

INTRODUCTION: FROM FORMAL TO EXISTENTIAL ONTOLOGY

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The present collection of studies is piloted by a twofold goal: on the one hand, to clarify the meaning of Whitehead's early works; on the other, to highlight their significance for the understanding of the development of Whiteheadian process thought and especially of Whitehead's own blend of (formal) ontology. To a significant extent, this collection carries on the enquiry that has been opened in Liège in 2001 and that has since resulted in the publication of the *Handbook of Whiteheadian Process Thought* and of its companion volume: *Creativity and Its Discontents*.¹

As a matter of fact, these two goals, when considered together, disclose important new interpretational possibilities. Although it remains tempting for some scholars to question the interest of a refreshed view on Whitehead's first epochs or on his later metaphysics, the conjunction of the two dimensions makes it a really rich research area, both to understand Whitehead *secundum* Whitehead and to assess contemporary philosophical challenges. Why so?

Whitehead's first works have never allowed their author to gain a lasting international acknowledgment. Granted, his *Universal Algebra* (1898) established him as an important mathematician and gained him a Doctor of Science degree, while the *Principia Mathematica* (1910–1913) was welcomed as an intellectual masterpiece — but the former was promptly read as nothing more than a systematic endeavour to generalize Grassmann and Boole, not as a study of the relevance of Maxwellian ideas in applied mathematics-at-large, while the latter was understood to be Russell's foundational program, a project that was anyway torpedoed by Wittgenstein and Gödel. One cannot reduce arithmetic, much less mathematics, to logic.

¹ See Beets, François, Dupuis, Michel and Weber, Michel (eds). *Alfred North Whitehead. De l'Algèbre universelle à la théologie naturelle*, Actes des Journées d'étude internationales tenues à l'Université de Liège les 11–12–13 octobre 2001, Frankfurt, Ontos verlag, 2004; cf. Weber, Michel and Desmond, Will (eds.). *Handbook of Whiteheadian Process Thought*, Frankfurt, Ontos verlag, 2008; Van Wyk, Alan and Weber, Michel (eds.), *Creativity and Its Discontents. The Response to Whitehead's Process and Reality*, Frankfurt, Ontos verlag, 2009.

Similarly, Whitehead's epistemological enquiries were not able to topple Einstein's relativity from its substantial pedestal (in the sense that Einstein was fundamentally clinging to philosophical substantialism) and they have left him, until very recently (see R. Desmet's contribution in this volume), with very few able readers.

Furthermore, although his late metaphysical works endowed Whitehead with a true philosophical legacy, they left him with a difficult reputation: the one of a once serious scientist who crossed the forbidden gates of metaphysical and theological speculations. Philosophers who could cope with religion usually embraced more trendy ventures (such as neo-Thomism or phenomenology) while those who could not saw Whitehead totally discrediting himself. His metaphysics was born at the wrong season. . .

Another picture discloses itself altogether when the issue is tackled from a holistic developmental perspective. Then the seemingly idle arguments of some of the first works gain new applicability. To take a straightforward example: the importance of the *Principia* in the Whiteheadian corpus taken as a whole is almost zero unless one realizes that its relational logic is essential to understand Whitehead's later ontology.

At the end of the day, the scrupulous reader cannot deny *either* the continuity *or* the discontinuity of Whitehead's philosophical development. In order to make this plain and to mobilize new heuristic tools, we argue that there is a *contiguity* in his works.

On the one hand, Whitehead's works display a significant double continuity of matter and form: all his life, Whitehead kept a steady interest in extension and relationality while his philosophical temperament — that can be sketched with a twofold tension: towards pure, linguistically untarnished, foundational experience, and towards a complete formalism (that took various guises during his intellectual career, but the importance of extension and of the notion of mathematical function remained constant) — remained stable as well. All his works are, in other words, lured by a constant archaeological (foundational) desire to question the meanings of “simple obvious statements” in order to attain higher orders of abstractions: *What do we mean by space-time, by immediate sense-perception, by simultaneity. . . ?* With regard to extension itself, Whitehead considers that it expresses most notably connection (rather than disconnection) and uniformity of relatedness (hence significance, recognition and measurement). His archaeological lure is however critical: all Whitehead's works are bridled by a sharp critical awareness of the limitations of language and of the impediments preventing a complete formalism. His later publications are remarkable from that perspective: Whitehead not only deplores the weakness of intuition and the deficiencies of language, he identifies the main fallacies that should be blamed (dogmatic

fallacy, perfect dictionary and misplaced concreteness), he incriminates syntax and its interpretation, eventually stretches the existing language and even coins new categories.

On the other hand, Whitehead gradually changed his focus during his speculative journey: he has indeed gently shifted from the concept of extension, to the concept of extensive abstraction and finally to the creative relation of extensive connection. The works of his first epoch — Cambridge, U.K. (1880–1909) — share one common concern: to question the foundations of geometry and, thereby, to provide an account for the relatedness of all possible worlds. Formalism is a tool (an *organon*) to come to terms with reality understood from the standpoint of a relational theory of space. More precisely, Whitehead focuses on spatial extension with the help of a Euclidean geometry still endowed with points — at least until the publication of his 1905 “Theory of Interpoints.” In developing his own physical geometry, he is the heir of Leibniz’ *Analysis situs* (1679, published in 1833), and especially of Gauss (1830) who forcefully argued that geometry is *not* an a priori science.²

In his London epoch (1910–1924), the bipolar relation of extension operating on events is introduced. Here geometry is explicitly studied *qua* physical science: the “concreteness” it addresses is no longer active as the goal of a priori principles but it is not yet the locus of the synthesis of the knower and the known. In other words, Whitehead extends (no pun intended) his focus to space / time / matter with the help of the mereology axiomatized in the *Principles of Natural Knowledge* (1919) on the basis of a fundamental binary relation of order (i.e., reflexive, asymmetrical and transitive) whose *relata* are events: the relation of extension. In doing so, he adopts a non-Euclidean — in so far as it is *pointless* — geometry. Of special significance is the fact that actuality is conceived as continuous and hence is understandable with a part-whole relationship. The application of the logic of relations to the perception of space and time allows him to bridge the gulf between the world of sense-perception and the world of science. Relationality is at the core of his understanding of extension: extension does not express *disconnection* and instantaneous cuts but *connection* and overlapping durations, thereby allowing the functional unity that fundamentally differentiates organicism from mechanicism.

The later Whitehead — Harvard (1924–1947) — transcends this *formal* ontological standpoint with a proper *existential* ontological standpoint. *Process and Reality*’s (1929) purpose is to display the gearing of actuality *per*

²Cf. also the references to Lobatchewsky 1830, Bolyai 1831, Grassmann 1844 & 1847 and Riemann 1851 & 1867 in Whitehead, Alfred North. *Essays in Science and Philosophy*, New York, Philosophical Library, Inc., 1947. Reprint: London, Rider, 1948.

se or existence (which is subjective and qualitative) and of the various layers of potentiality or being (basically objective and quantitative) through a bipolar relation (the relation of extensive connection) operating on regions. Whitehead's interest shifts now to ontological uniformity, a question that he believes requires a mereo-topology of sorts. Two facts explain this reform: on the one hand, Theodore de Laguna's criticisms of the mereology of London; on the other hand, Whitehead's decision to "throw a match into the powder magazine",³ i.e., to cross through the gates of metaphysics and hence to adopt an "epochal theory." The binary relation of extension whose *relata* are events is replaced by the binary relation of extensive connection (irreflexive, symmetrical and non transitive) whose *relata* are regions. Inclusion (irreflexive, asymmetrical and transitive) is rebuilt from there.

The best documented and discussed transformation of Whitehead's outlook amounts to his adoption in 1925 of the "epochal theory of time" that is required by the clarification of his ontological stance. There is no need to specify here the exact status of this ontological atomism; suffice it to say that actuality *per se* is now discontinuous.

In sum, the meaning and significance of Whitehead are better highlighted when sketching his conceptual development as a creative advance from formal to existential ontology, an advance that has always featured, *mutatis mutandis*, the same focus: the axiomatization of the uniform extensiveness structuring our world. Let us now further specify this claim.

The well-known contrast between formal logic and formal ontology is Husserlian (see his *Logische Untersuchungen* III, 1900–1901, that, incidentally, also sketches a mereology), but it can be traced back to Aristotle and Grassmann, the later being of the highest Whiteheadian relevance. On the one hand, the founding idea of a *formal* ontology is to "use formal methods to solve classical philosophical problems relating to the notions of being, object, state of affairs, existence, property, relation, universal, particular, substance, accident, part, boundary, measure, causality, and so on."⁴ On the other hand, we use the concept of *existential* ontology basically in order to name Whitehead's theoretical move from disembodied (i.e., only quantitative, scientific) experience to lived experience (*all* experiences and *only* experiences being taken at their face value).

Aristotle's *Metaphysics* distinguishes *scientia universalis* and *ontologia generalis*. The former embodies the search for the first principle(s) — i.e.,

³ Whitehead, Alfred North. *The Concept of Nature*, The Turner Lectures delivered in Trinity College, November 1919, Cambridge, Cambridge University Press, 1920. Reprint: Cambridge University Press, 1964, p. 29.

⁴ Poli, Roberto and Simons Peter M. (eds.). *Formal Ontology*, Boston (Mass.) / Dordrecht, Kluwer Academic Publishers, 1996, Foreword.

logic —: *Metaphysics* Γ concentrates on a theory of principles, in particular the law of contradiction as the fundamental principle and the four causes as its instrumentalization. The later seeks the theory of being *qua* being — i.e., metaphysics *per se* —: cf. especially *Metaphysics* Θ and Λ. The point is of course that Aristotle promotes an onto-logic (i.e., a discourse on *being* that is *logical* — the discourse as well as *being* itself) at unison with a logical system that matches (more than it fits) reality. In this, he simply unfolds the consequences of the Greek cultural vision.

For its part, Grassmann's *Die lineale Ausdehnungslehre* (1844) distinguishes two standpoints: the *formal* standpoint of logic and the *real* standpoint of the general theory of forms. Grassmannian scholars highlight two interesting influences: an indirect debt to the work of Schelling and a more explicit debt to Schleiermacher.⁵

Whitehead's perspective belongs to that tradition, but it has a specific empirical (or realistic) ring — hence the claim that he has drifted from a formal ontology to an existential ontology. Mathematics (in its widest signification) is a highly efficient universal engine of investigation of the possibilities of thought and reasoning. There are two embedded points here: on the one hand, Whitehead has always been concerned with formal *ontology*, i.e., his formalisms were always lured by an “ontological” (in the broadest sense of the word) concern; on the other hand, this ontological concern has progressively included an existential one, i.e., it ended up including existence *qua* human existence (feeling, enjoyment, value...) in a pure metaphysical fashion. Please notice that this is fully compatible with Whitehead's *explicit* insistence on his non-metaphysical commitment prior to SMW (1925).⁶

What can we conclude from these few heuristic reflexions? By *contiguism* we signify the sheer hermeneutical necessity to envision both the continuity and discontinuity in his works. Besides, the same important claim has to be made with regard to his ontology, that promotes both continuity (potentiality and extension) and discontinuity (actuality and intension, i.e., epochality or percolation).⁷

A coherent interpretation of the togetherness of Whitehead's “epochs” is essential: there is a *creative advance* (or *Aufhebung*) at work: each epoch

⁵ See especially Schubring, Gert (ed.). *Hermann Günther Grassmann (1809–1877): Visionary Mathematician, Scientist and Neohumanist Scholar*, Dordrecht, Kluwer, 1996.

⁶ In “PNK's Creative Advance from Formal to Existential Ontology” (in Durand, Guillaume et Weber, Michel (eds). *Les Principes de la connaissance naturelle d'Alfred North Whitehead – Alfred North Whitehead's Principles of Natural Knowledge*, Frankfurt, Ontos verlag, 2007, pp. 259–273), we point at some evidence from works published.

⁷ On this question and other technicalities, see our monograph: *Whitehead's Pancreativism. The Basics*, Frankfurt, Ontos verlag, 2006.

recapitulates and goes beyond the previous one(s) — with the exception of the *Principia Mathematica* whose fourth volume never appeared. There is a thread that runs from Cambridge’s Non-Euclidean — pointless — geometry (addressing spatial extension), through London’s Mereology (space / time / matter), to Harvard’s Mereology-topology (relatedness and uniformity). With Whitehead, one discovers at work the rare ideal James had found in Clifford: “The union of the mathematician with the poet, fervor with measure, passion with correctness.”⁸

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⁸ James, William. “Clifford’s *Lectures and Essays* [London, MacMillan and Co., 1879]”, in Perry, Ralph Barton (ed.). *Collected Essays and Reviews*, New York and London, Longmans, Green & Co, 1920, p. 138.

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