

Emergence and Agency

with Mikael Leidenhag, "The Relevance of Emergence Theory in the Science–Religion Dialogue"; Steven L. Peck, "Life as Emergent Agential Systems: Tendencies without Teleology in an Open Universe"; and Joseph A. Bracken, "Actions and Agents: Natural and Supernatural Reconsidered."

ACTIONS AND AGENTS: NATURAL AND SUPERNATURAL RECONSIDERED

by Joseph A. Bracken

Abstract. Using a process-oriented understanding of the relation between actions and agents, the author argues that an ontological agent is the ongoing effect or by-product rather than the antecedent cause of actions. Applied to the relation between natural and supernatural in philosophical cosmology, this allows one to claim, first, that agents (whether natural or supernatural) are not sensibly perceived, but only inferred from the ongoing observation of empirical actions; second, that the distinction between the natural and the supernatural is then conceivably a distinction between interrelated processes rather than between independently existing agents; and third, that a higher order process of supernatural origin could be operative in a lower order empirical process without interference even though its existence and activity could only be established on the basis of a faith commitment, not empirical evidence. What Paul Ricoeur referred to as a "surplus of meaning" over and above the scientific explanation of an event would be in play with the claim of divine guidance for the cosmic process.

Keywords: Henri Bergson; Celia Deane-Drummond; empirical effects; nonempirical causes; Paul Ricoeur; LeRon Shults; Jerome Stone; Alfred North Whitehead

In a recent issue of *Zygon: Journal of Religion and Science*, Celia Deane-Drummond published "Christ and Evolution: A Drama of Wisdom?" (Deane-Drummond 2012), the printed version of the Boyle Lecture for 2012. (The Boyle Lectures are presented in England every year to promote natural theology, specifically, discussion of rational arguments for the existence of God). Given her conscious focus on Christ or the Word

Joseph A. Bracken, SJ, is Professor Emeritus of Theology at Xavier University in Cincinnati, Ohio. He may be contacted at 3844 Victory Parkway, Cincinnati, OH 45207, USA; e-mail: bracken@xavier.edu.

Incarnate as the eschatological fulfillment of the cosmic process, Deane-Drummond's article is more properly an example of what might be called theology of nature, that is, a theology, which seeks to find confirmation for antecedent faith-based convictions in the data of current natural science. In his response to Deane-Drummond, F. LeRon Shults laments the consequent shrinking of what he calls the "natural" niche of Christian theology, that is, the common space within which theologians and natural scientists historically have agreed or disagreed in their interpretation of empirical data on purely rational grounds. His solution to this contemporary impasse between theologians and scientists is to set aside the traditional understanding of supernatural agents at work in the cosmic process in favor of a more naturalistic approach that regards belief in gods and other supernatural agents as a valuable coping device for survival in a hostile natural environment. This, however, would presumably be quite unacceptable to Deane-Drummond, given her explicitly faith-based understanding of Christ's key role in the cosmic process.

In the same issue of *Zygon: Journal of Religion and Science*, Jerome Stone published an article entitled "Spirituality for Naturalists." In that article, Stone noted the rise of "liberal" or "pluralistic" naturalism as distinguished from "scientific naturalism":

Liberal naturalism challenges scientific naturalism in part by questioning the latter's consistency (asserting that the claims of scientific naturalism extend beyond the limited scope of scientific assertions). Liberal naturalism also challenges scientific naturalism by exploring its weaknesses in dealing with the topics of mind, agency, and normativity, especially ethical and aesthetic. (Stone 2012, 482)

Keeping liberal or pluralistic naturalism in mind, Stone then proposes a "naturalistic spirituality": this spirituality is "first of all an experiencing of the sacredness of some things (or possibly all things) and second it is the cultivation of this experiencing and the living out of its implications" (Stone 2012, 493). In this way, Stone may have found a better starting point for more profitable discussion between theologians and natural scientists. He foresees that liberal or pluralistic naturalists could possibly find common ground with those who believe in the existence and activity of a transcendent supernatural order. Presumably both groups would value a spirituality that is concomitant with their other beliefs and convictions about the nature of reality. Yet, a theist may still feel compromised in talking with naturalists about a naturalistic spirituality; he or she is bracketing too much in the way of antecedent religious convictions in order to engage in dialogue with others simply on the basis of a spirituality grounded solely in the natural order. This article seeks to address that concern on the part of theists but in a way which will not alienate those who, like Shults, want to do classical natural theology after the fashion of Robert Boyle and

others of his day. Accordingly, as might be expected, my argument in this article is based on a philosophical analysis of the relation between agents and actions: whether agents are the causes of actions or, on the contrary, whether agents are the effect/result of an ongoing series of actions which exhibit a well-defined pattern of self-constitution and self-development, in other words, some kind of process.

PRELIMINARY COMMENTS ON THE RELATION BETWEEN ACTIONS AND AGENTS

It is axiomatic within classical metaphysics that actions follow from the decisions of a preexisting agent (*agere sequitur esse*). Yet, in neo-classical or process-oriented metaphysics, the self or ontological agent is the result or by-product of a process or interrelated set of processes within the natural order (equivalently, *esse sequitur agere*). In common sense experience, to be sure, actions seem to be derivative from the decision of a preexisting agent. But is the reverse actually the case? Are the persons and things of common sense experience the ongoing by-product of processes that are invisible to the eye by reason of their complexity and ever-changing character? Otherwise stated, do we directly perceive agents performing certain actions or do we human beings rather infer the real existence of agents from observation of those empirically perceptible actions?

David Hume indirectly raised this issue in his celebrated book *A Treatise of Human Nature* when he questioned the validity of the law of cause and effect in human experience and as a result the existence and causal agency of an enduring self over and above the succession of perceptions within the mind (Hume [1740] 1967, 253). In his *Critique of Pure Reason*, Immanuel Kant “saved” the validity of cause-effect relations in human experience by stipulating that the law of cause and effect is an operational principle in the human mind for ordering the “phenomena” of sense experience rather than a law of nature in the classical sense. Likewise, he retained belief in the existence and causal agency of an enduring self with his claim that the felt sense of an enduring self is actually the by-product or result of the ongoing combination of empirical data and the transcendental categories of the mind in virtue of the covert activity of the transcendental unity of apperception at every moment in dealing with the contents of sense experience (Kant [1781] 1956, B: 158–59). But then with Kant one must concede that the existence and causal activity of the self is not an immediate datum of sense experience, but rather a logical inference from the perception of fixed patterns in the ongoing succession of empirically verifiable actions.

Yet, how is this presupposition important for understanding the relationship between the natural and the supernatural? In his critique of Deane-Drummond’s theology of nature, Shults questions the real

existence of “gods” or supernatural agents: “Research in cognitive psychology suggests that gods are ‘born’ naturally in the human mind as a result of a hypersensitive cognitive device that detects agency in the natural environment when confronted with ambiguous phenomena” (Shults 2012, 546). For Shults, then, the existence of supernatural agents is a logically questionable inference from “ambiguous phenomena,” which can be accounted for naturally in terms of neural activity in the human brain. But if the existence of an agent (whether natural or supernatural) is not in itself empirically verifiable but invariably an inference from empirically perceptible actions, then the difference between the natural and the supernatural is no longer a question about the reality or nonreality of supernatural agents at work in the natural order but rather a question whether or not the natural order as an empirical process can be at least hypothetically understood as contained within and influenced by a higher order nonempirical process which, at least in principle, could ultimately account for the existence and activity of both natural and supernatural agents, albeit in different ways.¹ Furthermore, as I shall indicate later, this supernatural order of things could have legitimate goals and values, which indeed require the existence of the natural order but are not constrained by the latter.

To illustrate what I have in mind here, I note that in molecular biology the origination and continued existence of a molecule requires the antecedent existence and activity of component atoms. Yet, the molecule, when understood as a process rather than an unchanging entity, has a quality of existence and activity proper to itself, which exceeds the quality of existence and activity for its component atoms in their individual constitutive processes.² This seems to imply that, if one shifts from a traditional focus on individual agents (e.g., atoms) with purely external relations to one another to a new focus on processes constitutive of those atoms which can be internally related to one another so as to produce the higher order process constitutive of a molecule without losing their own identity as interrelated lower order processes, there might be a way to reconcile the naturalistic spirituality of Stone (and presumably Shults) with the supernaturally grounded spirituality of Deane-Drummond. What Stone, for example, considers to be the experience of the sacred in the natural order could be, from Deane-Drummond’s perspective, the empirical manifestation of the existence and activity of a “supernatural order” of things and of “supernatural agents” working within the natural order of things. The reality of this supernatural order of things (and the supernatural agents at work in that process) would be, of course, not empirically verifiable except by way of inference from empirically perceptible events which from the perspective of contemporary natural science are an anomaly, that is, a puzzling aberration from (but not necessarily a clear violation of) the laws of nature. In a healing miracle such as recovery of sight after antecedent blindness, for example, a blind person can once again see. But how that

happened is beyond the scope of contemporary natural science to explain. From a faith perspective, it is a miracle; for natural science, it is simply an anomaly, an exception to the natural order of things.

One could claim, of course, that the scriptural account of such a healing miracle is fictitious or at least dramatically changed so as to “prove” divine intervention in human affairs. But such a counterclaim is also implicitly based on a faith statement of another kind, namely, that the known laws of nature clearly establish the physical impossibility of such a healing miracle. In other words, judging what is possible and impossible in the workings of nature can never be fully determined, given the necessarily provisional character of all scientific hypotheses about physical reality. From a purely philosophical perspective, however, a more serious objection to my hypothesis must be addressed. Can the natural order of events be incorporated into a higher, allegedly supernatural order of events and still retain its own ontological integrity and mode of operation?

Within the understanding of agents and actions in classical metaphysics, this would seem to be logically impossible. For classical metaphysics is based upon the presupposition that substances can be externally influenced by one another’s existence and activity but cannot be combined or fully incorporated into one another without one substance losing its identity in order to become part of the other (e.g., the consumption of food and drink by human beings and other animal species). But for neo-classical or process-oriented metaphysical schemes, this incorporation of one substance within another without loss of ontological identity for the latter can happen and seemingly does happen on a regular basis. As noted earlier, atoms still retain their identity as atoms even when they become parts of molecules, just as molecules keep their ontological identity when they become parts of cells. Better to establish the hypothesis that the entire natural order of things can be incorporated into a higher, supernatural order of things, and that is, of course, the project of this article. But here and now one can at least say that the relation between agents and actions is quite different in classical metaphysics and process-oriented metaphysics. In classical metaphysics, agents are ontologically independent of one another and are the cause of their own actions. In process-oriented metaphysics, however, agents are the effects of actions and these actions can be combined so as to produce an ongoing higher order corporate reality (e.g., a molecule as more than a group of closely interrelated atoms).

In what follows, then, I first lay out my argument that entities as experienced in human consciousness are the by-product or result of various processes existing within us and around us in the world of nature from moment to moment. As a result, the ontological reality of an enduring self and of a stable world of things around oneself is, strictly speaking, not something that can be empirically verified; one only directly experiences the activities customarily associated with persons and things, both animate

and inanimate, and then infers the real existence and activity of the latter. Then in the second part of this article, I will indicate how such an insight into the ontological priority of actions to agents in nature allows one to see the difference between the natural and the supernatural in a new light, namely, in the context of higher and lower order processes within the overall cosmic process rather than in terms of a conflict between supernatural versus natural agents within that same cosmic process. Belief or disbelief in the reality of the supernatural as distinct from what is judged to be natural is then ultimately a matter of differing faith commitments as to the deeper meaning and value of the cosmic process. That is, do the workings of the natural order implicitly testify to a higher order nonempirical process of which they are only a part; or is the natural order a fully self-contained ontological reality governed by purely immanent laws or modes of operation?

ACTIONS AND AGENTS WITHIN A PROCESS-ORIENTED COSMOLOGY

Two of the most notable process-oriented philosophers of the twentieth century were unquestionably Henri Bergson and Alfred North Whitehead. Both were convinced that the mechanistic worldview of early modern science was seriously flawed; nature with all its component parts or members is alive, not dead. Philosophical cosmology should accordingly be based on principles of becoming rather than on principles of being, ongoing activity rather than unchanging reality. Hence, careful study of their worldviews should be valuable for establishing the validity of my hypothesis that coordinated actions or processes are the antecedent causes of agents rather than vice versa. But here one must be cautious since Bergson and Whitehead only partially agree on a cosmology based on principles of becoming rather than principles of being.

In his book *The Creative Mind (Pensée et le mouvant)*, for example, Bergson sets forth his basic understanding of the experience of movement in human consciousness: "We shall think of all change, all movement, as being absolutely indivisible," something that cannot be divided into a series of points or spatial locations without ceasing thereby to be movement (Bergson [1934] 1968, 167–68). Here, he claims that in the mental transposition of time or duration into a series of successive points or spatial locations, movement itself as an intuitively experienced physical reality is lost:

Movement for us is [conventionally] a position, then another position, and so on indefinitely. We say, it is true, that there must be something else, and that from one position to another there is the *passage* by which the interval is cleared. But as soon as we fix our attention on this passage, we immediately make of it a series of positions, even though we still admit that between

two successive positions one must indeed assume a passage. (Bergson [1934] 1968, 171)

Reflection on this behavior pattern leads him to his second presupposition: "There are changes, but there are underneath the change no things which change. There are movements, but there is no inert and invariable object which moves" (Bergson [1934] 1968, 173).

But, from Whitehead's perspective, this is at best only half-true. For Whitehead, movement or change is not primarily spatial, that is, a series of new positions in space. For him, movement or change is primarily temporal, that is, a conversion of potentiality into actuality with or without change of position in space. An organism, for example, changes from moment to moment in terms of its interaction with its environment. But to become other than it was a moment ago does not demand movement in space. Whitehead's foundational metaphysical presupposition is that "the final real things of which the world is made up" are actual entities, momentary self-constituting subjects of experience, that is, mini-organisms (Whitehead [1929] 1978, 18). In this way, he can agree with Bergson that becoming is prior to being since an actual entity is initially an activity which at the end of its process of self-constitution makes itself to be an objective reality, what he calls a "superject," that can be "prehended" (on a feeling level grasped) by subsequent actual entities in their own processes of self-constitution (Whitehead [1929] 1978, 28). Whitehead can likewise agree with Bergson that movement or change is in itself indivisible, a unitary reality. An actual entity's process of self-constitution cannot be broken up into temporally successive moments or phases (Whitehead [1929] 1978, 69). But movement or change in terms of the conversion of potentiality into actuality within a given actual entity still logically requires a starting point and an endpoint, namely, the antecedent world of things in which it originates and the subsequent world of things to whose structure and design it contributes its own distinctive pattern of existence and activity. Otherwise, one ends up with a monism of pure becoming (Heraclitus) in dialectical opposition to a monism of unchanging being (Parmenides).

Thus, Whitehead would not agree with Bergson that ultimately only movement exists, that every form of apparent being or permanence is an unconscious creation of the human mind, something which is not grounded in physical reality but only exists as a survival mechanism for day-to-day coping with one's environment (Whitehead [1925] 1967, 50; Bergson [1934] 1968, 177). For Whitehead, actual entities are entitative realities but exist only as results or by-products of underlying activities within an overall process of becoming. Yet, he would also agree with Bergson's claim: "This alleged movement of a thing is in reality only a movement of movements" (Bergson [1934] 1968, 175). So a given movement or activity can contain submovements/ subactivities and be itself incorporated into

even bigger movements/activities. Whitehead takes account of this need for multiplicity of interrelated movements/activities with his category of “society” (Whitehead [1929] 1978, 34–35). That is, a society is an enduring corporate process, that is, an objective reality constituted by actual entities which are in the first place activities and then “superjects,” mini-patterns of existence and activity, which serve as the necessary components of a society as a new kind of process-oriented entity, namely, a structured field of activity for successive generations of actual entities in their moment-by-moment dynamic interrelation.³ Thus, in the constitution of societies as well as the constitution of actual entities, coordinated activities or processes are ontologically prior to individual agents for Whitehead.

A society, moreover, while not itself a subject of experience like its constituent actual entities, nevertheless exercises agency, not the agency/efficient causality of a self or subject of experience, but the agency proper to an objective reality with a fixed pattern or structure of existence. Its agency is primarily that of formal (or informational) causality for its constituent actual entities in their self-constituting decisions at any given moment. That is, the current pattern of existence and activity of the society [what Whitehead calls its “common element of form” (Whitehead [1929] 1978, 34)] imposes constraints or limitations on the interrelated activity of its constituent actual entities in their individual processes of becoming here and now. In this sense, a Whiteheadian society is like an Aristotelian substance in that for the moment it possesses the equivalent of a substantial form to give order and intelligibility to its constituent parts or members. A Whiteheadian society is, however, unlike an Aristotelian substance in that its “substantial form” can be altered in virtue of the interrelated activity of its constituent parts or members over time in shaping that common element of form of the society for the future. In other words, the common element of form for a Whiteheadian society, unlike the essence or substantial form of an Aristotelian substance, will itself over time change, normally evolve into something other than what it is here and now (Bracken 2012, 140–42).

Likewise, in a qualified sense, a Whiteheadian society exercises final causality upon its constituent actual entities through that same structure or pattern of existence proper to itself as an objective reality. As such, the pattern or structure of existence offers a provisional directionality or orientation for the future to its constituent actual entities in their self-constitution here and now. It is, to be sure, only a provisional directionality since, as noted earlier, through the interrelated activity of successive sets of constituent actual entities over time, the society as a temporally organized physical reality may well acquire a somewhat different directionality or orientation for the future than it has right now through its current structure or pattern of existence. Much like organisms subject to the law of natural selection in Charles Darwin’s theory of evolution, a Whiteheadian

society thus combines chance and necessity for explanation of its continued existence from moment to moment. As Whitehead himself comments in *Process and Reality*,

The causal laws which dominate a social environment are the product of the defining characteristic of that society. But the society is only efficient through its individual members. Thus in a society, the members can only exist by reason of the laws which dominate the society, and the laws only come into being by reason of the analogous characters of the members of that society. (Whitehead [1929] 1978, 90–91)

Persons and things, to be sure, do not look like structured fields of activity for successive generations of actual entities. Yet, should one, as previously noted, trust the deliverances of common sense experience? For example, as a result of considerable speculation about quantum particles as alternately particles and waves (Bracken 2009, 154–67), many natural scientists have come to distrust the deliverances of common sense experience on which Aristotle and the medieval Scholastics (notably Thomas Aquinas) relied in working out an ontology based on substance and accidents. Persons and things turn out to be upon closer inspection a set of closely interrelated processes or systems, thus equivalently a structured field of activity for the events taking place within it as part of an all-encompassing cosmic process. They may give the impression that persons and things are self-sufficient realities in their own right, but they are composed of variously related internal processes or systems and their continued existence and activity is closely bound up with changing conditions, both internal and external, in terms of the natural environment in which they exist. As a result, an individual person or thing turns out to be on closer inspection a much more complex reality than meets the eye. It is made up of interrelated sets of processes both within and outside itself. Field theory naturally comes to mind as a way to explain the individual entity's sense of participation in a process-oriented world. That is, reality as a whole is a complex set of overlapping and hierarchically ordered fields of activity for all the events (in Whiteheadian terms, actual entities) taking place from moment to moment (Laszlo 2003, 1–2, 39–48).

Moreover, this new understanding of physical reality makes even more sense if one accepts with Whitehead that “the final real things that exist” (Whitehead [1929] 1978, 18) are momentary self-constituting subjects of experience (actual entities) which, as dynamically interrelated “superjects” (Whitehead [1929] 1978, 28–29), can in the aggregate look like the persons and things of common sense experience. For, in this way, the world is not dead but alive; it is grounded in dynamic intersubjective relations between momentary self-constituting subjects of experience. Chance is present in the ongoing interchange between interrelated subjects of experience and necessity arises in and through the slow growth of societies as relatively

fixed patterns of existence and activity between actual entities, which to common sense experience are persons and things. Seen in this light, a field-oriented approach to physical reality is not nearly so strange or even threatening to individuals accustomed to seeing the world as populated by persons and things.⁴

A NEW APPROACH TO THE DISTINCTION BETWEEN THE NATURAL AND THE SUPERNATURAL

If one accepts the plausibility of my hypothesis that the existence and activity of an agent is always the outcome or result of an antecedent process or patterned sequence of actions, and if the real existence and activity of an agent (whether natural or supernatural) is thus not empirically verifiable but is implicitly an inference from its sensibly perceptible activities, then, as already noted with respect to the progressive incorporation of atoms into molecules and of molecules into cells within the physical order, one can reasonably postulate the existence of a supernatural order which is inclusive of the natural order of things in the world without determining the mode of operation of the latter. That is, as the workings of a higher order process, which includes but transcends the natural order, it provides additional meaning and value to actions in the natural order. At the same time, one does not have to accept the reality of this supernatural order so as to explain these actions in the natural order which from a contemporary scientific perspective are anomalies, clear exceptions to the laws of nature. With Jerome Stone, one can simply stand in awe at the sense of the sacred, the human incomprehensibility of the full workings of the natural order, and afterwards “attempt to live out the sense of the importance of things that sacredness brings” (Stone 2012, 493). One is moving, in other words, beyond rational explanation, valuable as it is, to a mystical awareness, which adds depth and beauty to events in the natural order which are truly extraordinary in themselves, quite apart from any theologically oriented further explanation.⁵

In his book *Interpretation Theory: Discourse and the Surplus of Meaning*, Paul Ricoeur seems to be making the same point from the admittedly different perspective of reading and understanding a literary text. Such an interpretive reading of a text proceeds in stages: namely, as “a move from understanding to explaining and then as a move from explanation to comprehension” (Ricoeur 1976, 74). He then adds: “The first time [one reads the text], understanding will be a naïve grasping of the meaning of the text as a whole. The second time comprehension will be a sophisticated mode of understanding, supported by explanatory procedures” (Ricoeur 1976, 74). It is equivalently a move from first to second naïveté via scholarly research. He explains what he means by second naïveté in an earlier book, *The Symbolism of Evil*: “if we can no longer live the great symbolisms of the

sacred in accordance with the original belief in them, we can, we modern men, aim at a second naïveté in and through criticism” (Ricoeur 1967, 351). The sense of the whole, the experience of the sacred in things, is present in the first stage of understanding but is much richer in the second stage through supplementary scientific knowledge of reality. By implication, then, religion and science could be complementary dimensions of a more comprehensive human understanding of physical reality that still needs to be explored.

Does this hypothesis, however, amount to a naturalization of the supernatural, its explanation simply in terms of this world? The answer to that question would seem to be both yes and no. It is yes if one always attributes extraordinary events in nature to special divine intervention into the normal workings of nature. The answer is no if one acknowledges that God generally works through nature (rather than from outside nature) to actualize latent potentialities within nature that for the moment can only be anticipated through religious symbols and myths. An example here would be Christian belief in bodily resurrection. Could bodily resurrection someday be seen in a qualified sense as natural, given advanced scientific knowledge of the workings of cosmic evolution and perhaps the development of new technologies to deal with new and unexpected potentialities within nature? Who, for instance, could have foreseen a hundred years ago the existence of computers and Internet communication as a consequence of discoveries in the new field of quantum mechanics at the beginning of the twentieth century?

My own hypothesis in this article, however, is more directly philosophical: namely, that, if such a nuanced understanding of the God–world relationship is logically possible, then the natural order as an empirical process could be contained within and heavily influenced by a higher order nonempirical process (e.g., the divine life [n. 2]). Nature as a subsystem within this nonempirical divine process could then at least in principle involve the existence and activity of supernatural as well as natural agents. But the causal activity of these supernatural agents (e.g., God as an individual entity or as a community of divine persons in line with the Christian doctrine of the Trinity) much like the causal activity of agents in the natural order would not be an immediate datum of sense experience but rather a logical inference from their presumed empirical effects in the natural order. In that case, as Young Bin Moon proposes,⁶ extraordinary events in a religious context could be interpreted as the conjoint effect of both natural and supernatural agencies, albeit in different ways. In brief, there always seems to be a “surplus of meaning” in what is empirically evident (Ricoeur 1976, 57). Accordingly, “the symbol gives rise to thought” (Ricoeur 1967, 347–57). But that thought can go in different directions, depending upon one’s antecedent faith commitment as to the ultimate meaning and value of the cosmic process.⁷

NOTES

1. For example, within a process-oriented understanding of the Christian doctrine of the Trinity, the three divine persons are in the first place person-constituting activities, as Thomas Aquinas implied with his notion of the divine persons as “subsistent relations” (*Summa Theologiae* I, Q. 29, art. 4 resp.). By their dynamic interrelation from moment to moment they co-constitute themselves as one God, a corporate entitative reality or divine community. Furthermore, within this all-encompassing process of divine becoming, there could conceivably come into existence by divine free choice a lower order finite process, which is constitutive of cosmic evolution. Acting within this lower order finite process but without interfering with the natural mode of operation proper to that process, the divine persons could conceivably first empower finite physical entities to exist, and then offer them guidance for their own progressive self-determination. This proposal, to be sure, has some affinity with the notion of “divine initial aims” in the philosophical cosmology of Alfred North Whitehead (Whitehead [1929] 1978, 244), but it is not identical with it. For Whitehead the creativity which empowers all entities to become themselves is independent of God; in this sense God too is “a creature transcended by the creativity which it qualifies” (Whitehead [1929] 1978, 88). Within the Trinitarian model of the divine being described earlier, however, creativity is in the first place the nature of God, the underlying principle of activity for the divine persons in their ongoing dynamic interrelation, and then by divine favor likewise the principle of existence and activity for all finite actual entities (Bracken 2006, 14–27).

2. Here, I consciously side with Philip Clayton, Harold Morowitz, and others in the belief that nonreductive physicalism or “strong emergence” makes more sense for explanation of the phenomenon of emergence in the life sciences (cf., e.g., Morowitz 2002, 1–14; Clayton 2004, 100–01).

3. Whitehead himself is vague about the relation between his key concepts of actual entity/superject and society. What I am offering here is another understanding of that relation which in my judgment clarifies what Whitehead implicitly had in mind.

4. This is, of course, not to claim that human beings in their everyday conversations should stop talking to one another in terms of persons and things and begin talking about processes and systems as the basic components of physical reality. The common sense conviction that reality is made up of separate persons and things is too deeply rooted in the human psyche to be easily replaced by an approach to reality which initially seems to be so removed from ordinary experience. But when theologians and scientists engage in serious discussion about controversial issues that seem to set them apart from one another, then the contemporary understanding of physical reality as grounded in an evolutionary metaphysics which uses the language of dynamically interrelated processes and systems could be very useful.

5. See here Stanley (2011, 556): “If a scientist can convince other scientists that his methods and conclusions are useful, what does it matter whether he was thinking about God when he did the work? In the example of theistic scientists discussed in this essay, we can see an essential common outlook: despite the presence of divine action in the world, explanations should be sought in natural laws—and there was always more to be explained. Naturalism can prod one to these deeper and deeper levels of explanation, but so can theism.”

6. Cf. Moon (2012, 457): “. . . the world systems were created to serve ultimately as the external media for divine communication, and the evolutionary process is an ongoing recursive process of actualization/virtualization of the divinely intended potentiality of the world systems, a process I name divine mediatization. The emergence of *homo medialis* with the unique capacity to observe divine mediatization (or communicate transcendent meanings) via symbolic media culminates divine mediatization of the world.” The neologisms used by Moon in this citation somewhat obscure what he has in mind. But it seems clear that he envisions basically the same type of God–world relationship as I do in this article, namely, a symbiotic relationship between God, the world of nature, and human beings within an open-ended cosmic process whose ultimate goals and values are still not fully actualized.

7. Cf. Elphinstone (1976, 59–65). Elphinstone argues persuasively that the physical evolution of humankind is basically complete but that its spiritual evolution is far from complete. The physical evolution ended with the emergence of *homo sapiens* but humankind’s spiritual evolution “stretches outward far beyond and its symptoms are a hunger for righteousness, a concern for justice, a need both to forgive and be forgiven; and withal a thirst for love and an awareness of God” (60). As a devout Christian, Elphinstone believes that Jesus Christ is the God-given key

to this spiritual evolution of humankind both with his ethical teachings and his personal life of self-giving love. But one could more generally say that there was a pivotal period in human history in which all the major world religions took concrete shape as guides of human life. At this privileged moment, humankind through its spiritual leaders realized that something more than personal survival and reproduction of the species was the goal of existence in this world.

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