Whitehead's Process Metaphysics as a New Link between Science and Metaphysics

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ABSTRACT

Against the separation of metaphysics and science (advocated for by Plato and his followers); and against the rejection of metaphysics in favour of science (the Logical Positivists), this work argues that 'a new link' between metaphysics and science is all the more necessary for man to better understand nature. This is precisely what Whitehead's process metaphysics purports to do. But why is 'a new link' necessary? It is necessary because Aristotle (and his followers) already established a link ('an old link') by making metaphysics the foundation of all the sciences. Yet, Aristotelian metaphysics is a substance-based metaphysics while Whitehead's metaphysics takes process and especially the category of relation seriously. Whitehead's Process metaphysics prioritizes process over permanence, becoming over being, relation over substance. Why does Whitehead have such preference for process metaphysics over classical metaphysics? The answer, as shall be shown in this paper, lies in science with the demise of Newtonian science and the rise of Einsteinian science based on the theory of relativity. In an era when the concept of depassement de la metaphysique has become such a dominant feature of modern and postmodern thought, it is therefore our point of interest to find out why Whitehead (who situates himself within this period) takes up metaphysics as the foundation of his philosophizing: Why does Whitehead embark on reconciling science and metaphysics when all his contemporaries are dissociating themselves from the former? These questions will be the main concern of my research in this paper.

Key words: Process Metaphysics, actual entity, eternal objects, Creativity, Concrescence, Prehension

I. The scientific 'Sources' of Process metaphysics

The proper understanding of a philosopher's thought requires a clear appreciation of the problems and issues with which he was concerned, and of the context in which they presented themselves to him. This certainly is a most important requirement for understanding the metaphysics of Alfred North Whitehead. Whitehead's background was an unusual one for a speculative metaphysician. He was educated as a mathematician and a physicist and wrote much on physics and its philosophy. He began his writing in process and metaphysics only when he joined HarvardUniversity at the age of 63.

Viewed chronologically, it is evident that Whitehead's earliest philosophical preoccupation was with the philosophical problems of modern science which had become acute with the new developments that had taken place at the beginning of the 20th century. His writings at this time were devoted exclusively to these problems.[1] These works include: *The Organization of Thought 1917, An Enquiry Concerning the Principles of Natural knowledge 1919, and The Concept of Nature1920.* It is therefore indubitable that in his

later writings his concern with the problems of modern science and its philosophy played a significant part. Here we have among others *Science and the Modern World 1925* and *Process and Reality: An Essay in Cosmology, 1929.* Whitehead's devotion to metaphysics came later. Javier Monserrat explains that when Whitehead began with metaphysics, he already had an image of the world in his mind. The critical factor that caused him to crossover into metaphysics is the idea that science had turned traditional metaphysics head over heels and that it was necessary to create a new metaphysics that's congruent with it. He justified this assertion with Whitehead's view that science demands a transformation of the world in order to make it "modern": it is science that makes the world modern requiring both a metaphysics and religion that are "modern".[2]

This explains why Whitehead began the preface to his *Science and the Modern World* by noting that the human intuitions of science, aesthetics, ethics, and religion each make a positive contribution to the worldview of a community. In each historical period, any one or combination of these intuitions may receive emphasis and

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[1]LECLERC I., *Whitehead's Metaphysics: An Introductory Exposition (*London, 1958) online version at http://www.questia.com/readers/action/open/10305739#1 (page consulted on the 8th of August 2011).

[2]MONSERRAT J.,*Alfred n. Whitehead on Process Philosophy and Theology: Cosmos and Kenosis of Divinityin Pensamiento, vol. 64 (2008), num. 242* p. 824.

thus influence the dominant worldview of its people. It is a peculiar characteristic of the last three (now four) centuries that scientific pursuits have come to dominate the worldview of Western minds. For this reason, Whitehead seeks to establish a comprehensive cosmology—understood here in the sense of a systematic descriptive theory of the world—that does justice to all of the human intuitions and not only the scientific ones.[3] Hence, looking at the patent dissolution of the comfortable scheme of scientific materialism which has dominated the last three centuries, Whitehead:

Endeavoured to outline an alternative ontological doctrine, which shall be wide enough to include what is fundamental both for science and for its critics. In this alternative scheme, the notion of material, as fundamental, has been replaced by that of organic synthesis. But the approach has always been from the consideration of the actual intricacies of scientific thought, and of the peculiar perplexities which it suggests.[4]

In *Science and the Modern World* Whitehead presents a scientific image of the world that influenced his whole philosophy. Between 1924 and 1925, Heisenberg and Schrödinger developed "Matrix Mechanics" and "Wave Mechanics" respectively. These had a great influence on Whitehead as evidenced in his *Science and the Modern World* and especially in *Process and Reality.* Monserrat explains that the demise of classical atomism brought on by the dematerialization of physical matter through the rise of the quantum theory brought much aid and comfort to a process-oriented metaphysics. Twentieth century physics has thus turned the tables on classical atomism. Instead of very small *things* (atoms) combining to produce standard processes (windstorms and such) modern physics envisions very small processes (quantum phenomena) combining to produce standard things (ordinary macro-objects) as a result of their *modus operandi.* Therefore, for Whitehead, it was obvious that the 20th century described a world in "flux" with unstable events that interacted with each other by way of physical prehensions in order to construct real entities in the same way that societies of organised events dynamically transformed a continuous process.[5]

Furthermore, the 19th century introduced a radically novel perspective to the understanding of the world: the evolutionary point of view. In this regard, J. Monserrat again says:

Classical metaphysics and philosophy responded to the world in a "constructed" state; evolution, in turn, imposed the view of a dynamic world continually in process. To understand the general properties of this new world described by science, the "first philosophy": graeco-scholastic or Cartesian-mechanistic metaphysics was not enough. Many thinkers noticed this trend. Because of this, the philosophy of the end of the 19th and beginning of the 20th centuries was full of attempts to create a new metaphysics; the metaphysics of a new image of the world born of science.[6]

One of the trends of this new philosophy was made up of vitalism. In effect, the world up until this point was understood from the point of a static, dualist graeco-scholastic philosophy or from the scientific paradigm of the machine (Cartesian mechanism). It was imperative to build an understanding of the world from an *organic paradigm*[7] of life in evolution. In this light, Hustwit maintains:

For not only is evolution a process that makes philosophers and philosophy possible, but it provides a clear model for how processual novelty and innovation comes into operation in nature's self-engendering and self-perpetuating scheme of things. Evolution, be it of organism or of mind, of subatomic matter or of the cosmos as a whole, reflects the pervasive role of process which philosophers of this school see as central both to the nature of our world and to the terms in which it must be understood.[8]

For Monserrat, "this gestating vitalism was present throughout Europe, mainly in France and Germany but was also an essential ingredient of the North American pragmatism."[9] Whitehead was greatly influenced by these pragmatists and by H. Bergson. Before Whitehead came into philosophy Bergson had published his great works and had international fame. In *Science and the Modern World* Whitehead frequently makes mentions of Bergsonian metaphysics.

First of all, Whitehead saw the universe as engaged in a truly creative advance, an advance leading to higher forms of value, importance and richness. It is essential to the universe that it comes from a definite past and moves ahead, sometimes after failures and regressions, to higher achievements. The whole world is dynamic and has a thrust for higher values.[10] Also, on the cultural level, mankind is ever striving for the realization of some ideal, proper to each age, to be achieved within a certain period of time. The ideal is never realized in its perfection, but it is under the attraction of the ideal that men, as individuals and as members of a society, have the incentive to move ahead to the best of their ability.[11] The last and most important reason comes from the science. The science of Whitehead's day gave evidence of a progressive evolution at work that shows that nature, as we know it today, has passed through higher and higher stages from inorganic matter to organic matter. With the new scientific discoveries on the early 20th centuries and especially with the quantum theory, the Newtonian science that had led to scientific materialism was no longer viable to explain the nature of the universe. The universe must be in motion, must be made up of events – energy like processes – and not static atoms. Whitehead, in his most creative years, followed the deliberation of quantum mechanics according to which physical reality consisted of corpuscular matter[12]

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[3] WHITEHEAD, A. N., *Science and the Modern World*, p. viii.
[4] Ibid., p. 157.
[5] Cf., MONSERRAT J., *Alfred N. Whitehead on Process Philosophy and theology: Cosmos and Kenosis of Divinity in Pensamiento, vol. 64 (2008), num. 242* p. 824.
[6] Ibidem.

[7] Hence Henri Bergson's *Elan Vital,* Whitehead's *Philosophy of Organism*
[8] Cf., J. R. HUSTWIT, *Process Philosophy* in Standford Encyclopedia of Philosophy, online version at http://plato.stanford.edu/entries/process-philosophy/.
[9] MONSERRAT J., *Alfred N. Whitehead on Process Philosophy and theology,* p. 825.
[10] A. N. WHITEHEAD, *Modes of Thought,* New York: Macmillan, 1938, pp. 16, 206-208.
[11] Ibid., pp. 164-165.
[12] 'Corpuscles' are small units of matter of various shapes and with various physical properties that interact with one

that at the same time was a wave. He found in microphysical events, such as electrons in their quantum orbit, that Physics at the beginning of the 20th Century described a world in "flux." The 19th Century evolutionary theories equally imposed on him the view of a dynamic world continually in process.[13]

Looking at the world from these three perspectives, Whitehead concluded that the fundamental fact of our experience is process. This does not mean sheer activity operating at random. Whitehead was constantly bothered by the question on why there should be process. Why should things act at all? Why should the world, on the broad cultural level and on the narrower scientific level, be continually striving for higher achievement? Why should things act at all?[14] These and others are the questions that Whitehead felt that science had left unanswered but that these demanded a deeper insight into the "metaphysical nature of things."[15] Whitehead, therefore, developed his philosophy with the hope that it might illuminate "the ultimate aim infused into the process of nature."[16] Even though the term process philosophy (metaphysics) is primarily associated with the work of Whitehead, process philosophy is a long-standing philosophical tradition. It is, therefore, crucial that we make a succinct historical inspection of this notion in its various manifestations prior to Whitehead.

II.   Process Metaphysics

Against any anti-metaphysical tendencies of his era, Whitehead tried to make a "dispassionate consideration of the nature of things, antecedently to any special investigation into their details. Such a standpoint is termed metaphysical."[17] This explains why he developed a comprehensive metaphysical system for the understanding of science, society and self as found in his major texts. He referred to this project as "Speculative Philosophy". He defines speculative philosophy or metaphysics metaphysics as the endeavor to discover the general ideas that are indispensable to the analysis of everything that happens. In fact, Whatever is found in 'practice' must lie within the scope of metaphysical description. When the description fails to include the 'practice,' the metaphysics is inadequate and requires revision. "Metaphysics is nothing but the description of the generalities which applies to all the details of practice."[18] In other words, it is:

The endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of

our experience can be interpreted. By this notion of 'interpretation' I mean that everything of which we are conscious, as enjoyed, perceived, willed, or thought, shall have the character of a particular instance of the general scheme. Thus the philosophical scheme should be coherent, logical and, in respect of its interpretation, applicable and adequate.[19]

An adequate metaphysics then must apply in general terms to the whole of reality, including all human subjective experiences. Even though Whitehead's metaphysics is especially constructed with reference to the emerging objective scientific worldview, he did not neglect subjective human experience. Indeed, the metaphysics is such that the normal uses of the terms *subjective* and *objective* no longer apply. This is because "nothing must be omitted, experience drunk and experience sober".[20] It is not adequate to construct a metaphysics that renders the full spectrum of the emotional and imaginative life invisible or insignificant. Whitehead warns that "philosophy may not neglect the multifariousness of the world—the fairies dance, and Christ is nailed to the cross".[21] Note that while Whitehead references fantastic inventions of human imagination, his objective is objectivity. A general description of reality is the goal.

Process metaphysics views the structure of reality as one of change and process. All entities in the world possess processes and are contributing to a larger process, reality. Process metaphysics is concerned with what exists in the world and with what terms this reality is to be understood. The guiding force behind this concept is that reality is to be explained in terms of processes and not static Aristotelian substances. For process metaphysicians, change of all sorts is the predominant quality of reality. Whitehead's process metaphysics "is concerned with the becoming, the being and the relatedness of actual entities." In his metaphysics, "relatedness is dominant over quality. All relatedness has its foundation in relatedness of actualities."[22] Hence, in the Whiteheadian categorical scheme, relatedness takes priority just as the Aristotelian substance does in Aristotle's scheme.

In his definition of process metaphysics above, Whitehead suggests that a conceptual scheme can be necessary and appropriate to the interpretation of experience. This is his most important claim, for it is this which enables him to frame an ontology which includes all that there is. Yet any such relation of necessity and contingency seems to present itself as a dilemma. Leslie Armour puts the dilemma as follows:

The claim that there must be some necessary truths arises chiefly from the association of necessity and constancy. If experiences are to be explained, *something* must remain constant throughout the sequence to be explained. If there are no necessities in reality, it is not certain that anything will be or has been constant. Yet Whitehead was convinced that our experience is Heraclitean: The most basic and important category is that of events. In such a universe,

another; 'Quantum Mechanics' studies the behaviour of unobservable subatomic particles such as electrons and photons, and their movements. Cfr. A. CHAKRAVARTTY, *Metaphysics for Scientific Realism,* New York, Cambridge University Press USA 2007, p. 72.

[13] J. MONSERRAT, *Alfred N. Whitehead on Process Philosophy and Theology: Cosmos and Kenosis of Divinity* 'in' Pensamiento, Vol. 64 (2008), num. 242, pp. 823-824.

[14] Cf., ROTH, R., *American Religious Philosophy*, USA 1967, p. 123

[15] WHITEHEAD, A. N., *Modes of Thought,* p. 217 in Roth, R., *American Religious Philosophy*, USA 1967, p. 123

[16] WHITEHEAD, A. N., *Modes of Thought,* p. 16 in Roth, R., *American Religious Philosophy*, USA 1967, p. 123

[17] WHITEHEAD, A. N., *Science and the Modern World*, p.158.

[18] WHITEHEAD, A. N., *Process and Reality,* p. 13.

[19] Ibid., p. 3.

[20] WHITEHEAD, A. N., *Adventures of Ideas*, 226

[21] WHITEHEAD, A. N., *Process and Reality,* p. 338.

[22] WHITEHEAD, A. N., *Process and Reality,* p. xiii.

nothing stays the same. Every actuality *seems* contingent. The conflict between flux and explanation is perhaps the oldest element in western metaphysics. One can read Plato as struggling to reconcile Parmenides who seemed to have discovered the logical conditions for intelligibility, and Heraclitus, who grasped the truth about experience.[23]

Not unnaturally, therefore, Whitehead saw all of subsequent philosophy as a series of struggles with Plato's problems and insights.[24] And he insisted that the abandonment of this quest was a major disaster.

III. The Method of Process Metaphysics
In his metaphysical endeavour, Heidegger does not undertake a book-burning campaign as Hume did nor does he launch a devastating attack on metaphysics as Kant. On reading historically backward, however, he asserts that in its historical journey, something went wrong with metaphysics. For Heidegger, this something that went wrong was the *Seinsvergessnheit*(forgetfulness) of Being.[25] Heidegger, as a result, took it upon himself as a major task to return metaphysics from the derailment it had undergone over the years. Following this same approach like Heidegger, Whitehead constructs his metaphysical system with the following "strong impressions" dominating his mind:

First, that the movement of historical, and philosophical, criticism of detached questions, which on the whole has dominated the last two centuries, has done its work and requires to be supplemented by a more sustained effort of constructive thought. Secondly, that the true method of philosophical construction is to frame a scheme of ideas, the best that one can, and unflinchingly to explore the interpretation of experience in terms of that scheme.[26]

Whitehead is conscious of the fact that despite the demise of classical metaphysics, his system, which is intended to be a modification of the former, is not final and error free. He expresses this consciousness when he states that "in philosophical discussion, the merest hint of dogmatic certainty as to finality of statement is an exhibition of folly."[27]

The best method of metaphysics, according to Whitehead, is by way of descriptive generalization which involves the fusion of empiricism and rationalism. In his definition of speculative philosophy Whitehead says that it must be "applicable" and "adequate". And he defines these thus: "here 'applicable' means that some items of experience are thus interpretable and 'adequate' means that there are no items incapable of such interpretation."[28] Empiricism then resides in its appeal to experience since we can deal only with what we experience and as such we must turn to such experience to determine the validity of what we speculate or theorize

about.[29] In the words of Whitehead, "the ultimate appeal into the general consciousness of what in practice we experience."[30] Yet this empiricism alone cannot give us metaphysical knowledge since, as Whitehead says, "the collapse of the method of rigid empiricism… occurs whenever we seek larger generalities."[31] The method of descriptive generalization involves "an accent from a particular fact, or from a species to the genus exemplified."[32] The genus exemplified refers to the larger generalities and only rationalism can elicit these larger generalities.

But is this method of descriptive generalisation a form of induction? The answer is affirmative but only in the broad sense of the term given that in Whitehead's estimation, there is no strict enumeration of particular facts. Yet, as Whitehead puts it, where observation (empiricism) fails, imagination takes over (hence imaginative rationalism). Contrary to the general understanding of induction, Whitehead does not conceive induction to be the derivation of general laws, instead it is the elicitation of definite features of experience. In his *Science and the Modern World* Whitehead holds that "the very baffling task of applying reason to elicit the general characteristics of the immediate occasion as set before us in direct cognition, is a necessary preliminary, if we are to justify induction."[33] The focus then is on the immediate occasion in its present concreteness. Thus, "the key to the process of induction", Whitehead says, "is to be found in the right understanding of the immediate occasion of knowledge in its full concreteness."[34] Descriptive generalisation, then, is the "utilisation of specific notions, applying to a restricted group of facts, for the divination of the generic notions which apply to all facts."[35]

These 'specific notions' are those arrived at by the process of imaginative rationalism. By introducing this notion of imaginative rationalism Whitehead hoped to solve what he perceived as "a somewhat more complex process than Bacon anticipated"[36] in his (Bacon) treatment of induction. Whitehead believes that "what Bacon omitted", in his theory of induction, "was the play of a free imagination, controlled by the requirements of coherence and logic."[37] Bacon's weakness, according to Whitehead, was that "he had in mind the belief that with a sufficient care in the collection of instances, the general law would stand out of itself." Whitehead, however, praises Bacon as "one of the great builders who constructed the mind of the modern world."[38]

For Whitehead, metaphysics must begin from an empirical observation and then move to imaginative rationalism to form generalisations. In this same light, Jay Tidmarsh explains:
Thus, any work in metaphysics must, as an initial matter, be strictly empirical. We must begin with that which we know,

[23]Leslie Armour.,*Whitehead's Metaphysics,Process Studies*, Vol. 21, Number 4, Winter, 1992.pp. 203.

[24]For Whitehead, "the safest general characterisation of European philosophical tradition is that it consists of a series of footnotes to Plato" *Process and Reality*, p. 39.

[25]Heidegger, m., *Basic Problems of Phenomenology,* Indiana: IndianaUniversity Press, 1982, pp. 17, 120, 319.

[26]Whitehead, A. N.,*Process and Reality,* p. xiv.

[27]Ibid.

[28]A. N.,Whitehead, *Process and Reality, p.* 3.

[29]A. N.,Whitehead, *Adventures of Ideas, p.* 223. Also, A. N.,Whitehead, Process *and Reality, p.* 300.

[30]A. N.,Whitehead, Process *and Reality, p.* 20.

[31]*Ibid., p.*7.

[32] A. N.,Whitehead, *Adventures of Ideas,* 235.

[33]A. N.,Whitehead, *Science and the Modern World,*p. 44.

[34]*Ibid.*

[35]A. N.,Whitehead, *Process and Reality, p.* 8.

[36]A. N.,Whitehead, *Science and the Modern World,*p. 44.

[37]A. N.,Whitehead, *Process and Reality, p.* 54.

[38]A. N.,Whitehead, *Science and the Modern World,*p. 44.

and that which we know lies entirely within our human experience. Then from that empirical basis we can attempt to generalize to those aspects of experience in which the totality of the Universe shares. These universal aspects of existence then lead us to establish a working hypothesis about the nature of existence. Next, we can test the hypothesis against additional empirical evidence in order to determine whether the hypothesis adequately explains the real world. If all aspects of our actual world can be explained bythe hypothesis, then the hypothesis is validated on the basis of existing knowledge; but if some aspects of the world escape its explanatory reach, then the hypothesis must fail.[39]

In his *Alfred North Whitehead*, N. Pittenger summarizes Whitehead's method of descriptive generalisation in the same vein as Tidmarsh:

It is empirical in that it begins from the most careful study of some given, perhaps quite restricted area. This may be science in any of its branches; it may be religious experience or moral awareness or the realm of the 'aesthetic'. But also rational, for from these careful study of particular areas, generalisations are made.[40]

Whitehead's Process metaphysics as such employs three methodologies, usually simultaneously: empiricism (knowledge from experience), rationalism (knowledge from deduction), and speculation (knowledge from imagination). Whitehead's famous metaphor for philosophy is that of a short airplane flight:

The true method of discovery is like the flight of an aeroplane. It starts from the ground of particular observation; it makes a flight in the thin air of imaginative generalization; and it again lands for renewed observation rendered acute by rational interpretation.[41]

Philosophy begins on the ground with the concrete reality of lived experience. Experience provides us with the raw data for our theories. Then, our thought takes off, losing contact with the ground and soaring into heights of imaginative speculation. During speculation, we use rational criteria and imagination to synthesize facts into a (relatively) systematic worldview. In the end, however, our theories must eventually land and once again make contact with the ground—our speculations and hypotheses must ultimately answer once again to the authority of experience. By taking this airplane flight as a model for speculative metaphysics, Whitehead envisions the process of metaphysics to consist in an unending series of "test flights," as our metaphysical conclusions are never final and always hypothetical. The process of adjusting our metaphysics to meet the demands of experience is a task with no end in sight, as experience continually provides the philosopher with new facts. Thus, process metaphysics regards the status of its own claims as contingent and tentative. In the words of Whitehead, "metaphysical categories are not dogmatic statements of the obvious; they are tentative formulations of the ultimate

generalities."[42] This differs significantly from classical metaphysical systems, which are regarded as final, authoritative, and necessary.[43]

For Bergson, metaphysics is the fruit of intuition. As Monserrat explains, "it was an intuition of the profound nature of vital movement by way of immediate experience. It is an intuition that perceives life as *duration* of a continuous *future*."[44]Stumpf quotes Bergson in these words:

To think intuitively is to think in duration…. Intuition starts from movement, posits it, or rather perceives it as reality itself, and sees in immobility only an abstract moment, a snapshot taken by our mind…. Intuition bound up to a duration which is growth, perceives in it an uninterrupted continuity of unforeseeable novelty; it sees, it knows that the mind draws from the more than it has, that spirituality consists in just that, and that reality, impregnated with spirit, creation.[45]

Whitehead also thought that metaphysics was born out of intuition. However, he thought it was an intuition based on experience. Metaphysics is thus reached by way of intuition. It comes from experience as from the perception of ones own body in an objective world that is organically open. Nevertheless, while philosophy is based on intuitive experience, it is something more: it is a rational and reflective construction of general concepts that are applied to the understanding of all concrete situations; in addition, they give meaning to précised and particular knowledge whether it is in daily life or in the sciences. For J. Monserrat, metaphysics may be arrived at intuitively but it is not formulated without rational and philosophical reflection. Metaphysics, for Whitehead is an abstraction that tries to create universal concepts that are general and cover all possible manifestations of reality. Hence four factors were present in Whitehead's conception of metaphysics:

first, intuition, based on experience, of the organic self in the world (in this case, it is true that metaphysics was born out of experiential intuition); second, his knowledge of the surprising scientific image of the world in the beginning years of quantum mechanics; third his knowledge of the authors that were trying to formulate the general concepts of a new metaphysics that integrated this experiential intuition with modern science (Bergson, Pierce or James); fourth, his original elaboration of a system of concepts that allowed the integration of all of our ordinary, religious and scientific experiences in a unified metaphysics.[46]

Is Whitehead then an empiricist or a rationalist? The answer is both. His aim is to reconcile both schools of thought. He follows in the footsteps of the British empiricists in opposing those thinkers who insist that metaphysics is a process of *apriori* deduction from incontestable first premises. At the

[39]J. TIDMARSH, "Whitehead's Metaphysics and the Law: A Dialogue" (1998). *Scholarly Works.*Paper 24, htt://scholarship.law.nd.edu/law_faculty_scholarship/24, (page consulted on 25th September 2015), Pdf doc, 6 – 7.
[40]N. Pittenger, *Alfred North Whitehead,* London: Lurtherworth Press, 1969, p. 18.
[41]A. N. WHITEHEAD, *Process and Reality,* p. 5.

[42]A. N.,WHITEHEAD, *Process and Reality, p.* 8.
[43]CF., *Process Philosophy,* in Internet Encyclopaedia of Philosophy
[44]J., MONSERRAT,"Alfred n. Whitehead on Process Philosophy and Theology: Cosmos and Kenosis of Divinity"p. 826.
[45]BERGSON, H., as quoted by Stumpf, S. E., *Philosophy: History and Problems,*p. 413.
[46]J.,MONSERRAT,"Alfred n. Whitehead on Process Philosophy and Theology: Cosmos and Kenosis of Divinity"pp. 827-828.

same time, Whitehead is a rationalist for he recognizes the role of reason in generalizing from initial observation to universal experience.[47] In fact, in the preface to *Process and Reality,* Whitehead observes that his philosophy is based upon a recurrence to that phase of philosophic thought which began with Descartes and ended with Hume. The philosophic scheme which they endeavour to explain is termed the Philosophy of Organism. There is no doctrine put forward which cannot cite in its defence some explicit statement of one of this group of thinkers, or of one of the two founders of all Western thought, Plato and Aristotle. But the philosophy of organism is apt to emphasize just those elements in the writings of these masters which subsequent systematizers have put aside. The writer who most fully anticipated the main positions of the philosophy of organism is John Locke in his Essay, especially in its later books.[48]

From his definition of metaphysics, it is evident that Whitehead's insistence on a coherent and logical metaphysics on the one hand, and on an applicable and adequate one on the other, demonstrates his desire to bridge the gap separating rationalists from empiricists in modern philosophical discourse. [49]

IV.   The Categoreal Scheme
Whitehead developed a set of categories to elucidate his whole theorising on reality. These are: the categories of the Ultimate, categories of Existence, Explanation and Obligation. For him, every entity should be a specific instance of one category of existence, every explanation should be a specific instance of categories of explanation, and every obligation should be a specific instance of the categoreal obligation. The category of the Ultimate expresses the general principle presupposed in the three more special categories.[50] It would be necessary to systematize the, more radical, fundamental metaphysical concepts that permit the understanding of the real world, both for the natural person and the scientist. It is clear that the metaphysical concepts created by Whitehead looked to be congruent with the images of the real world in science.

Actual Entities
Part of the philosophical task is to identify what kinds of things exist. Of course, that depends on what the philosopher means by *exist*. For some thinkers, to exist means to be fully actual as a concrete particular. For Kierkegaard, the term *existence* is reserved for an individual human being. To exist, he said, "implies being a certain kind of individual, an individual who strives, who considers alternatives, who chooses, who decides, and who above all, makes a commitment."[51] Whitehead reserves the mode of existence for what is actual and here he talks of actual entities. This is, without doubt, Whitehead's most basic concept. For him:

'Actual entities' – also termed 'actual occasions'[52]- are the final real things of which the world is made up. There is no going behind actual entities to find anything more real. They differ among themselves: God is an actual entity and so is the most trivial puff of existence in far off empty space. But though there are gradations of importance, and diversities of function, yet in the principles which actuality exemplifies all are on the same level. The final facts are, all alike, actual entities; ....[53]

Like the atoms of Democritus they are microcosmic entities, aggregates of which, termed *societies* or *nexus*, form the macrocosmic entities of our everyday experience - trees, houses, people. But whereas the atoms of Democritus are inert, imperishable, material stuff, Whitehead's actual entities are vital, transient "drops of experience, complex and interdependent."[54] To hold that the final real things of which the world is made up are drops of experience is not to imply that consciousness permeates inanimate nature; for consciousness can characterize only extremely sophisticated actual entities, and actual entities have the potentiality for the sophistication productive of consciousness only when they are members of extremely complex societies such as the society we call the human brain.[55]

Actual entities, then, are units of process, and the title *Process and Reality* is meant to indicate that for Whitehead these microcosmic units of process are the final realities - since there is no going behind actual entities to find anything more real. On the other hand, to mistakenly consider an aggregate of actual entities as a final reality is to commit the Fallacy of Misplaced Concreteness.[56] This is because for him, "the actual world is a process, and that the process is the becoming of actual entities. Thus actual entities are creatures."[57]

Eternal Objects
From a Whiteheadian perspective, entities can be actual (real things that exist) or ideal (pure forms that do not exist

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[47]J. TIDMARSH, "Whitehead's Metaphysics and the Law: A Dialogue", p. 7.
[48]A. N. WHITEHEAD, *Process and Reality, p.* xi.
[49]J. TIDMARSH, "Whitehead's Metaphysics and the Law: A Dialogue", p. 8.
[50]WHITEHEAD, A. N., *Process and Reality,* pp. 20-21.
[51]Kierkegaard in Stumpf, S. E., *Philosophy: History and Problems,* New York, McGraw-Hill, 2003, pp. 357.

[52]For all practical purposes the phrases *actual occasion* and *actual entity* are interchangeable. Whitehead notes only one difference: the word *occasion* implies a spatio-temporal location. God is the one nontemporal actual entity. Hence Whitehead observes that "the term 'actual occasion' will always exclude God from its scope" (Process and Reality, p.88). It is true, however, that even though "the term 'actual occasion' is used synonymously with 'actual entity'" (Process Reaity, p. 77), the use of *actual occasion* should alert one to the likelihood that the "character of extensiveness has some direct relevance to the discussion, either extensiveness in the form of temporal extensiveness, that is to say 'duration,' or extensiveness in the form of spatial extension, or in the more complete signification of spatio-temporal extensiveness" (Process Reality, p. 77).
[53]WHITEHEAD, A. N., *Process and Reality,* p. 18.
[54]Ibid.
[55]SHERBURNE, D. W*., A Key to Whitehead's* Process and Reality (Macmillan, 1966), quoted by Alan Anderson *Whiteheadian Terminology* at http://websyte.com/alan/termin.htm (page consulted on the 1st September 2011)
[56]For Whitehead, this is "merely the accidental error of mistaking the abstract for the concrete." *Science and the Modern World,* p. 52.
[57]WHITEHEAD, A. N., *Process and Reality,* p. 22.

but are able to define existent realities). These ideal entities are known as eternal objects. They define a realm of possibilities, of conditional potentials of existent reality and therefore of actual entities and their dynamic processes of association in their complex evolution. There is a terminological diversity that revolves around this concept: forms, ideal identities, abstract entities, universals, potential forms.[58]

For Whitehead, "any entity whose conceptual recognition does not involve a necessary reference to any definite actual entities of the temporal world is called an 'eternal object'."[59] Eternal objects are forms of definiteness capable of specifying the character of actual entities; they are "Pure Potentials for the Specific Determination of Fact."[60] An actual entity's process of becoming is a process of acquiring definiteness by a series of decisions to select or reject various forms of definiteness (eternal objects) after grading them in a diversity of relevance.[61] In describing the three formative elements of the universe (creativity, eternal objects and God) Whitehead maintains that eternal objects are "the realm of ideal entities, or forms, which are in themselves not actual, but are such that they are exemplified in everything that is actual, according to some proportion of relevance."[62] That's why an eternal object can be described only in terms of its potentiality for 'ingression' into the becoming of actual entities.[63] The selection and rejection of eternal objects is the done only by each actual entity since eternal objects are simply pure potentials. Hence, "an eternal object is always a potentiality for actual entities; but in itself, as conceptually felt, it is neutral as to the fact of its physical ingression in any particular actual entity of the temporal world."[64] In this light, Christian explains:

Eternal objects are pure potentials. They are in fundamental contrast with actual entities. In themselves they do not determine in what actual entities they are *ingredient*. This is what is meant by saying that they are "pure" potentials. They are merely possible forms of definiteness. Prehensions of eternal objects are called *conceptual prehensions*, in contrast with prehensions of actual entities, which are called *physical prehensions*. [65]

But how free are actual entities in their decisions? Not entirely for as Sherburne explains that any given actual entity does not make its decisions with utter freedom.[66] For

Whitehead, "an actual entity arises from decisions *for* it and by its very existence provides decisions *for* other actual entities which supersede it."[67] The past, from which it inherits, presents it with certain forms of definiteness that it is compelled to reiterate. Actual entities, however, exercise much freedom in their selection of eternal objects. Furthermore, eternal objects are essentially aloof from change in that it is of their essence to be eternal. But they are involved in change in the sense that the very process of "becoming in any given actual occasion is the process of determining, via selected eternal objects, the specific character, the kind of definiteness that will make that actual entity what it will be."[68] Hence for Whitehead, "the things which are temporal arise by their participation in the things which are eternal."[69]

Creativity

Whitehead argues that the best description of ultimate reality is through the principle of *creativity*. Creativity is the universal of universals - that which is only actual in virtue of its accidents or instances. Creativity is the most general notion at the base of all that actually exists. Thus, all actual entities, even God, are in a sense "creatures" of creativity.[70] For J. R. Wilcox:

Creativity in Whitehead is analogous to prime matter in Aristotle in that it is the counterpart of form. As the "ultimate notion of the highest generality at the base of actuality," it is "without a character of its own" and "cannot be characterized because all characters are more special than itself" (PR 20/30). Creativity is the "ultimate behind all forms" (PR 20/30). There is, however, a crucial difference between creativity and prime matter in that whereas prime matter is passive with respect to receiving the actuality of the forms, creativity is pure activity. Creativity is "divested of the notion of passive receptivity, either of 'form' or of external relation" (PR 31/46). For Whitehead, it is not the material, but the formal principle that is passive or potential; the "eternal objects are the pure potentials of the universe" (PR 149/226).[71]

In *Religion in the Making,* creativity is the process "whereby the actual world has its character of temporal passage to novelty"[72] while in *Process and Reality*, "creativity is the universal of universals characterizing ultimate matter of fact....Creativity is the principle of novelty."[73] For W. Christian, *Creativity* is Whitehead's term for the most fundamental character of actuality. Creativity is not an individual thing and has no status apart from actual

[58]MONSERRAT J., p. 829.

[59]WHITEHEAD, A. N.,*Process and Reality,* p. 44.

[60]Ibid. p. 22.

[61]Cf., ibid., p. 43.

[62]WHITEHEAD, A. N., *Religion in the Making,*New York: Macmillan, 1926, p. 24.

[63]WHITEHEAD, A. N.,*Process and Reality,* p. 23. The term 'ingression' refers to the particular mode in which the potentiality of an eternal object is realized in a particular actual entity, contributing to the definiteness of that actual entity.

[64]WHITEHEAD, A. N.,*Process and Reality,* p. 44.

[65]CHRISTIAN, W. A.*An Interpretation of Whitehead's Metaphysics,* Yale, 1959, p.13. The terms *Conceptual prehension and Physical prehensions* shall be explained below when talking about Prehension

[66]SHERBURNE, D. W.*, A Key to Whitehead's* Process and Reality (Macmillan, 1966), quoted by Alan Anderson*Whiteheadian

Terminology at http://websyte.com/alan/termin.htm (page consulted on the 1st September 2011)

[67]WHITEHEAD, A. N.,*Process and Reality,* p. 68.

[68]SHERBURNE, D. W.*, A Key to Whitehead's* Process and Reality.

[69]WHITEHEAD, A. N.,*Process and Reality,* p. 40.

[70]HUSTWIT, J. R.,Process *Philosophy*in Internet Encyclopedia of Philosophy at http://www.iep.utm.edu/processp/ (pageconsulted on the 20th September 2011).

[71]WILCOX, J. R., *A Monistic Interpretation of Whitehead's Creativity,* in ProcessStudies, Vol. 20, Number 3, Fall, 1991, p. 163. (PR is an abbreviation of Whitehead's *Process and Reality*)

[72]WHITEHEAD, A. N., *Religion in the Making,*p. 24.

[73]WHITEHEAD, A. N.,*Process and Reality,* p. 21.

entities.[74]In Whitehead's system, the ultimacy of creativity is undisputed. For him:

In all philosophic theory there is an ultimate which is actual in virtue of its accidents. It is only then capable of characterisation through its accidental embodiments, and apart from these accidents is devoid of actuality. In the philosophy of organism this ultimate is termed 'creativity'; and God is its primordial, non-temporal accident.[75]

Concrescence

For Whitehead, concrescence is the name for the process in which the "universe of many things acquires an individual unity in a determinate relegation of each item of the 'many' to its subordination in the constitution of the novel 'one'."[76] Cobb explains that concrescence is simply the process of becoming "concrete." Concrete here means fully actual as a completed actual occasion.[77]Iroegbu looks at the term from an etymological perspective:

Concrescence is the act of becoming of actual entities. From the Latin *Concrescere*, to grow together, it is the productive act, the act of becoming of a being which is togetherness. In concrescence, the new being passes from its components in their ideal disjunctive diversity into the same components in their realised concrete togetherness. The new being becomes real.[78]

For Monserrat, this term comes from the vocabulary of biology:

It is the union and the growing together of parts that were originally separate. It is the constitution of unity in the universe of multiple things until the final result of a new unitary entity. The evolutionary process of the universe has been a process of concrescence because the original actual entities are dynamic and produce a process that is made up of continual relationships between entities.[79]

Concrescence is, therefore, the *growing together* of a many into the unity of a one.With the attaining of its satisfaction an actual entity is completed and *perishes,* that is, it becomes a datum for fresh instances of concrescence. Cobb explains further: the use of the term "concrescence" places emphasis on the idea that even these momentary flashes of actuality that Whitehead calls actual occasions are processes. There is the actual occasion in the process of becoming, and then there is the completed occasion. Whitehead calls the completion "satisfaction." For Cobb, this term emphasizes that this process of becoming is characterised by subjectivity. There is a subjective aim, a subjective form, a decision and a satisfaction. But as soon as the occasion attains satisfaction it becomes an objective datum for successor occasions.[80]

Prehension

Concrescence describes a genetic process in which multiple things in the universe organically unify. Prehension is a term that describes the *activity* of each of the actual entities when they make a concretion or unit with other entities. The unity of the universe is constructed by way of the prehension of entities upon others. It is the active essence of the actual entity: to be dynamic in a process that configures the concrescent unit with other entities.[81]For Whitehead, every prehension consists of three factors: (a) the 'subject' which is prehending, namely, the actual entity in which that prehension is a concrete element; (b) the 'datum' which is prehended; (c) the 'subjective form' which is *how* that subject prehens that datum.[82] In the simplest case, we have a prehension of a single actual occasion, so that the objective datum is the aspect of that occasion that is prehended. But the datum of most prehensions is a nexus. For example, especially in conscious experience, I prehend a stone, not the individual molecules of which it consists, much less the individual quanta. And the objective datum of the occasion as a whole is always a nexus, namely, the actual world of the occasion.

Whitehead further notes two different types of prehensions depending on the type of entity involved: Prehensions of actual entities – that is, prehensions whose data involve actual entities – are termed 'physical prehensions'; and prehensions of eternal objects are termed 'conceptual prehensions.'... There are two species of prehensions: (a) 'positive prehensions' which are termed 'feelings,' and (b) 'negative prehensions' which is said to 'eliminate from feeling.'[83]

These are just some of concepts in Whitehead's process metaphysics.

Conclusion

As is evident from the above presentation, Process metaphysics is characterized by an attempt to reconcile the diverse intuitions found in human experience into a coherent holistic scheme. Hustwit explains that this reconciliation of the intuitions of objectivity and subjectivity, with a concern for scientific findings, produces the explicitly metaphysical speculation that the world, at its most fundamental level, is made up of momentary events of experience rather than enduring material substances. Process metaphysics speculates that these momentary events, called actual occasions or actual entities, are essentially self-determining, experiential, and internally related to each other.Actual occasions correspond to electrons and sub-atomic particles, but also to human persons. The human person is a society of billions of these occasions (that is, the body), which is organized and coordinated by a single dominant occasion (that is, the mind). Thus, process philosophy avoids a strict mind-body dualism.[84]

Whitehead's process metaphysics does not rely on the usual dualisms that have vexed previous metaphysical systems. We no longer need to be troubled about the distinctions

[74]CHRISTIAN, W. A.*An Interpretation of Whitehead's Metaphysics,* Yale, 1959, p.13

[75]WHITEHEAD, A. N.,*Process and Reality,* p. 7.

[76]Ibid., p. 211.

[77]J. B. COBB, JR., *A Glossary with Alphabetical Index,* p. 59.

[78]IROEGBU, P., *Metaphysics: The Kpim of Philosophy,* Nigeria, International Universities Press Ltd, 1995, p.24

[79]MONSERRAT J., p. 829.

[80]J. B. COBB, JR., *A Glossary with Alphabetical Index,* p. 59.

[81]MONSERRAT J., p. 830.

[82]WHITEHEAD, A. N.,*Process and Reality,* p. 24.

[83]WHITEHEAD, A. N.,*Process and Reality,* p. 24.

[84]HUSTWIT, J. R., *Process Philosophy*in Internet Encyclopedia of Philosophy

between matter and mind, animate and inanimate, created and evolved, nature and nurture, or reductionism and emergence. The difference between atoms, animals, artifacts, and humans is in the degrees of complexity, the intensity of causal relationships, and the extent of self-creative freedom integrated in these various phenomena. The differences are not in any essentialized notions of natural kinds. Most philosophical problems in the metaphysics of contemporary science disappear with Whitehead's event-centered process philosophy.[85]

In sum, Whitehead's process metaphysics holds a unitary view of the world, that is, one order theory of the world. The world is conceived as an integrated and inter-related web of spatio-temporal processes. Every entity in the world is included in a single order of happenings. There is no exception, not even God as we shall see in the next chapter. As such, reality is organic and inter-related. Once static substance is negated, and along with it a model of fixed parts associated mechanically and externally, process thought takes up the model of mutually interdependent parts associated organically. Nature, including both organic and inorganic entities, in this view, becomes a vast complex of interacting forces and therefore no longer is it the independent essence or substance of which an entity is constituted-but rather the relation of that entity with others that determines the nature and mode of its existence. This leads to what can be called a social view of reality. This of course is vital in a time when there is a universal search for a genuinely social conception of man, and reality as a whole, Whitehead can speak of God in organic relation with the world.

BIBLIOGRAPHY

[1] COBB, J.B. (2008), - *A Glossary with Alphabetical Index to Technical Terms in Process and Reality: Whitehead Word Book*, P&F Press, Claremont.

[2] (1965), *A Christian Natural Theology* (Philadelphia: The Westminster Press.

[3] COBB, J.B. & GRIFFIN, D.R. (1976), *Process Theology: an Introductory Exposition*; The Westminster Press.

[4] CHRISTIAN, W.A. (1959), *An Interpretation of Whitehead's Metaphysics,* New Haven: Yale University Press.

[5] HARTSHORNE, C. (1972), *Whitehead's Philosophy: Selected Essays, 1935-70,* Lincoln, University of Nebraska Press.

[6] JOHNSON, A.H. (1962), *Whitehead's Theory of Reality.,* Dover Publications.

[7] KUNTZ, P.G. (1984), *Alfred North Whitehead,* G. K. Hall & Company.

[8] LOWE, V. (1962), *Understanding Whitehead,* Baltimore: John Hopkins Press.

[9] MARTIN, R.M. (1974), *Whitehead's Categoreal Scheme and Other Papers,* MartinusNijhoff, The Hague.

[10] MAYS, W. (1977), *Whitehead's Philosophy of Science and Metaphysics,* The Hague: MartinusNijhoff.

[11] MESLE, Robert (2008), *Process-Relational Philosophy: An Introduction to Alfred North Whitehead,* Pennsylvania: Templeton Foundation Press.

[12] PITTENGER, N. (1969), *Alfred North Whitehead,* London: Lurtherworth Press.

[13] RESCHNER, N. (2000), - *Process Philosophy*: *A Survey of Basic Issues*, Pittsburgh: University of Pittsburgh Press.

[14] (1996), *Process Metaphysics: An Introduction to Process Philosophy*, New York: State University of New York Press.

[15] SCHILPP, Paul Arthur (ed.) (1991), *The Philosophy of Alfred North Whitehead*, volume III of *The Library of Living Philosophers*.Open Court, La Salle, Illionis, 2. Edition.

[16] STENGERS, I. (2002), *Penser avec Whitehead: une libre et sauvage création de concepts,* Paris: Seuil.

[17] SWEET, W., "Introduction: Taking Metaphysics Seriously" in *Approaches to Metaphysics*, W. Sweet, (ed.), Kluwer Academic Publishers, New York 2004, 1-2.

[18] HUSTWIT, J., "Process Philosophy" in *Stanford Encyclopedia of Philosophy* online at http://plato.stanford.edu (consulted on 25th March

[19] FORD, L.S., "A Guide to Whitehead" in *Teaching Philosophy,* Vol. 7, No. 2, April 1984, 143.

[20] ZVIE BAR-ON, A., *The Categories and the Principle of Coherence: Whitehead's Theory of Categories in Historical Perspective,* Dordrecht: MartinusNijhoff Publishers, 1987.

[21] USHENKO, A.P., *The Philosophy of Relativity,* London: G. Allen &Unwin, Ltd., 1937.

[22] IROEGBU, P., *Metaphysics: The Kpim of Philosophy,* Nigeria, International Universities Press Ltd, 1995.

[23] HEIDEGGER M., - *Being and Time*, J. MACQUARRIE – E. ROBINSON (trs.), Basil Blackwell, Oxford 1962, 23.

[24] *An Introduction to Metaphysics*, Yale University Press Inc., London 1959

[25] *Basic Problems of Phenomenology,* Indiana: Indiana University Press, 1982.

[26] TIDMARSH, J., "Whitehead's Metaphysics and the Law: A Dialogue" (1998). *Scholarly Works.* Paper 24, online at htt://scholarship.law.nd.edu/law_faculty_scholarship/24, (page consulted on 25th September 2015), Pdf doc, 6 – 7.

[27] LOWE, V., "The Development of Whitehead's Philosophy" in *The Philosophy of Alfred North Whitehead,* P. A. Schilpp (ed), Northwestern University Press, 1941.

[28] LESLIE ARMOUR, "Whitehead's Metaphysics", in *Process Studies*, Vol. 21, Number 4, Winter, 1992.

[29] Whitehead, A. North, *Adventures of Ideas*, Cambridge: Cambridge University Press, 1947.

[30] _____, *Modes of Thought*, New York: Free Press, 1966.

[31] _____, *Process and Reality*, Corrected Edition, ed. Griffin & Sherburne, New York: The Free Press, 1978

[32] ____, *Science and the Modern World,* The New American Library of World literature, inc.New York, 1926.

[33] _____, *Religion in the Making*, Cambridge: Cambridge University Press 1930.

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[85]Cf.,GRASSIE, W.,*Resources and Problems in Whitehead's Metaphysics,*