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Process Philosophy and the Emergent Theory of Mind: Whitehead, Lloyd Morgan and Schelling

Arran Gare

Philosophy and Cultural Inquiry, Swinburne University,
P.O. Box 218, Hawthorn, Vic. 3122. Australia.
Email: agare@swin.edu.au

Abstract— While some process philosophers have denigrated the emergent theory of mind, what they have denigrated has been ‘materialist’ theories of emergence. My contention is that one of the most important reasons for embracing process philosophy is that it is required to make intelligible the emergence of consciousness. There is evidence that this was a central concern of Whitehead. However, Whitehead acknowledged that his metaphysics was deficient in this regard. In this paper I will argue that to fully understand the emergent theory of mind and its relation to process philosophy it is necessary to recast the whole history of modern philosophy in terms of efforts by philosophers grappling with the relationship between mind and body, or more broadly, consciousness and nature. This will involve granting a central place to Schelling’s philosophy, the ideas that influenced it and how Schelling’s insights were developed by subsequent philosophers. Process philosophy will then be seen as the tradition generated by efforts to transcend the opposition between idealism and materialism, and its promise in this regard, apart from anything else, is what makes it the most promising philosophy for the future.

Keywords—

I. INTRODUCTION

In *The Mind and its Place in Nature*, published in 1926, C.D. Broad characterized ‘Reductive Materialism in general and strict Behaviourism in particular’ as ‘instances of the numerous class of theories which are so preposterously silly that only very learned men could have thought of them’ (623). John Searle, in *The Rediscovery of Mind*, expressed much the same sentiments not only about eliminative materialism and behaviourism, but also about identity and functionalist theories of mind (1992, chap.1). Given what we know with reasonable certainty about the evolution of the universe and of earth, that life evolved from a world in which there was no life and that humans, characterized by complex cultures and reflexive consciousness, evolved from simpler forms of life, both might equally have said that the emergent theory of mind, which each defended, is so obviously true in one form or another that only highly educated people could fail to accept some version of it. The universe must be seen as creative, generating new kinds of beings that are more than the conditions of their emergence. As Conwy Lloyd Morgan, the philosopher who coined the notion of emergence, put it, ‘the orderly sequence [of natural events], historically viewed, appears to present, from time to time, something genuinely new. Under what I here call emergent evolution stress is laid on this incoming of the new’ (Lloyd Morgan, 1923, p.1). New beings

have new qualities not predictable from antecedent events, these qualities being the expression of ‘a system of intrinsic relatedness’ (p.19). Lloyd Morgan argued that ‘what is supervenient at any emergent stage of evolutionary progress is a new kind of relatedness – new terms in new relations – hitherto not in being. In virtue of such new kinds of relatedness, not only have natural entities new qualities within their own proper being, but new properties in relation to other entities’ (p.19). Rather than examining the relationship between mind and body or thoughts and the brain, the proper way to understand the relationship between human consciousness and the rest of nature is to investigate each of the various emergent levels of being, including different forms of life, which have preceded the emergence of human consciousness. The emergent theory of mind is presented as part of a general theory of emergent evolution.

Where do process philosophers stand on this issue? Most process philosophers influenced by Whitehead are concerned to defend pan-experientialism, and have been dismissive of the emergent theory of mind. Charles Birch and John Cobb exemplify this attitude (Birch and Cobb, 77-9). However, what these thinkers are really opposing is materialist versions of theories of emergence; that is, the claim that since configurations of matter can have properties not found in the components of these configurations, then

it is possible that more complex configurations could have the properties of sentience and even consciousness. Just as with water the property of wetness is not contained in either hydrogen or oxygen, so brains can have consciousness although this property is not contained in its component cells. While less crude, the emergent theories of mind of John Searle and most of the members of the Santa Fe Institute are of this kind (Searle, 1992, p.111f; Crutchfield, 1994). They still assume an essentially materialist or mechanist view of the physical world. What process philosophers question, and here they are at one with other opponents of the emergent theory of mind, is how any arrangement of matter or interaction between bits of matter conceived as extended bodies could give rise to anything like experience or consciousness.

But as Broad pointed out, there are different versions of emergentism. 'Emergent materialism' he characterized as the doctrine holding that '[m]ateriality is a differentiating attribute, and mentality is an emergent characteristic'. This is the version of emergentism to which process philosophers are opposed. 'Emergent mentalism' is the doctrine holding that 'Mentality is a differentiating attribute, and materiality an emergent characteristic'. This is usually associated with idealism and in recent years has rarely been taken seriously. 'Emergent neutralism' is the doctrine holding that '[n]either mentality nor materiality is a differentiating attribute, but both are emergent characteristics' (p.632). Elaborating on this third form of emergentism, Broad argued that the neutral 'stuff' from which materiality and mentality emerge 'must be supposed (a) to have some of the factors included in materiality and none of those included in mentality; or (b) to have some of the factors included in mentality and none of those included in materiality; or (c) to combine some of the factors of mentality with some of the factors of materiality' (p.633). Although the notion of 'stuff' is problematic and should perhaps be replaced by the notion of basic existents, in my view, emergent neutralism is not only compatible with process philosophy, it is characteristic of it, and the different ways of conceiving the basic existents correspond to different versions of process philosophy. Ivor Leclerc's version of process philosophy (Leclerc, 1972, 1986) is closer to the first version, (a), while David Ray Griffin's version is closer to the second version, (b). Significantly, most of the early proponents of the theory of emergence were emergent neutralists, and tended to conceive the basic existents as processes.

II. THE EMERGENT THEORY OF MIND AND WHITEHEAD

What then was the relationship between Whitehead's metaphysics and the emergent theory of mind? To appreciate this it is necessary to first look at the early proponents of the theory of emergence.

While Conwy Lloyd Morgan was the first person to articulate the notion of emergence, it was immediately taken up and developed as part of a new metaphysical system by Samuel Alexander who presented his ideas in the Gifford Lectures of 1916 and 1918. These were published in 1920 as Alexander's *magnum opus*, *Space, Time and Deity*. Lloyd Morgan was strongly influenced by this work, and further developed his version of the theory in the Gifford Lectures of 1922 and 1923 and published in 1923 and 1925 as *Emergent Evolution* and *Life, Mind and Spirit*.

Alexander started by postulating pure motions characterized as space-time instants. He characterized time as the mind of space, although he rejected the notion that 'time is mind or any lowest degree of mind' (*Space, Time and Deity*, II, p.44). From this starting point Alexander attempted to characterize the emergence of matter, first with its primary qualities, later, with its secondary qualities, then life, mind and deity. His theory was basically a form of neutral emergentism if type (a), taking the neutral basic existents to have some of the properties of materiality and none of those of mentality; and it was also a form of process philosophy.

Lloyd Morgan rejected Alexander's notions of space-time, arguing that there is no spatio-temporal relatedness apart from events. Events are the basic existents, but there are specific kinds 'of integral relatedness of which the constitutive characters of each member of the group is an emergent expression' (1923, p.7). The new kind of relatedness associated with such emergent levels then supervenes over the lower events. By virtue of the supervenience of the higher levels, systems are characterized by immanent causation or self-causation, which Lloyd Morgan distinguished from transeunt causation or causation by extrinsic conditions. Lloyd Morgan also argued that 'there are no physical systems, of integral status, that are not also psychical systems; and no psychical systems that are not also physical systems. All systems of events are in their degree psycho-physical' (p.26). Lloyd Morgan's theory then appears to be a form of neutral emergentism of type c. Lloyd Morgan always spoke of the world as consisting of events and systems of events and was strongly influenced by the evolutionary notions of Bergson and Alexander. He also was a process philosopher of sorts.

Whitehead appears to have taken Lloyd Morgan's work as a point of departure, seeing it as defining the problems to be solved. Lloyd Morgan was familiar with Whitehead's book, the *Concept of Nature*, drawing from it and criticizing it. He considered sympathetically Whitehead's characterization of objects as universal and timeless elements of reality which ingress in the events of nature, but attacked Whitehead for attempting in this work to characterize nature as a closed system independent of the knower. He noted that while Whitehead claimed to 'leave to metaphysics the synthesis of the known and the known' (p.44), he continually used expressions such as 'disclosed to sense awareness' (p.235). It was shortly after this, in 1925, that Whitehead published

Science and the Modern World, the first published work where he adopted what he called a 'metaphysical' standpoint (p.157). Whitehead acknowledged his indebtedness to only two thinkers, Lloyd Morgan and Alexander. 'There has been no occasion in the text to make detailed reference to Lloyd Morgan's *Emergent Evolution* or to Alexander's *Space, Time and Deity*', he wrote. 'It will appear obvious to the readers that I have found them very suggestive' (p.viii). Here, in what Lewis Ford refers to as the first metaphysical synthesis (Ford, chap.2), Lloyd Morgan's notion of evolution is most clearly evident. It is here that he argues, very much in accordance with Lloyd Morgan's notion of a hierarchy of supervenient kinds of relatedness, that '[t]he concrete enduring entities are organisms, so that the plan of the whole influences the very character of the various subordinate organisms which enter into it' (p.79).

In 1927-28 Whitehead gave his own Gifford Lectures, published as his *magnum opus*, *Process and Reality: An Essay in Cosmology* in 1929. While this work makes no mention of Lloyd Morgan and mentions Alexander only twice, and to some extent abandons ideas presented in *Science in the Modern World*, it was clearly a continuation of the tradition of Lloyd Morgan and Alexander committed to developing a coherent evolutionary cosmology which would overcome the dualism between the physical and the mental and make the emergence of consciousness intelligible.

In the mature metaphysics, the basic existents of the universe are 'actual occasions', corresponding to Lloyd Morgan's 'events'. The coining of this term was part of a quest by Whitehead, who emphasized that he was not a panpsychist, for a language neutral between the mental and the physical. Actual occasions, characterized as 'concrescences' of 'prehensions' of anterior actual occasions and of possibilities of definiteness or 'eternal objects', satisfying themselves in a decision by which all indetermination is eliminated, are both subject and object, physical and mental: 'An occasion is a subject in respect to its special activity concerning an object; and anything is an object in respect to its provocation of some special activity within a subject' he wrote. 'Each occasion has its physical inheritance and its mental reaction which drives it on to its self-completion' (1933, p.176 & 190). Whitehead clarified his intention to avoid the dualism between the physical and the mental in his last major work, *Modes of Thought*. 'For some, nature is mere appearance and mind is the sole reality. For others, physical nature is the sole reality and mind is an epiphenomenon', he wrote. 'The Doctrine that I am maintaining is that neither physical nature nor life can be understood unless we fuse them together as essential factors in the composition of "really real" things whose interconnections and individual characters constitute the universe' (p.150).

A group of actual occasions, exhibiting a common function by virtue their mutual immanence, is a

nexus. When a nexus is 'self-sustaining', that is, 'is its own reason' (Whitehead, 1933, p.203), it is a society (corresponding to Lloyd Morgan's 'self-causing system of events'). Whitehead's analysis of the relationship between actual occasions and societies offers an explanation of Lloyd Morgan's notion of 'integral relatedness of which the constitutive characters of each member of the group is an emergent expression'. Societies share in some type of social order by virtue of a 'common element of form illustrated in the definiteness of each of its included actual entities' due to 'the conditions imposed upon [each actual entity] by its prehension of some other members of the nexus' (p.203). The condition of reproduction of these actual occasions is their 'inclusion of positive feelings involving that common form' (p.203). Societies can form into larger societies. These provide the appropriate environment for their constituent societies: 'A structured society as a whole provides a favourable environment for the subordinate societies which it harbours within itself. Also the whole society must be set in a wider environment permissive of its continuance' (1978, p.99). Societies can be lifeless bodies or living bodies with mentalities of various grades according to their effect on their component actual occasions. Whitehead observed:

... it seems that, in bodies that are obviously living, a coordination has been achieved that raises into prominence some functioning inherent in the ultimate occasions. For lifeless matter these functionings thwart each other, and average out so as to produce a negligible total effect. In the case of living bodies the coordination intervenes. And the average effect of these intimate functionings has to be taken into account. ... [I]n a man, the living body is permeated by living societies of low-grade occasions so far as mentality is concerned. But the whole is coordinated so as to support a personal living society of high-grade occasions (1933, p.207f.).

So, as Whitehead wrote in *Process and Reality*, while '[f]or Kant, the world emerges from the subject; for the philosophy of organism, the subject emerges from the world' (p.88).

However, Whitehead's efforts in this regard might be taken as precluding real emergence. A.H. Johnson, a student of Whitehead whose research was devoted to interpreting his philosophy, suggested this to Whitehead. Johnson argued that Whitehead had defined societies of actual occasions in a way that the only novel qualities are those found in one component actual entity or in a series of actual entities. Whitehead responded that he 'should have introduced a Category of "Emergence of Novelty".' Johnson recounted Whitehead's further reflections on this:

In the doctrine (category) of 'transmutation' he tried to approach it, but didn't succeed. Under the headings: Extension; Proposition; Coordinate Division – it might have been considered. It comes under the heading of "Whereness". Whitehead pointed out that, though he hasn't formulated a Category of 'Emergence' ... he had noted the fact of 'pattern of society' – the pattern being not an

element in any one component [actual entity] (1963, p.53).

Clearly Whitehead was attempting to develop a version of emergent neutralism of type (c) in which the basic existents that constitute material objects and high order mentalities have some of the characteristics of materiality and some of mentality, but was not entirely happy with what he had achieved.

III. PROCESS PHILOSOPHY AND THEORIES OF EMERGENCE

What is the significance of this close relation between Whitehead and the early proponents of the notion of emergence? More fundamentally, what is the relationship between process philosophy and theories of emergence? My contention is that the effort to provide the basis for a theory of emergence captures the core of modern process philosophy. It is a continuation of what Lovejoy characterized as the revolt against the dualism introduced into philosophy by Descartes (Lovejoy, 1960). Descartes was primarily interested in reformulating our conception of physical existence as *res extensa* to facilitate its analysis through the new mathematics of analytical geometry. Unlike Hobbes, Descartes appreciated that if physical existence were so conceived, mind or consciousness would be unintelligible. Mind was characterized as *res cogitans*, conceived of as essentially distinct from physical existence, making the relationship between mind and matter unintelligible. While Descartes successfully inaugurated a new era in which mathematical physics became the paradigm and foundation for all other knowledge, by problematizing 'consciousness' he also generated a counter-tradition of thought centred on the assumption of the primary reality of consciousness. Since the seventeenth century large numbers of philosophers and scientists have taken the material world as conceived by Descartes, or as it was reformulated by Newton, as their point of departure and striven to explain everything, including society and human consciousness, in terms consistent with mathematical physics. This is the tradition, usually, although perhaps not correctly, thought to have begun with Hobbes (Herbert, 1989, chap.2), which Whitehead characterized as scientific materialism. Along with mainstream economists and psychologists, socio-biologists and philosophers such as Daniel Dennett, the majority of scientists, are continuing to develop and defend this research project.

This tradition has been opposed by other philosophers and some scientists taking individual or social consciousness as their primary reference point, explaining the realm of nature as a mental, cultural or spiritual construct. They do not accept the ontological implications of the scientific view of the world at face value. Often dismissed by their opponents as idealists, this tradition includes Vico, Berkeley, Kant, Fichte, Hegel, theorists of hermeneutics, neo-Kantians, Hegelian Marxists, and some of the pragmatists,

phenomenologists and ordinary language philosophers. This is a much less coherent tradition of thought than scientific materialism, divided between those who assume that consciousness is individual or transcendental and those who argue that it is essentially social, cultural or spiritual, and between those who assume that consciousness is contemplative and those who insist that praxis precedes reflective or theoretical thinking. What all such thinkers have in common is a refusal to be bound by the categories of reductionist science and a determination to do justice to the creativity and freedom of consciousness.

Finally, there is a smaller tradition of thought that acknowledges the achievements of so-called 'idealists' and the inconsistency of the way they have construed consciousness with the way the physical world is construed by the mainstream of scientists, but who still wish to take nature or the physical world rather than consciousness as their primary reference point for making the world intelligible. Much bolder than the 'idealists', these are the philosophers and scientists who have argued that whatever its achievements, the mainstream tradition of science must be fundamentally wrong, that nature must be such that consciousness and free agency, fully appreciated as such, can be conceived as part of nature. This requires that at least some of the central characteristics of consciousness must be central characteristics of all that exists, including non-living physical entities. Accordingly, they have called for a transformation or revolution in science on the basis of a new conception of nature from which consciousness could evolve.

Clearly there are complexities and anomalies papered over by such a schematic characterization of modern thought. Yet, despite such anomalies, my contention is that the history of modern philosophy and science only becomes properly intelligible when construed in this way. That is, it is only from the perspective of the ontological division introduced by Descartes, the achievements and failures of philosophers who embraced one or the other side of this dualism, and the slowly developing tradition of efforts to overcome this division by proposing something like emergence, that the achievements and limitations of the work of scientists and philosophers of the past three and half centuries become intelligible. Such a history requires a reassessment of past philosophers, particularly those rejecting both scientific materialism and 'idealism'. It is through such a history that the relationships between a vast range of philosophers and scientists, normally viewed in isolation from each other, can be properly understood and the work of Alexander, Lloyd Morgan and Whitehead placed in context and properly evaluated. That is, what is offered here is the sketch of a revisionist history of philosophy in general, and the basis of what I believe to be a more coherent history of process philosophy than has been offered hitherto, culminating in a successful account of the emergence of mind.

IV. PRECURSORS TO THE THEORY OF EMERGENCE:
FROM LEIBNIZ TO SCHELLING

Lloyd Morgan acknowledged a number of thinkers who contributed to his theory of emergence. He was strongly influenced by Henri Bergson, Herbert Spencer, E.G. Spaulding and Walter T. Marvin, but also acknowledged John Stuart Mill, G.H. Lewes and the psychologists Wundt and McDougal as having contributed essential components to the theory (1923, p.2ff.). However, if we consider the theory of emergence, and by virtue of this, a process view of the world, as part of the strategy to conceive nature such that consciousness can be conceived to be part of it, then it is clear that this strategy has a much longer history. It originated with Leibniz. Reacting to both Descartes' metaphysics and to Newton's cosmology, Leibniz conceived the primary existents of the world as proto-conscious monads, each striving for perfection. Temporal unfolding was seen to be central to the very being of monads, while spatial and temporal continua were treated as derivative and as abstractions from particular existents. 'Space is nothing but the order of the existence of things possible at the same time', Leibniz wrote, 'while time is the order of existence of things possible successively' (1969, p.536). Bodies as extended beings were also conceived as derivative aspects of reality. The world as conceived by mechanics then was seen not as grasping the core of physical existence, but as pertaining to appearances. Still, on the basis of his metaphysics, Leibniz argued against central ideas of the physics of Descartes and Newton. Seeing nature as essentially active, Leibniz postulated a universal *vis viva*, and in accordance with this, argued against Newton that the conservation of kinetic energy rather than the conservation of momentum should be taken as the basic principle of mechanics. And he suggested that the cosmos should be seen as evolving to higher and higher levels.

We can see here the basic argument for process philosophy. Leibniz appreciated that extended matter as conceived by Descartes, or matter located in space as conceived by Newton, are incompatible with any conceivable notion of consciousness. So he took consciousness as his point of departure and, having identified its essential properties, characterized all existence in these terms and then attempted to show how bodies in motion could be construed as derivative of such a world. Most importantly, Leibniz appreciated that consciousness is first and foremost active; it is in process, or is a process of becoming. However, he also ascribed perception to these processes. Leibniz postulated that the basic existents of the world or 'monads' are processes of perceiving so that the higher levels of consciousness could be seen as particular states of these basic existents. He then tried to show that the appearance of bodies, space and time could be explained through these monads, at the same time explaining how this world of bodies could be analyzable through mathematics; that is, Leibniz gave an account of how mathematical physics was possible in a world of mental processes.

In doing so, he made important contributions to mathematics and to mathematical physics. Thus, in order to give a proper place to the reality of consciousness, Leibniz developed a metaphysics privileging processes over things designed to account for, and in fact further develop, mathematical physics.

However, Leibniz did not develop a theory of how minds could emerge from the inanimate world. His monads were immortal windowless minds, completely autonomous from each other, developing in pre-established harmony. The development of mind was seen as a difference in the degree of consciousness of these monads, not a difference in kind. Bodies, space and time are not the primary existents from which minds evolved, but mere appearances for the intellect. What is emerging is the experience of bodies, space and time from the monads. This is an example of what Broad characterized as emergent mentalism.

This is the direction that Kant developed Leibniz's philosophy. As we all know, Kant argued that the sensory manifold which we come to experience as objects located in space, changing their positions over time, and causally interacting with each other, is experienced this way not because this is how the world really is, but because this is how the transcendental ego organizes experience. The sensory manifold is organized by imagination, the forms of intuition (space and time) and the categories and concepts of the understanding (including the category of 'causality and dependence'). Since it is through such organizing activity that we can know anything, we have no basis for knowing the things in themselves, the 'noumenal realm' behind the sensory manifold. Only the free moral will gives us some intimation of what this real world might be like. Kant's arguments, rather than those of Berkeley or Hume, have been the main source of inspiration for the development of various forms of 'idealism'.

But there was more to Kant than this. Not only did Kant contribute greatly to analyzing the nature of consciousness, throughout his life he adhered to Leibniz's notion that nature is essentially active (Kant, 1985). He contributed to the development of dynamism, arguing that nature does not consist of atoms but of centers of force (p.44). He also conceived of nature as having evolved and speculated on the formation of the solar system. He was interested in biology, introduced the notion of 'community' of causation in the second edition of the *Critique of Pure Reason* and defended functionalist or teleological explanations of living processes in the *Critique of Judgement* (although here he explicitly ruled out a theory of emergence). Kant contributed to the development of a new conception of nature.

To Kant's students such as Herder, this work was far more important to philosophy than Kant's critical philosophy and his critique of metaphysics (Nisbet, 1970). Developing Leibniz's and Kant's notion of a dynamic nature, embracing Kant's conception of human consciousness as active, but construing this

consciousness as social rather than individual and active rather than contemplative, Herder sketched out a conception of nature and of human history which contains almost all the elements of what has become the tradition of process philosophy. The central concept of Herder's philosophy of nature was *Kraft*, or dynamic, purpose-seeking forces. Contrary to Leibniz's philosophy, these were seen as flowing into each other, clashing, combining and coalescing to generate new kinds of beings. That is, Herder sketched a view of nature within which life, human history and mind could be seen as emergent phenomena, although the details of what was involved in emergence were never fully developed, and Herder did not grapple with the fundamental philosophical problems of such a theory (Nisbet, 1970).

Schelling, who began his career as a disciple of Kant's disciple Fichte, broke with Fichte and, drawing upon the work of Spinoza, Aristotle and radical neo-Platonists such as Boehme and Bruno, circumvented Kant's strictures on metaphysics and developed with far greater rigor Herder's cosmology (Schelling, 1994, pp.114-133; Hegel, 1995, p.514). This involved formulating what can only be characterized as a highly developed form of process metaphysics containing a theory of emergence. Herder and Schelling were closely aligned with and helped inspire German Romanticism and influenced a vast range of other thinkers in science, history, theology and philosophy. Schelling's philosophy therefore provides the key to understanding not only the history of modern process philosophy, but of post-mechanistic science and most of modern (and postmodern) philosophy.

V. SCHELLING AS PROCESS PHILOSOPHER AND THEORIST OF EMERGENCE

Schelling named one of his major works *System of Transcendental Idealism* and is usually characterized as an idealist. However, while this work was designed to analyze and elaborate the categories through which the ego understands the world, it was not meant to be a self-sufficient philosophy. Like Whitehead, Schelling opposed both the approach that takes the objective as primary and attempts to show how a subjective is annexed to it, and the converse approach that takes the subjective as primary and takes as its problem to show how an objective supervenes. Arguing for a transcendence of this opposition, he argued that the self-conscious 'I' needs to be explained, ultimately as the product and highest potentiality of nature. Transcendental philosophy therefore needs to be complemented by a philosophy of nature (Schelling, 1988), '*both sciences together are [required]*' (1978, p.2). Schelling claimed that his philosophy was 'neither materialism nor spiritualism, neither realism nor idealism' but contained within itself 'the opposition of all earlier systems' (1994, p.120). Later, he argued for the priority of the philosophy of nature over transcendental idealism (Bowie, 1993, p.57). Nature must be conceived as

capable, at its highest level of development, of giving rise to the self-conscious subject that could arrive at knowledge of nature. But such knowledge is inherently limited, Schelling concluded. As Michael Vater summed up Schelling's conclusions, 'The odyssey of consciousness ends, not with any grand rationalization of the universe nor with the transition to any timeless and final logical language underpinning all, but with a recognition of the finite and fragmented textures of empirical reality and the multiplicity of its partial intelligible schemata.' (Vater, 1978, p.xxxv) Schelling later argued that there is an 'unprethinkable being' (*unvordenkliches Sein*) that precedes all thought, within which all thought takes place, which is eternally beyond our complete grasp but which calls forth the quest to make intelligible the whole of existence (Schelling, 1977, p.160).

Schelling was ultimately concerned to make intelligible the free, self-conscious subject. He took volition as ontologically basic, but argued that will by itself could not become conscious of itself. Following Herder and Fichte, Schelling argued that such self-consciousness is only possible through the recognition of the other. The self catches sight of itself in the mirror of the other and is defined or delimited by the other. It is only through this reflexivity that it can become a free, self-determining will (1978, p.163). But to explain the emergence of the autonomous self through reciprocal recognition it is first necessary to explain the existence of will. Schelling's procedure was to subtract from self-consciousness to arrive at the lowest conceivable potential, and then construct the path upward through a successions of limits to show how the conscious self could emerge from this as its highest potential. The lowest potential arrived at was the 'pure subject-object', which Schelling equated with nature, and, he claimed, the 'unconscious' stages through which consciousness emerges can only become conscious to an 'I' which has developed out of them and realizes its dependence upon them.

This approach led Schelling to conceive nature as essentially self-constraining or limiting activity, simultaneously 'productivity' (or process) and 'products'. Insofar as nature is productivity, it is subject; insofar as it is product, it is object. He compared nature to a stream:

A stream flows in a straight line as long as it meets no resistance. Where there is resistance an eddy appears. Each original Product of Nature, each organization, acts like such an eddy. For example, the eddy is not static, but constantly changeable – but in each instant reproduces itself anew. Therefore no Product in Nature is fixed, but in each instant is renewed by the power of the whole of Nature (what we see is not the existing, but the constant Reproducing of the Products of Nature) (Schelling, 1856-61, Vol.III, p.18; trans. White, 1996, p.41.).

As Schelling conceived it, productivity consists in opposed activities limiting each other. He proclaimed, 'give me a nature made up of opposed activities ...

and from that I will bring forth for you the intelligence, with the whole system of its presentations' (1978, p.72). From opposed activities emerge force and matter, space and time, chemicals and non-living and living organisms. Whatever product or form exists is in perpetual process of forming itself. According to Schelling, the process of self-constitution or self-organization, rather than being a marginal phenomenon, must be the primal ground of all reality (Heuser-Kessler, 1986). Causal 'community' in which a whole maintains itself by reciprocal causation, instead of being treated as a derivative form of causation, as in Kant, was taken as the primary form of causation, with the cause-effect relations of mechanistic thought taken as derivative. Dead matter, in which product prevails over productivity, is a result of the stable balance of forces where products have achieved a state of indifference. Organisms are self-organizing beings in which productivity cannot easily maintain products in a state of indifference. Living organisms differ from non-living organisms in that their complexity makes it even more difficult to maintain a state of indifference; they are characterized by irritability. They must respond to changes in their environments creatively to form and reform themselves as products. The senses become an essential component of such creative response. Sentient life is the condition for the emergence of spirit, with its social forms and history. With spirit, we have intersubjectivity, the experience of world as objective, and the emergence of freedom to choose evil or good. Evil is the domination of the blind self-seeking urge. It is creative power out of control; but without such power there would be no existence and no good (Schelling, 1954). The potential for good comes with the self-consciousness that emerges with social relationships that limit, and facilitate the self-limitation, of this creative power.

VI. PROCESS PHILOSOPHY FROM SCHELLING TO WHITEHEAD

While Schelling's philosophy contains much more than has been presented here and is notoriously difficult to interpret, it is not difficult to see in it the precursor to the evolutionary cosmologies and theories of emergence of Alexander, Lloyd Morgan and Whitehead. But Schelling's philosophy was also the precursor to the evolutionary cosmologies of Engels, Herbert Spencer, C.S. Peirce and the pragmatists, Bergson, Aleksandr Bogdanov and Ludwig von Bertalanffy. While the influence is often indirect, all these thinkers have been grappling with the same fundamental problem and are indebted in one way or another, directly or indirectly, to Schelling. All such thinkers have emphasized the primary reality of process over things. They can all be characterized, as Schelling characterized his own philosophy, as 'neither materialism nor spiritualism, neither realism nor idealism' but as overcoming these divisions. Alexander, Lloyd Morgan and Whitehead should be seen as later developments of this tradition.

Appreciating this enables the ideas of all such thinkers to be understood as part of a developing tradition of thought, and the various contributions of each can then be evaluated accordingly, rather than being seen as particular reactions against the mechanical view of the world or against 'idealism'.

However, Schelling's influence extends beyond philosophers striving to develop an evolutionary cosmology. Schelling's *Naturphilosophie* has had a tremendous influence on science. Oersted's work on chemistry and electro-magnetism was strongly influenced by Schelling (Gower, 1973). The principle of 'conservation of energy' was formulated by scientists who had been influenced by Schelling (Kuhn, 1977). And many of the anti-reductionist developments in biology were inspired by *Naturphilosophie*. That is, efforts to construe nature to make intelligible the emergence of consciousness have proved enormously fruitful in the natural sciences, largely displacing mechanistic thinking in physics. Conversely, Schelling had a major influence on philosophers and social and cultural theorists reacting against Hegelian and neo-Kantian 'idealism' and the 'idealist' tendencies in Husserl (Gare, 2002). Directly and indirectly, Feuerbach and Marx were strongly influenced by Schelling, as were Friedrich Ast (a founder of hermeneutics), Kierkegaard, Schopenhauer, Nietzsche, Freud, Heidegger, Bakhtin, Deleuze and Zizek. Appreciating the roots of all these thinkers and the schools of thought they inspired in Schelling's philosophy enables their achievements to be appreciated as basically consistent with and possible contributions to the development of process metaphysics (Gare, 2002).

In this context, how should we view the work of Whitehead? In *Process and Reality* Whitehead characterized his work as based upon a recurrence of the phase of philosophical thought that began with Descartes and ended with Hume, praising in particular the work of Locke. While Whitehead claimed to be influenced by these thinkers, he was attempting to identify where philosophy went awry. As I have suggested, Whitehead was more immediately influenced by Alexander and Lloyd Morgan, who themselves belonged to a longer tradition of dynamic thinking in opposition to mechanistic thought. Whitehead was also influenced by ideas from physics, including Maxwell's electro-magnetic theories, thermodynamics, relativity theory and quantum theory that were developments of, or were only intelligible in terms of ideas going back to Leibniz and Schelling. Whitehead aligned himself with biologists opposed to the reduction of living beings to complex machines (Whitehead, 1968, Lecture Eight). He was strongly influenced by Romantic poetry. And he was indirectly influenced by Schelling through the writings of Lossky and the philosophy of Bradley (who, while usually characterized as an Hegelian, was in some ways closer to Schelling). What I am suggesting, and what I have argued in more detail elsewhere, is that while Whitehead in *Process and Reality* defined his work in relation to philosophers

such as Descartes, Locke and Hume, his originality came from developing the tradition of *Naturphilosophie* (Gare, 2002).

Whitehead, along with Peirce, is particularly important to this tradition as a logician and philosopher of mathematics. Developing, spelling out the implications of and deploying the new symbolic logic of relations, Whitehead and Peirce dispelled some of the biases against process thinking and considered again the place of mathematics in a world of processes. The core of Whitehead's metaphysics can be taken as an effort to defend speculative philosophy and to reformulate an organic view of the world to accord with these developments in logic and mathematics, thereby making it a more rigorous and defensible position. He acknowledged that one of his main concerns in *Process and Reality* was to rescue the type of thought exemplified by Bergson, William James and John Dewey from the charge of anti-intellectualism (Whitehead, 1978, p.xii). The result was a philosophy with striking resemblances to Schelling's, particularly in his analysis of the relation between subject and object and his theology, but which offers a far more detailed analysis of the proto-mental and proto-material aspects of process and of the relationship between process, logic and mathematics.

What then can we say about Whitehead's theory of emergence? What I have tried to show is that Whitehead, developing the tradition of *Naturphilosophie*, took it for granted that a cosmology must give a central place to emergence. It is also clear that he was not entirely satisfied with this aspect of his own philosophy. But his comments also reveal the extent to which Whitehead conceived his work to be exploratory rather than a finally completed system of thought. Like most great thinkers, Whitehead himself was a revisionist, constantly questioning and revising his own ideas, and would surely be much more sympathetic to revisionists amongst those he inspired than to orthodox exponents of his philosophy. Whitehead's philosophy needs revision to provide a better theory of emergence.

VII. BEYOND WHITEHEAD, OR, BACK TO SCHELLING

From the point of view of those attempting to revise Whitehead's philosophy to give a more adequate place to emergence there are two main problems. The first pertains to Whitehead's tendency on his own admission to grant only a derivative status to composite entities, the societies of actual occasions. The second pertains to Whitehead's doctrine of eternal objects, conceiving the realm of pure possibilities for definiteness such that any new developments in the world must be seen as realizing pre-existent possibilities.

While the problematic status of compound entities has engaged a number of process philosophers (Leclerc, 1986; Bracken 1994), the most radical revision of Whitehead's 'atomism' has been Lewis Ford's recent

suggestion that we recognize a plurality of levels of occasions, with smaller occasions being included in larger occasions, influenced by these larger occasions in the forms of definiteness they select while being prehended by the larger occasions in their own concrescence (Moses, 1997). Ford also wants to allow overlapping in the becoming of occasions. Although he does not refer to Bergson, his revision of Whitehead has led him to a Bergsonian conception of multiple, interacting levels of duration (Capek, 1971, p.159).

In relation to eternal objects, Murray Code, a leading expositor of Whitehead's philosophy of mathematics, argues that if nature is to be characterized as 'creative advance', then 'so called' eternal objects should be seen as evolving also (Code, 1995; Code, 1999; Code 2002). He suggests that we recognize imagination as an indispensable activity woven into the very fabric of process, and proposes that we reinterpret Whitehead's eternal objects as components of the semiosis as analysed by Peirce. According to Peirce, semiosis is triadic, consisting of a sign, an object and an interpretant, which in turn becomes a sign for further interpretation. Allowing for interpretation grants a place to imagination and the appreciation of new possibilities of the object interpreted. Code, following Peirce, suggests that a generalizing tendency (that is, a tendency to generate proto- 'eternal objects') could have originated within a world of chaos with vague signs, inviting imaginative interpretation, beginning what became a universal process of semiosis. Originally there would have been almost blind habitual interpretation characteristic of the inanimate world, with almost no entertainment of new possibilities. However, further evolution of nature from primitive life forms to humans could have led to the increasingly imaginative interpretations generating new possibilities to challenge habitual interpretations of situations. The generation by mathematicians of the realm of formal possibilities is one of the recent achievements of semiotic imagination. Code argues that such semiosis requires organisms as characterized by Whitehead to be the bearers of interpretations. Presumably, prehension should be seen as involving imaginative interpretation.

Reformulated in this way, Whitehead's philosophy accords more closely with the Schellingian tradition of natural philosophy. However, this tradition also contributes important elements to the Whitehead tradition of process thought. Previously I noted that those who have attempted to analyse human experience and to take this as the core of their philosophies can be divided firstly between those who begin with the experience of the individual and those who argue that human experience as self-reflexive is essentially social and related to others; and secondly, between those who assume an essentially contemplative notion of consciousness and those who insist that experience is first and foremost associated with practical engagement with the world. Whitehead, despite his emphasis on the relational nature of actual

occasions and on the self-constituting character or societies of actual occasions, tends to assume that experience is of contemplative individuals. And there is little appreciation of the active role of others in the constitution of either actual occasions or societies. For instance, there is no place for the prehension or appreciation of other actual occasions as co-becoming subjects (Whitehead, 1933, p.178). And there is no place given to struggle between societies of actual occasions to preserve themselves against the resistances, assertions or even threats of others. Correspondingly, there is little consideration of how new forms of cooperation develop between co-becoming societies and no place given to struggle in the development of cognition. Whitehead characterized life and then human life in terms of different grades of mentality, but he did not provide the means to explain these qualitative differences, merely attributing these to the development of potentialities inherent in actual occasions. Schelling's starting point, by contrast, is emphatically of practically engaged, socially constituted individuals. I believe that Schelling was basically right on this issue, and that this led Schelling to crucial insights about the nature of existence and of emergence, not contained in Whitehead's philosophy, which since have been fruitfully developed by other thinkers.

As we have seen, Schelling saw self-consciousness emerging through the limiting of the particular will by other people, and then generalized this notion of limit to characterize the evolution of nature from infinite activity to force to matter to non-living organisms to life and finally, to the human spirit (Schelling, 1978, p.68ff.). Each stage from infinite activity onwards was seen to involve further limits. Such notions contributed to the development of the notion of energy and to the notion of opposing forces within science, ideas now central to both modern physics and modern chemistry. Schelling argued that with organization, matter has become a means and it is the maintenance of form or figure that has become essential (Schelling, 1994, p.122ff.). This involves a new kind of limit. Although only sketched briefly by Schelling, this idea has been developed recently in hierarchy theory in which nature is conceived to be organized by hierarchies of constraints (Pattee, 1973; Salthe, 1993, Ahl and Allen, 1996). An atom constrains or limits the activity of its component sub-atomic components, a crystal constrains or limits the activity of its component atoms, and a plant constrains or limits the activity of its component chemicals and interchanges with its environment to generate and develop biological form, itself an enduring constraint. Living beings are hierarchies of constrained and constraining activities generating and maintaining a multiplicity of mutually supporting forms. While spatial scale immediately springs to mind when characterizing these different levels, hierarchy theorists have found temporal scale to be more important. Higher levels reproduce themselves over longer durations than lower levels.

Limits produced by the interactions of co-becoming processes appear to be central to the development of sentience. As we have seen, Schelling characterized living beings as inherently unbalanced and thereby of necessity actively engaged with their environments. '[L]ife must be thought of as engaged in a constant struggle against the course of nature, or in an endeavour to uphold its identity against the latter' Schelling wrote (Schelling, 1978, p.127). Living beings must respond to changes in their environments creatively to form and reform themselves as products. This characterization of life concurs with recent notions of dissipative structures which develop in systems thermodynamically far from equilibrium and of autopoiesis or self-making. Schelling argued that higher developments of life are associated with greater imbalances, requiring of organisms greater awareness of the world around them, more active responses to this world and greater levels of creativity. The senses are an essential component of such creative activity. From senses that gave organisms an awareness of their immediate environment, organisms have evolved other senses enabling them to perceive at successively greater distances.

These ideas have been developed within a tradition of anti-mechanist biology inspired by the Schellingian biologist, K.E. von Baer (Gould, 1977, p.60f.; Kull, 1998). Developing von Baer's ideas, Jacob von Uexküll argued that to understand organisms it is necessary to understand their surrounding worlds. He analysed the constitution of these worlds, showing how the perception world and the action world of organisms are related through function circles (for food, for enemies, and so on) to constitute first their surrounding worlds (*umwelten*), and then through the coordination and relating of perception and action in different function circles, to inner worlds. By studying the function circles of each organism he revealed the distinctive worlds of different organisms, showing how 'there are as many surrounding worlds as animals' (von Uexküll, 1926, p.176). Von Uexküll's ideas helped inspire and strongly influenced the science of ethology, philosophical biology, and more recently, biosemiotics, each of which have sought to trace the stages of development of these worlds leading to the reflexive consciousness of humans (Lorenz 1977; Jonas 1976; Hoffmeyer, 1996). Interpreting von Uexküll's notion of surrounding world through Peirce's semiotics and hierarchy theory, the biosemioticians have identified the emergence of life with the emergence of semiosis (Lemke, 2000). Radicalizing von Uexküll's arguments, they have argued that plants also have surrounding worlds as their growth is based on interpreting signs (Kull, 2000). Animals, as distinct from plants, are characterized by motility. Jonas argued that this is associated with perception and emotion (Jonas, 1976). The ability to move about and perceive over a distance discloses a world of possibilities to the organism, while opening up a temporal dimension within which possibilities can be appreciated, responded to and realized through

movement of the whole organism. That is, there is a new level of organization in which interaction between organism and environment is constrained by perceptual appreciation of possibilities and concomitant emotions. Animals from amoeba to chimpanzees can be characterized in terms of the possibilities they can identify, that is, the complexity of their worlds, their emotional engagement with these worlds and their possibilities, and the complexity of actions these organisms are capable of to realize desired possibilities.

This conception of living organisms provides the basis for defining the specific characteristics of humans. With humans we have much more complex forms of semiosis facilitating greater levels of intersubjectivity and reflexivity, the transcendence of egocentric perspectives and the appearance of the world as objective, shared by other subjects (the *mitwelt*). That is, with humanity we have the emergence of culture. These developments make possible customs, institutions, religions, laws, science, art and philosophy transcending individuals and constraining their activities. These are the constraints, associated with mutual recognition, which enable individuals to see themselves from the perspective of others and so to become reflexively conscious of themselves (so developing a self-world or *eigenwelt*), to critically reflect on their cultural heritage, to develop their own beliefs and to live according to these. That is, people are able to develop minds of their own whereby they constrain their own activities and lives according to their beliefs, thereby becoming truly free. Elaborated in this way, Schelling's conception of life and human consciousness not only provides a framework to situate the ideas of later process philosophers but also a naturalistic foundation for rethinking the immensely rich tradition of social, political and ethical philosophy inspired by Hegel.

VIII. CONCLUSION

The argument of this paper has been that modern process philosophy can be understood as the response to the major problem engendered by the triumph of mathematical physics following Descartes and Newton. While mathematical physics was immensely successful in explaining aspects of the physical world, it made consciousness virtually unintelligible. The proposed solutions to this problem while accepting mathematical physics at face value as a characterization of physical existence are incoherent. Taking seriously the reality of consciousness, some philosophers have argued that physical existence as analysed by physicists is a mere appearance. As the mechanical view of the world successfully advanced into biology, this strategy lost its plausibility. Other philosophers took a more radical approach and argued that nature must be such that consciousness could have emerged from it and that science should be developed on new metaphysical foundations accordingly. This is what began the modern tradition of process philosophy. Whitehead should be

understood as part of this tradition and an exponent of the emergent theory of mind. However, although there is ample evidence that in elaborating his metaphysics Whitehead intended to provide a basis for the emergent theory of mind, in fact his philosophy was defective in this regard. My argument is that rather than retreating from the emergent theory of mind, process philosophers should appreciate the contributions of other thinkers in this tradition and reformulate process philosophy accordingly.

While the focus of this paper has been on the emergent theory of mind and the conditions for developing such a theory, my purpose is much broader. My intention has been to show why the tradition of process philosophy should be regarded as the most promising grand research program available for understanding the world and our place within it as well as for orienting us to act and to live in this world. It is a tradition that originated with Herder and Schelling and encompasses the most vital developments in philosophy and science up to the present. When appreciated as such the history of philosophy over the last three hundred years becomes far more intelligible as thinkers reacting against scientific materialism and against neo-Kantian, Hegelian or Husserlian 'idealism' are located within this tradition and the inter-relationships between their ideas appreciated. As such it is an active tradition facing immense challenges, both intellectual and practical. But these do not appear insurmountable. Of course there are reasons for embracing process philosophy other than its ability to make intelligible the emergence of reflexive human consciousness from nature. Process philosophy holds promise for advancing the physical and biological sciences. It provides a basis for integrating developments in the natural and human sciences and for overcoming the division between the sciences and the humanities. Most importantly, it overcomes the nihilism of modernity, justifying the ethics, social philosophy, political philosophy and/or theology which seems to be required to confront the challenges confronting humanity, not least the global ecological crisis. But what the mind-body issue highlights is that the alternatives to process philosophy are just silly.

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