, amplifies and conveys semantic information. The theory of entities as semantic machines, as well as the theory of the speed of matter, refers to Simondon's masterpiece, *L'individuation à la lumière des notions de forme et d'information* [2005], whose influence is visible since *Difference and Repetition* [see Hui & Morelle 2017]; but it finds surprising analogies in much earlier monistic reflections on nature like that of Lorenz Oken (1779-1851) [Poggi 2000, 455-57]. According to the Spinozist doctrine of *A Thousand Plateaus*, nature is «a fixed plane, upon which things are distinguished from one another only by speed and slowness», and enters in ever different assemblages [Deleuze & Guat-

tari 1980/1987, 254]. Matter itself is intrinsically ideal and traversed by infinite grades of speed, which represent its heterogeneity. There are specific regimes of individuation or strata that may correspond, for example, to slowdowns needed for further accelerations, in order to reach new speeds on different directions. This is the case – among many others[17] – of the passage from the physical to the vital regime of individuation as described by Simondon. According to his theory, a biological becoming takes place when the physical ceases to repeat its periodical traits, following a sort of curving dynamic. The physical becoming slows down on its inchoative stages (neotenization), which will be kept alive in the recursive dynamics of a non-periodical equilibrium [Simondon 2005, 152-53]. These variations in speed determine a full-fledged «conversion» of space-time, a radical variation in rhythm. The *a priori* of rhythmic and singular pulsation, thus, is also a matter of morphogenetical speed.

3. Topology of the affects

Deleuze, Simondon and Ruyer are all thinkers of space-time, for whom what applies to time applies also to space. The concept of «speed» sums up this chrono-topological complementarity. The lesson of embryogenesis itself can be drawn from both a temporal and a spatial dimension. It is a lesson on the manifestation of the novelty of life: the real novelty is what synthetically emerges from previous stages of the matter by no means of deduction or linear causality. From this perspective, synthesis, or the production of sense, takes place entirely within nature.[18] This genetical passage is realized through a differential relation, by a break of the similarity chain or a «symmetry-breaking». After Hermann Weyl's theories, symmetry is defined as an equality in the application of certain constructive rules (invariants) to figures; hence a symmetry-breaking

[17] Morphogenetic processes of heterochrony (e.g. paedomorphism, peramorphism…) and neoteny started to be conceptualized from the late nineteenth century.

[18] Analogous conclusions can be found in Samuel Alexander's *Space, Time and Deity* (1920) and in Alfred North Whitehead's *Process and Reality* (1929), both important references for Ruyer and Deleuze.

represents the creation of a new form, usually on an infinitesimal level. Forms, in this manner, are considered from the viewpoint of their event, not of some intrinsic properties that constitute an essence [DeLanda 2002, 18]. Whenever a morphogenesis occurs, a symmetry-breaking may be brought up: Simondon for instance extends the physical concept of «phase transition» to every event of individuation; Deleuze talks of ontological bifurcations since *Bergsonism* (1966), and later makes it a characteristic of the «rhizomatic» becoming of nature in *A Thousand Plateaus*; Ruyer argues that biological causation is not attributable to proper "causality", since it is nonmetric, nonquantitative, nonlocalizable (what induces today's research to speak of a case of «entanglement» [see Vecchi *et al*. 2019]).

«Strictly speaking, symmetry exists only between different poles or focal points of interiority» to which a force is always exterior [Deleuze & Guattari 1980/1987, 399]. Symmetry is a quality of the organism, which represents, in Deleuzian philosophy, the hierarchical structure of the Being; whereas the *anorganic* is the concept of Becoming in itself. The two volumes of *Capitalism and Schizophrenia* are a great hymn to the anorganic force and to its effects on bodies, but above all to the force as an effect *of* bodies, as their immaterial resonance [Deleuze 1969/1990, 70]; in other words, to the paradoxical coincidence of *soma* and *germen* in the intensive consistency of sense. The argument exposed in *The Logic of the Sense* represents the solution to a matter which Deleuze addresses from the first works on Nietzsche until the last courses on Foucault: the problem of forces (which is again, in a way, the problem of the living itself in its seminal form). Is the force that pertains to the living separated from physical matter, or does it consist only of its effects upon the otherwise dead matter (as Blumenbach and Kant thought of the *nisus formativus*)? Is the force all in the affect? And if not, *where* is it?

In the already mentioned last pages of *What is Philosophy?*, Deleuze gives the following (partial) answer: «Vitalism has always had two possible interpretations: that of an Idea that acts, but is not – that acts therefore only from the point of view of an external cerebral knowledge (from Kant to Claude Bernard); or that of a force that is but does not act – that is therefore a pure internal Awareness (from Leibniz to Ruyer).

If the second interpretation seems to us to be imperative, it is because the contraction that preserves is always in a state of detachment in relation to action or even to movement and appears as pure contemplation without knowledge» [Deleuze & Guattari 1991/1994, 213]. If such an "objective" vitalism is necessary, it is because Becoming is not a mere property attributable to a logically precedent structure. As we have seen, an immanentistic view of the force does not necessarily lead to stasis or ineffectiveness: in Ruyer, for example, the ideal performs and actualizes itself constitutively, being it a *genetical* force; likewise does the Deleuzian «virtual» (though with the due differences [see Bogue 2017]). We must therefore put the stress on «the act of ontogenesis» itself, instead of on the simple structures or on the pure operations. The act of ontogenesis is neither the action of a structure nor that of an immaterial subject: the mistake of old vitalism, states Ruyer [1952a, 223], is indeed conceiving the force as a macroscopic influence that moves and animates matter. The "life" of the living is to be found elsewhere.

Every morphogenesis takes place by a break of interiority, which means that it comes from "outside" the constituted structure: it is always «heterogenesis» [Deleuze & Guattari 1980/1987]. It affects the body; its consistency is one of application and of affection. But as we have already seen, affection has to be taken in itself, as preceding and composing the bodies, insofar as it is genetical. The Becoming owns a specific ontological status: the "force" is, but not in the same order of the Being. It «insists» [Deleuze 1969/1990] on the matter as its semantic dimension, as its effectuality, its variation, and its singularity. In *The Logic of Sense* it is described as a wind among the series, a «vapor» of the structures that corresponds to their pure relations: «it belongs to no height or depth, but rather to a surface effect, being inseparable from the surface which is its proper dimension» [Deleuze 1969/1990, 72]. It is also «neutral» and «impassible», beyond determination (of quantity, quality, mode, etc.). Life (or «sense») is genetic, but also sterile (not fecund, not directly productive); it has «eternal truth» but cannot «be distinguished from its temporal actualizations» [Deleuze 1969/1990, 100].[19] It does not belong to bodies as their property, it rather is their

[19] The ground principle, already fully formulated in *Difference and Repetition*, is that «the world […] pre-exists its expressions. It is nevertheless true that it does not

effect of genetical consistency, which nonetheless comes before them.

The answer to the question on "where is the force" cannot be given from the viewpoint of the structure that defines an inside and an outside. The force is at the same time interior and exterior to macroscopic structures, being fundamentally «preindividual». The notion of preindividuality, coined by Simondon and repeatedly used by Deleuze, refers to the semantic and virtual thickness of the individual, which finds place in its folds, constituting its «associated *milieu*». As argued by Simondon, this kind of exteriority (Deleuze's «*dehors*») is not located outside and all around a structural interiority like an *Umwelt*: it is instead ubiquitous and medial, much more similar to a fluid,[20] as in ancient vitalism (but again not comparable to a macroscopic force). Both Ruyer and Simondon, in fact, place the genetical force in the ontological regime of the sub-atomic level, showing great philosophical faith in the conquests of quantum physics [Leblois 2007]. Quantistic dynamics reveal that the condition of the Being is one of constant activity, and specifically a relational activity without synthesis [Simondon 2005, 111], that avoids both the physicalist and the vitalist approach (the essentialism of the structure and that of the pure flux, discontinuism and continuism). In the quantum realm lies the «potential», the power of heterogeneity which corresponds to the first and purest genetical events. On a quantic level, everything is – again – a matter of speed [Simondon 2005, 129], «since each intensive quantum in itself is difference» [Deleuze 2002/2003b, 87]. Nowadays, the hypothesis of the role of sub-atomic matter in the biological processes is far from being a fanciful conjecture [see Longo & Montévil 2014]: quantum mechanics show acausal physical processes that can be applied – just as Ruyer does – to explain consciousness [Penrose 1989] and to comprehend the action of mind over body [Kauffman 2010, 224-25].

We argue that this perspective on the quantic status of the virtual (or potential) preindividuality should be thought of in continuity with

exist apart from that which expresses it […]; but these expressions refer to the expressed as though to the *requisite* of their constitution» [Deleuze 1968/1994, 47-48].

[20] Canguilhem [1965/2008, 98-120] traces back the origin of the notion of *milieu* to the modern physics of fluids, also used to describe the medium *par excellence*, luminiferous ether.

Deleuze's topological approach to the infinitely small «matter-fold» as «matter-time» in the pages of *The Fold* [1988/1993, 7]. Deleuze had already noticed the relevance of organic "folding" in *A Thousand Plateaus*, where he evokes a puppet theater composed by Cuvier, Geoffroy Saint-Hilaire, von Baer, and Vialletton [Deleuze & Guattari 1980/1987, 46]. Through Leibniz's philosophy of nature, and later in *What is Philosophy?* and in the courses dedicated to Foucault, Deleuze develops a speculative topology of the living centered on the idea of completely virtual sets of relational modes that drive fluxes and influence the structures. While current topology looks for universal principles to be applied also in the field of the living from the viewpoint of transcendental schematics [Boi 2005], the topological law set out by Deleuze is one of transversal change and differentiation: that of «folding» and unfolding, involution and evolution. Development does not simply go from undifferentiated to more differentiated, it does not necessarily represent a growth in complexity; the ubiquity of germinal fields is the contemporaneity of the primordial Egg [Deleuze & Guattari 1980/1987, 164], which is far from constituting an original and primal stage. Between the macroscopic folds and below perception, there are other folds (not particles) of which material bodies are «zones of expression» [Deleuze 1988/1993, 98].[21] Singularities consist in this very activity of matter, this constant bending of constraints:[22] life is matter that folds.[23] This incessant bending is what Simondon describes as topological information, insofar as «*les vraies formes implicites ne sont pas géométriques, mais topologiques*» [Simondon 2005, 53].

[21] Deleuze comes to the same conclusions as Ruyer and Simondon: the processes of forming «do not apply to living organisms, but to physical and chemical particles, to molecules, atoms, and photons» [Deleuze 1988/1993, 103].

[22] From a topological perspective, elements are defined by their sense in a pre-extensive space of effects, comparable to a vector field in which invariants are topological accidents [DeLanda 2002, 72].

[23] Matter, in other words, is made plastic by the forces that inhabit it. The continuity between variation of constraints and apparition of novelty is explainable by underlining the role of the expressive processes, the moment of material passage of information. The concept of expression is, in fact, what allows Deleuze to take up Spinoza's monism. On the role of material expression in current life sciences and its philosophical relevance see for example Tedesco [2012], Mandrioli & Portera [2013].

4. Nature of the autós

A large part of Ruyer's thought is devoted to grasping the concept of «true form». Deleuze, as we have seen, follows the same program, albeit with different adversaries. Deleuze argues against the central, interior and organic form, which is rooted in the transcendence of the Idea and which he associates with historical morphology: Goethe «passes for a Spinozist» when allied to Geoffroy Saint-Hilaire, but he «retains the twofold idea of development of form and a formation-education of the Subject» [Deleuze & Guattari 1980/1987, 542, note 52]. The Goethean form, in Deleuze's view, is still too subjective. A similar criticism towards organicism belongs also to Ruyer [1940a, 1940b], though Ruyer has opposed himself more to the mechanistic tendencies in contemporary sciences than to the organicist ones. As for Simondon, he admits that Goethean metamorphosis of plants is the model of his own concept of morphogenesis [2005, 517, note 37], but he also affirms that Goethe takes interest in Saint-Hilaire's transformism just to make it a system of classification [2005, 500, note 34], and that he does not clearly define the relation between individual and nature [2005, 503, note 35].

We can state that despite a general phase of coldness towards Goethean philosophy, the problems of Goethe were to a significant extent the same problems of French biophilosophers. From a very different starting point, most of Simondon's efforts, for example, are directed to demonstrating the priority of formation on form and of individuation on the individual already affirmed by Goethe. «*Qu'est-ce qu'un individu?*», asks Simondon: «*À cette question, nous répondrons qu'on ne peut pas, en toute rigoeur, parler d'individu, mais d'individuation*» [Simondon 2005, 190]. «*L'individu n'est à proprement parler en relation ni avec lui-même ni avec d'autres réalités; il est l'être* de *la relation, et non pas être* en *relation, car la relation est opération intense, centre actif*» [Simondon 2005, 63]. The mistake of Aristotelianism is to place a proto-structure as substrate of every operation, hence to understand relations on the basis of their terms (and development, for example, on the basis of the formed adult). The priority of act over potency is at the origin of subjectivism and of the obsessive search for identity that

characterizes the scientific enterprise of modernity.[24] The fixed and stable structure is no less than a moment abstracted from a much more complex condition, in which certain regimes of formation influence the acts that take place in them. A chaotic state, as Simondon often notes, is much more "stable" than an ordered one: order does not go along with stability, but with dynamic tension, with living equilibrium of processes. Moreover, the concept of order is – as demonstrated by physics – relative to scale and size. Perceptive constancies are abstractions that cannot provide morphological norms for the natural becoming.

What is analogous throughout the whole of nature is instead a principle of information, morphogenesis, and active relation. The *principium individuationis* does not lie in a proto-structure, nor in an abstract flux or substantial becoming (as in ancient vitalism), but rather in the concrete act of manifestation, which is a «complete system» of synergies, with structural and energetic conditions. The individual exists insofar as he transmits, amplifies, articulates sense: by every act of propagation of sense, it individuates itself. «*L'individualité est un aspect de la génération*» [Simondon 2005, 190]. Individual equilibrium is a case of ever-acting tendencies, at the intersection between many rhythms or «phases» of individuation.

The fact that there is no such thing as the isolated individual does not deny the singularity of particular individuations. Simondon points out that every process has «*un terme non probabilitaire*» [Simondon 2005, 549], something beyond quantity (for example the number of signals) and quality (the semantic structures) that justifies the apparition of novelty; but he still binds this character of «intensity» to the presence of a perceptive subject, without substantially overcoming the Bergsonian view of *Les données immediates* [Simondon 2005, 238]. Deleuze will be the one to decidedly turn the notion of intensity into an ontological concept. If morphogenesis is an act of concrete expression of novelty rather than a simple communication of signals, if it stems from a «real potential» rather than from logical possibility or representation, then it must correspond to a field of affections even without involving an

[24] As Ruyer puts it, the description of structures is the "easy part" of morphology and of classic science in general, while the study of genesis is the most complex and mysterious [Ruyer 1958, 5-6].

individual; insofar as it entails a difference (or a real transmission of information), it must have intensive nature even without depending on a psychological subject. Intensity is, for Deleuze, the concept of creative difference, inseparable from the affect, the zone where the force composes its structure and therefore consists. Every grade of affection establishes thresholds, valences, and orientations, reconfigures a system of meaning by virtue of a pure change, a non-identical condition, a posture. Objectivity and subjectivity are constituted after the act itself. Singularity is this ontological «inflection», this «axiomatic» (or genetic) novelty [Deleuze & Guattari 1991/1994, 91]. The same idea of orientation or inflection can be found in Simondon's «axiontology»[25] and in Ruyer's understanding of finalism.

«Consistency necessarily occurs between heterogeneities», and it is a matter of expression [Deleuze & Guattari 1980/1987, 330]. A multitude holds together not by repeating a hierarchical order, but through a genetic *nomos* regulated through a memory of matter. «The forms do not preexist the population, they are more like statistical results», writes Deleuze. «The more a population assumes divergent forms, the more its multiplicity divides into multiplicities of different nature, the more its elements form distinct compounds of matters». Moreover, «the degrees are not degrees of preexistent development […]. Degrees are no longer measured in terms of increasing perfection or a differentiation and increase in the complexity of the parts, but in terms of differential relations and coefficients» [Deleuze & Guattari 1980/1987, 48]. Once having dismissed the structural standpoint, it is easier to see the flaws of every perspective centered on the conservation of the living individual rather than on its formation. Autopoiesis, for example, is a notion of clear physiological origin that implies the exteriority of the environment and subordinates processes to the constitution of the *autòs* by means of reflection; that reveals, finally, all the ambiguous political implications of system theories [Protevi 2009]. The morphological interrogation of that *omnitudo* which is also a *multitudo*, that *unitas multiplex* which cannot be thought according to the absolute metaphor of

[25] Deleuze acknowledges Simondon's influence on this point, but writes that he doesn't carry the notion of difference all the way through [Deleuze 1968/1994, 318, note 25].

organism, points towards the notion of a «perfect individuality lacking nothing, even though this individuality is different from that of a thing or a subject» [Deleuze & Guattari 1980/1987, 261], «singular without being individual» [Deleuze 2002/2003b, 87].

Thus, the "self" of the processes typically attributed to the form (self-organization, self-realization, self-design…) becomes problematic. From the viewpoint of genesis itself, we can conceive only «self-enjoyment», not after the model of spiritual reflection but after the one of natural *praxis*, of internal action. As Ruyer intends it, self-enjoyment is a primary activity that possesses itself, being in every part of itself: like the Goethean *Urpflanze*, the form «enjoys» its own transformation, its virtual entirety, perpetually [Moiso 2005, 294]. What is «enjoyed», therefore, is an infinite affection, which is an infinite (and simultaneous) generation. This is the only alternative – also according to Deleuze – to understanding genesis on the model of a representative process, with "someone" who generates or perceives the generation and something which is generated. When the affection or the transformation is untied from a subject and an object, the affect coincides with the space-timeless becoming of the being.

Instead of a celestial Hyperuranion, we could think of an infinite and non-subjective speculative dimension like the «Infinite Fun Space» that, in the fictional universe of Iain M. Banks, is the unsuspected dream of the mind-machines when left alone; or again to the quantic domain. What is crucial is that such an infinite ideality is not previsional (like a *mathesis universalis*), but is immediately creating. This is why Ruyer comes to a panpsychist conception, in which every form is active insofar as it exists and follows virtual paths without psychological deliberation: what is traditionally called "spirit" corresponds here to the virtual and differential thickness of living entities, the equipotentiality of the embryo and of the brain, the rhythms of the organs, the patterns in animal behavior, as well as any becoming in nature. The characteristic of equipotentiality shared by the embryo and by the human brain is the most vivid representation of the ecstatic state of matter: «*la norme spirituelle se transforme en "tâche" psychique; cette tâche à son tour tend à se transformer en liaisons physiologiques matérielles fonctionnant d'une manière automatique*» [Ruyer 1952a, 124]. A spiritual principle is not

distinguishable from nature itself [Simondon 2016, 34] as the «*pouvoir d'hétérogénéité*» of the Being [Simondon 2005, 358].

In the case of the living, the «form» is inseparable from the «formation». A living being is never entirely configurated, and it can never limit itself to functioning: it forms itself incessantly. Since every formation is inseparable from a norm, we must say that the form is what gives itself its own norm in the act of existing [Ruyer 1952a, 157]. Forms, unlike figures and structures (which are mere aggregates), require a supplementary dimension to be understood [Deleuze 1988/1993, 102], that is what Kant recognized as their ideal nature,[26] since it refers to nonlocalizable relations instead of horizontal, causal, mechanically understandable linkages. As such, the form's ideality does not resemble a "glue" for the otherwise separated parts, because that would generate the *regressus in infinitum* that has been typical of an animist conception of life as macroscopic force (what is *between* the glue and the glued?). «We are contemplations», writes Deleuze [1968/1994, 74], insofar as we live.

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[26] «An idea must, it is thought, underlie the possibility of the natural product. But this idea is an absolute unity of representation, whereas the material is a plurality of things that of itself can afford no definite unity of composition. Hence, if that unity of the idea is actually to serve as the *a priori* determining ground of a natural law of the causality of such a form of the composite, the end of nature must be made to extend to *everything* contained in his product. For if once we lift such an effect out of the sphere of the blind mechanism of nature and relate it *as a whole* to a supersensible ground of determination, we must then estimate it out and out on this principle. We have no reason for assuming the form of such a thing to be still partly dependent on blind mechanism, for with such confusion of heterogeneous principles every reliable rule for judging things would disappear» [Kant 1790/2007, 205].

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Keywords

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Abstract

Philosophical morphology carries on a difficult tradition, bound with different currents and periods of thought. During the 20th century, an original and profound reflection on the living form can be recognized in the so-called French biophilosophy. Morphology, thus, seems to re-emerge under the guise of a post-critical ontology of becoming. Thinkers like Raymond Ruyer, Gilbert Simondon and Gilles Deleuze

showed that they were deeply aware of the manifold issues revolving around the notion of form and of their interconnections, and were able to provide original solutions to these problems in the framework of their thought systems. More recently, these reflections have asserted themselves in virtue of their coherence and their speculative force. This paper aims at a theoretical overview of the morphological spirit of biophilosophy that retraces the complex exchanges of influences between these three significant thinkers, Ruyer, Simondon and Deleuze. Along the focal nodes of temporality, spatiality and individuality, a renewed image of philosophical morphology will result from the vitality of their theoretical proposals.

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