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Bergson's biology

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Posteraro, Tano S., *Bergson's Philosophy of Biology: Virtuality, Tendency and Time*. Edinburgh University Press, 2022, 312 p.

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What biological ideas, concepts or approaches would Bergson have wanted to rely upon when developing his metaphysics of life? Or, conversely, what biological ideas, concepts or approaches would Bergson have liked his metaphysics of life to foster? To the short list of publications that have seriously tackled such questions, we can now add Tano Posteraro's recent book, *Bergson's Philosophy of Biology*.

I see three main intentions in Tano Posteraro's book. The first, already hinted at above, is that of establishing a dialogue between Bergson's *Creative Evolution* and today's biology and philosophy of biology. This provides us with a Bergson seen from the present, a reinterpretation of Bergson's main claims about life and its evolution in light of some recent theoretical developments in – largely put – biological theory. I believe this intention is admirably achieved and many Bergson scholars will undoubtedly profit from the connections established by Tano Posteraro and well as from the minutiae with which he follows the connections between theories and positions often separated not only by a century, but by a significant divergence in their methods of inquiry. The only downside I see on this particular front is the fact that some of the historical sources of Bergson's philosophy of life are inevitably left aside. If we view Bergson

from the perspective of *his* past, of his sources, then some accents of our interpretation of Bergson will inevitably change and Bergson's view might seem less progressive and less consonant with contemporary research than Tano Posteraro presents it. But this is not meant to be a critique: when, in the course of my discussion below, I point to some potential exegetical lacunae, it is merely in order to indicate to the reader that there is another side to Bergson's theory of life that needs to be kept in mind, one that is not always consonant with Posteraro's interpretation. But this does not detract anything from the latter and from the convincing way in which its first intention is carried out.

The second intention seems to be that of recentering Bergsonian exegesis around life-related issues. When *Creative Evolution* was published, it was largely seen by contemporaries (e.g., William James) as the crowning achievement of Bergsonism. However, subsequent generations of commentators tended to shift the center of gravity of Bergson's work towards issues related to consciousness (e.g., the relationship between consciousness and freedom or between consciousness, time and matter), as they were deployed in Bergson's first two major books, *Time and Free Will* and *Matter and Memory*. Tano Posteraro is part of a wave of contemporary commentators that attempt to change this tide and replace *Creative Evolution* back in the center of Bergson's by way, again, of a retrospective reading, one that sees earlier concepts and positions as Bergson's stepping stones, necessary paths for reaching the possibility of philosophically embracing the whole of life.

The third aim of the book seems to be that of providing a non-substantialist interpretation of the *élan vital*: the latter should not be seen as a vitalist principle, but as an "image for tendency" (p. 6) – where tendency is itself the allure that the virtual takes within the realm of vital phenomena – or as an image for the irreducible role of time in understanding the unfolding of life (p. 7). On the face of it, the book does not quite succeed in its attempt to fully disengage the *élan vital* from vitalism. Despite the very good analyses provided to Bergson's two main arguments against vitalism – the "fragmenting" of the "vital principle" into a plethora of organizing principles, one for each living individual (i.e. vitalism pertaining to internal

finalism), and the denunciation of the artifactual and anthropomorphic image (p. 194) vitalists have of the relationship between matter and its organizing principle in living beings –, Posteraro still comes to admit that "it may be the case that Bergson's idea of tendency involves aspects of vitalism" (p. 195). However, I do not view this as a defeat or a failure, given the way in which Posteraro successfully carries out his first intention: if Bergson can be meaningfully connected to contemporary research in life sciences, then a Bergsonian philosophy of biology would be worth pursuing without necessarily following Bergson's work to the letter. To put it otherwise, Bergson need not have been "right all along" in every respect; as long as at least some of his concepts may still be compatible with current research, both the critical and the heuristic aspects of his philosophy of biology remain valuable.

In what follows, I will briefly develop the above points by way of an overview of the book's chapters. Chapter 1 ("The Actual: Mechanism, Finalism, Modality") essentially deals with the motivation behind Bergson's theory of evolution, namely his discontent with – and subsequent critique of – mechanistic and finalistic explanations of biological phenomena. Given that the next two chapters are mainly devoted to metaphysical issues, this is a wise way to begin, because biological issues are brought to the fore from the beginning. However, the two issues discussed here are quite different in nature: Bergson's anti-mechanism is here synonymous with an anti-adaptationist position with respect to life's evolution, whereas Bergson's anti-finalism is mainly discussed here in the context of his resistance to (vitalist) inner-purposiveness in the development and self-maintenance of living individual organisms. This makes for a somewhat confusing reading, as the reader has a hard time seeing how Bergson's opposition to an evolutionary theory and, respectively, to a developmental one could be treated together. Moreover, Bergson's critical arguments of adaptationism and possibilism (finalism involving pre-existent possibilities) are too close to Bergson's text to encourage the reader, despite some brief but insightful discussions of relevant concepts in Leibniz and Kant. Furthermore, much more could have been said about the evolutionary theories *of his time* that Bergson criticizes: one

could perhaps even argue that, at least to some extent, some of those theorists may have been looking for evolutionary solutions to developmental problems (see e.g., Spencer 1893 and Weismann's 1893 reply), and this could have provided good reasons for treating the two issues together. In sum, this chapter is probably the less structured and most confusing of the entire book, but the reader is rewarded for pressing on to the next chapters.

The second chapter ("The Virtual: Instantiations, Implications, Dynamics") analyzes three main facets or aspects of the virtual in Bergson's work before *Creative Evolution*. The virtual – what Deleuze taught us to regard as Bergson's distinctive modal category – is interpreted by Posteraro along the lines of a mereological theory, as a particular theory of part-whole relationships. The virtual is a "whole" that entertains specific relationships with its parts, relationships that are not characteristic of other modal categories (the actual, the possible). Posteraro identifies three such facets of the virtual. The first – instantiation – is most readily seen in Bergson' theory of pure perception from *Matter and Memory*. What we perceive is our potential action on things and this is just a selection of a complete perception that is at work in matter itself, by which each material point has a perspective on the entire universe. Our perception is thus merely a selection operated on a much larger whole, it is a mere instantiation of certain aspects of things – those that we may act upon given our bodily constitution – and does not "add" anything to reality. Implication refers to the interpenetration of parts in a qualitative multiplicity: the contraction of multiple moments in a single quality in perception, the contraction of bodily memory in habitual behavior and the contraction of one's entire past in one's present, with each passing moment. Finally, the most original part of the chapter is the idea of "dynamics" or "dynamical interaction" (inspired from Bergson's discussion of innovation in "Intellectual effort"), the idea that each actualized perception, behavior or attention act reacts on the whole which is contracted in it and brings with it a reorganization of that whole: a failed attempt to solve a problem helps us rethink the problem itself, the possibilities of my body revealed by perception help open new

possibilities – and hence new perceptual insights – by way of action, repeating a bodily operation helps us refine the motor scheme that we use to perform that very operation etc. Explicitly discussing this third facet of the virtual – its "dynamical" nature – is not an insignificant contribution of this book. The only shortcoming of this chapter is perhaps the fact that the author does not problematize Bergson's granting an important role to possibility in perception, given that "instantiation" is an aspect of the virtual that Bergson opposes to the possible – like Bergson in the first chapter of *Matter and Memory*, Posteraro uses in the first section of this chapter the terms "virtual" and "possible" as interchangeable terms, and this is a tension in Bergson's theory of perception (and, more generally, of consciousness as hesitation and choice) that still awaits its clarification.

Chapter 3 ("A Discourse on Tendency") introduces the central notion of Posteraro's interpretation of Bergson, that of "tendency," which is seen as the development of virtual multiplicity after *Matter and Memory* and into Bergson's theory of life's evolution. The first iterations of this notion are followed in Bergson's earlier writings, but it is in "Intellectual effort" and *Creative evolution* that the notion comes into its own. Tendencies are qualitative multiplicities: no tendency exists alone, multiple tendencies coexist within each tendency, and the actualization of a tendency is its dissociation from others. Tendencies are, as by their names, not passive, they tend to actualize themselves, they have directionality without specified purpose. However, their actualization maintains the whole from which the actualized tendency has dissociated itself or, to put it otherwise, actualization is a form of coexistence, a "modus vivendi" as Bergson puts it, of a dominant tendency with those it was coalesced with before the actualization and which also contribute to the form the actualization takes. The last section of this chapter distinguishes Bergson's theory of tendency from Anjum and Mumford's (2011) notion of disposition, a discussion that is perhaps less useful than it promises to be and that could have been reduced to the main differences: that, unlike dispositions, tendencies are part of an interpenetrating whole, so that they may only be analyzed separately after they are actualized and that tendencies are essentially temporal (not static) in that they

retain their past – the whole out of which they have dissociated themselves – and actively impel towards their future actualization (p. 130).

Chapter 4 ("Individuality and Organization") opens the most important part of the book. Spatialisation and temporalization are interpreted here as two opposing tendencies, the tendencies whose ideal end-points (though inexistent, because they are mere abstractions) are space and time. These tendencies form various modes of coexistence and some of our main categories (matter, life) are, in fact, not substantial realities, but modes of coexistence in which either spatialization (for the case of matter) or temporalization (for the case of life) is the dominant tendency. Spatialisation is analyzed into three aspects, namely isolation (of a system from others) that is only indicated in the material world itself (in the form of non-homogeneity of the material continuum), externalization of parts (each part may be seen as external to the others, once the system is isolated) and, finally, localization (in a neutral, abstract or absolute grid-like space: once the parts are externalized from each other, the possibility of its decomposability is presupposed to have pre-existed this operation, and that preexistence is neutral space itself). Living systems, on the other hand, exhibit a tendency towards temporalization that has three facets that are strictly opposed to those of spatialization. Rather than being a form of isolation, individuation is a self-organizing movement that Bergson interprets in thermodynamic terms as a resistance to – or rather a delaying of – entropic decay. The "interpenetration" of parts is interpreted as the unity that traverses the developmental processes that make up an organism: the intricate structure of an eye, with all its diverse, precisely arranged components may be seen as an almost impossible organ to build if we assume the parts to be external to one another; but if we regard the developmental processes by which some initially undifferentiated cells form the eye in a unified and simple – though temporally extended – process of differentiation, the "parts" of the eye can become exterior to one another only after they will have diverged from a whole they were initially interpenetrated in. Non-locality or duration is finally interpreted as the metabolic self-maintenance of

organisms and this metabolic activity that holds together the whole organism is interpreted as the foundation of lived time.

The developmental interpretation given to Bergson's discussion of the formation of the eye as a "simple" act is, I think, one of the most original parts of this book. It elegantly opposes the mechanistic predisposition of seeing the eye as the eventual result of putting together infinitely small parts in a manufacture-like fashion and the Bergsonian move of remounting towards the past, towards the source of the eye's unity in the initial undifferentiated cells. Of course, an evolutionary explanation is also required and, from an evolutionary perspective, some of Bergson's idea that we see *despite* our eyes is lost in Posteraro's discussion of the issue in chapter 5 (p. 214).

Chapter 5 ("Finalism inverted") comes to Bergson's own theory of evolution. The chapter begins with an interesting distinction between the metabolic (individual) scale and the evolutionary (reproductive) scale, and the tension between two registers – the impulse towards the creation of new life forms and the tendency towards stasis, towards least effort and self-preservation that is expressed when these new forms are actually formed – is interpreted as an *apparent* contrariety due to our applying an evolutionary scale as a frame for metabolic phenomena. I see this as an interesting attempt to mitigate the Lamarckian element in Bergson's view of evolution, namely the idea that adaptation is a side alley, rather than the main highway of evolution and that the main directions of evolution have to be grasped not at the scale of individuals, populations or species, but at the level of the main macroevolutionary directions towards which life evolves (see Jeler 2022). Ultimately, I believe that Posteraro's insightful attempt to reduce this Lamarckian element is unsuccessful because Bergson locates the tension not between ontogenetic and phylogenetic phenomena, but within phylogenetic phenomena (it is species – and not individual organism – that turn away – at least in part –, in their formation, from the impulse that led to this formation (see Bergson 1944, 113-114, 142-143). It is therefore no wonder that, in this chapter, Lamarck is reduced to the theory of the transmission of acquired characteristics: while this may have

been a frequent move in the neo-Lamarckism of Bergson's time, a deeper influence of Lamarck makes its presence felt in Bergson's view of life and Posteraro's interpretation makes no room for it. Another shortcoming of the chapter is the marginalization of Bergson's hypothesis that it is through directed variation in the germ cells of the individuals of a species – seen in a saltationist way – that the impulse towards the formation of new forms of life is manifested. A very brief mention of a few recent publications leaning towards directed variation is done in this chapter, but Bergson's thesis should have been analyzed more closely in light of today's scholarship on the issue. After a discussion of Bergson's relationship to Theodore Eimer's theory of orthogenesis, Bergson's theory of the *élan vital* is interpreted as an inverted, external finalism. Inverted, in the sense that it does not postulate goals to be achieved, but it consists in a harmony among divergent lines of evolution, a harmony that is explained by the common, initially undifferentiated origin of these tendencies, rather than by a common end they would attempt to realize. External, in the sense that, unlike the inner-purposiveness of vitalist theories, it holds that the impulse that unites the individual organisms and life forms is external to them and is to be found in the evolutionary progress of the whole of life as a unique, simple movement.

From the point of view of philosophy of biology, Chapter 6 ("Canalisation and convergence") is perhaps the richest and the most provoking of the entire book. It analyses Bergson's main argument against the neo-Darwinian views of the omnipotence of selection, namely the existence of convergent organs or traits in very different taxa that diverged before these organs or traits first appeared (e.g., the camera eye in vertebrates and mollusks). The analysis shows that, against Bergson's conviction, cases of convergence do not automatically refute theories of the omnipotence of selection (p. 225). However, conceptual tools from contemporary evo-devo theory are then used to show that Bergson's view on convergence – namely, the fact that it presupposes the retention of the same tendencies from a deep, common evolutionary past – are, at least to some extent, compatible with today's views. Highly conserved gene toolkits

that control the development of organisms are responsible for convergent traits across different taxa, while environmental factors or selective pressures merely provide the occasion for these structures to form. Of course, for Bergson, both the organs or traits themselves and the genetic complexes governing their development are actualizations of the virtual tendencies of life that await the occasion for their insertion into actual life forms, i.e., for their divergence and dissociation (p. 234). Bergson's view thus seems analogical to current evo-devo views, but identity between these positions remains out of the question. However, the connections outlined by Posteraro here are surely worth further exploration.

I am however less convinced by the final idea of the chapter, namely that the more a tendency is actualized, the more it becomes likely to be actualized in different taxa. This suggests that "dynamic interaction" – by which an actualization returns to modify the virtual whole that engendered it – could operate at the level of the whole of life, as if an actualized tendency in one taxon could remount the evolutionary course and affect the actualization processes in other bifurcations of the tree of life. How the appearance of the eye in one clade or species could, in itself, promote its subsequent appearance in another species or clade remains unclear upon reading the last part of the chapter. Moreover, this idea seems to rest upon Bergson's views of a "sympathy" between different forms of life that is based on his theory of the fundamental unity of the "whole of life," but, by Posteraro's own admission in the concluding remarks, the discussion of issues related to sympathy is left for further work.

The relatively minor critical points made abi are not meant to deny the great merits of this reading of Bergson. This book should – and certainly will – heavily influence the scholarship on Bergson's philosophy of life, hopefully pushing it towards an even closer dialogue with scientific research. And it might also influence the way we see Bergson's philosophy *tout court*.).

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