

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”

THE RELEVANCE OF EMERGENCE THEORY IN THE SCIENCE–RELIGION DIALOGUE

by Mikael Leidenhag

Abstract. In this article, I call into question the relevance of emergence theories as presently used by thinkers in the science–religion discussion. Specifically, I discuss theories of emergence that have been used by both religious naturalists and proponents of panentheism. I argue for the following conclusions: (1) If we take the background theory to be metaphysical realism, then there seems to be no positive connection between the reality of emergent properties and the validity of providing reality with a religious interpretation, though one could perhaps construe an argument for the positive ontological status of emergence as a negative case for a religious worldview. (2) To be considered more plausible, religious naturalism should interpret religious discourse from the perspective of pragmatic realism. (3) Panentheistic models of divine causality are unable to avoid ontological dualism. (4) It is not obvious that emergent phenomena and/or properties are nonreducible in the ontological sense of the terms; indeed, the tension between weak and strong emergence makes it difficult for the emergentist to make ontological judgments. My general conclusion is that the concept of emergence has little metaphysical significance in the dialogue between science and theology.

Keywords: emergence; panentheism; reductionism; religious naturalism

A number of thinkers in the science–religion discussion maintain that the concept of emergence can, and even should, bring about a change of attitude concerning the ontological and epistemological possibilities of conceptualizing reality from a religious point of view. Emergence can in many ways be construed as an alternative to reductionism, which roughly

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speaking refers to the view that the explanatory arrows always point downward, that normative expressions are definable in terms of descriptive expressions and that life itself is in a sense an epiphenomenon of matter (Rolston 1987, 84; Kauffman 2008, 10; Kim 1995, 133). The concept of emergence, on the other hand, emphasizes the so called “higher” levels of reality, which on this view cannot be reduced to the lower levels of reality; that, for example, it is not possible to explain mental phenomenon *X* in purely physical terms. Higher levels have on this view emerged by the interplay of lower level entities (Drees 2010, 33). The notion of higher levels, or emergent levels of reality, normally refers to consciousness, morality, cultural entities, love, free will, agency, the biosphere, and so on. For example, George Ellis argues that reality is hierarchically structured in the sense that the specific type of causation for living systems corresponds to different academic subjects (Ellis 2006, 80). Thus, each science deals with a specific level of reality; particle physics deals with its level, cell biology with its level of inquiry, sociology with another level, and so on.

The concept of emergence has in recent years gained significant attention, and the emergentist position seems appealing to many people since it may offer a way to “tread the golden path between physicalism and dualism!” (Jackelén 2006, 625). And we can, by adopting the position of emergence, save a richer view of reality without giving into the temptation of dualism, a view which has become somewhat of a sin in the academic milieu. Given this, many thinkers place their faith in the theory and notion of emergence which they hope will help the dialogue between science and religion to move beyond the old dichotomies of reductionism and dualism. Some have gone farther and suggested that emergence theories can help in defending and explicating religious beliefs, and that a fruitful dialogue with the natural sciences, and in particular the cognitive sciences, in the end could lead to a reconciliation between naturalism and religion, without us having to adopt a reductionist account of religious beliefs and practices.

Two cases of attempts to reconcile science and religion through the concept of emergence will be discussed in this article. The first case concerns naturalists who want to join naturalism with the idea that we can give reality a religious interpretation, and that nature somehow can be considered a sacred or religious object. These naturalists are typically referred to as *religious naturalists*. The second case that will be described and analyzed concerns some recent attempts by theists who want to formulate a scientifically adequate model of divine causality (how God interacts with the world). They argue that the theory of emergence and how it pictures the relationship between mind and body may give us an idea of how God could interact with the world without breaking natural laws or interrupting the causal nexus. This position is often called *panentheism*.

However, when more closely scrutinized, the relevance of emergence in the science–religion dialogue becomes somewhat unclear. In this article, I

will argue for the following conclusions. (1) If we take the metaphysical background to be realism, then there seems to be no positive connection between the reality of emergent properties and the possibility of interpreting reality from a religious perspective, though one could perhaps construe an argument for the positive ontological status of emergence as a negative case for a religious worldview. (2) Pragmatic realism, I suggest, is the most charitable way of understanding the claims of religious naturalism. (3) Pantheistic models of divine causality are unable to avoid ontological dualism, and emergence theory offers no way out of this problem. (4) It is not obvious that emergent phenomena and/or properties are nonreducible in the ontological sense of the terms, which I argue poses a serious challenge to both religious naturalists and pantheists.

I shall, in the “Emergence Outlined” section, present some basic concepts and thoughts concerning emergence theory and point out some differences between weak and strong forms of emergence. In the “Emergence and Religious Naturalism” section, I will describe how emergence ideas are being utilized by religious naturalists and how they argue for the reality of emergence. Thereafter, in the “Emergence and Divine Action” section, I will highlight the concept of emergence as it is being used by theists, or pantheists, in order to argue for a view of divine action that seems scientifically adequate. In “The Connection Between Emergent Properties and a Religious Conception of Reality,” I will call into question the connection between the reality of emergence and a religious worldview, and introduce the notion of pragmatic realism. Moreover, in the “Pantheism, Emergence, and Ontological Dualism” section, I will explain why pantheism fails to avoid dualism, and, in the “Emergence, Naturalism and Nonreducibility” section, why it is not obvious that emergent phenomena are ontologically nonreducible.

EMERGENCE OUTLINED

As suggested above, the theory or concept of emergence recommends that we come to view reality in terms of “levels.” But what does it mean to talk about levels of reality? Philip Clayton, probably the greatest advocate of the application of emergence theories in the science–religion dialogue, outlines emergence as a metaphysical thesis in the following way: “It claims that the nature of the world is such that it produces, and perhaps must produce, continually more complex realities in a process of ongoing creativity . . .” (Clayton 2004, 42). This complexity is hierarchically structured because “more complex units are formed out of more simple parts” (Clayton 2004, 60). The late Arthur Peacocke has claimed a similar understanding of reality as hierarchically structured; he writes that the “natural world has more and more shown it to consist of a hierarchy of systems in levels of organization, each successive member of which is a whole constituted of parts, often

preceding it historically in the series” (Peacocke 1993, 22). Others use the concept of emergence to speak about “levels of reality” in that reality is open to a plurality of explanations. We should, according to theologian John Haught, acknowledge the possibility of layered explanations, meaning that we can rightly acknowledge that most phenomena “admit of more than one level of understanding” (Haught 2006, 16, 68). One could say that reality seems to invite many “reading levels” (Haught 2003, 91).

However, there are weaker and stronger forms of emergence being expressed in this context. According to the former type of emergence, emergent properties or phenomena are *unpredictable* or *unexpected* products of the evolutionary cosmological/biological process. Ursula Goodenough argues that life itself is emergent: “Life *does* generate something-more-from-nothing-but, over and over again, and each emergence, even though fully explainable by chemistry, is nonetheless miraculous” (Goodenough 1998, 30). David Chalmers takes intelligence as an example which he believes to be unexpected relative to the underlying principles that govern biological processes (Chalmers 1995, 253). An emergent property such as intelligence would be an evolutionary surprise in the sense that we are epistemologically unable to deduce it from physical laws alone.

Proponents of stronger forms of emergence, however, feel that the weaker thesis is insufficient given that epistemological uncertainties can't be used as a reliable guide to ontology. They add that an emergent property not only has to be nondeducible from its lower levels or irreducible to its low-level structure from which it emerged; it also has to be *causally effective*. It is now that the notion of downward causation becomes significant. By downward causation, emergence theorists typically refer to the view according to which a high-level entity or emergent phenomenon *X* manifests genuinely causal powers so that *X* affects its constituents, or where the whole causally affects its parts (Niño El-Hani and Emmeche 2000, 242; Clayton 2004, 49). You could demonstrate that a downward causation has happened if the following conditions were met: (a) One could show that changes in high-level variables lead to changes in lower level variables and (b) that these changes are the result of reliable causation and not random events (Ellis 2006, 89). One way to strengthen (b) would be to show that the event in question is repeatable and predictable. If these conditions were met, if we can show that downward causality has undeniably taken place, then an ontology of emergence begins to take shape.

EMERGENCE AND RELIGIOUS NATURALISM

Religious naturalism is briefly a view which both affirms naturalism and the possibility of providing a religious interpretation of nature, and of reality as a whole. It is thoroughly antisupernaturalistic, and religious naturalists are typically atheists, although some maintain an agnostic position concerning

the existence of God. While the term *God* is frequently used by religious naturalists, the meaning of the term differs greatly from how it is usually understood in, for example, the Abrahamic traditions. God does not refer to an ontological being, existing objectively beyond space and time. Rather, God is used by religious naturalist to refer to nature or some aspect of nature which they take to be religiously significant, or which can be considered a religious object worthy of worship and devotion. Many religious naturalists, like Gordon Kaufman, Karl Peters, and Stuart Kauffman, speak of God as *Creativity*, which refers to the ongoing creativity of the cosmological and biological evolutionary process; the coming into being of something “novel and important” (Kaufman 2007, 916). The cosmological and evolutionary process, though completely natural, reveals a mystery, which calls for a religious attitude of wonder and respect for life. They typically stress the irreducibility and emergence of three things: (1) the irreducibility of the biosphere to the realm of physics, (2) the irreducibility of consciousness, and (3) the irreducibility of teleological and intentional language.

Stuart Kauffman argues that the biosphere seems to produce new entities with their own properties and causal powers, entities that seem to go beyond ontological reductionism. It is impossible, according to Kauffman, to deduce or infer high-level phenomena from low-level or underlying physics. He describes the epistemological problem of predicting the course and direction of the biosphere, the evolutionary process. There are too many variables to take into account when trying to, for example, simulate the outcome of the evolutionary process and what kind of organisms it is likely to produce. Science, one could say, encounters a boundary. One would have to, Kauffman writes, “carry out infinitely many . . . simulations in order to model our specific biosphere with perfect precision.” But, Kauffman continues, “Obviously, no one could get this much time on a supercomputer” (Kauffman 2008, 39). The biosphere and human culture are creative in ways that are essentially unpredictable. This epistemological problem creates devastating problems for the reductionist worldview espoused by, among others, Galileo, Newton, and Laplace. The biosphere is essentially emergent and unpredictable, which Kauffman and other religious naturalists argue calls for a religious attitude toward reality and life.

Another problem for reductionism, according to Kauffman, is its inability to account for teleological language. Essential for teleological language are “means-ends” explanations in which “reasons appear as causes of behavior” (Kauffman and Clayton 2006, 504). Now, the problem for the reductionist is that it does not seem possible to replace teleological language with physical language. Consider, for example, the proposition “Lisa has left her house to go shopping.” It does not seem possible, argues Kauffman, to state the necessary and sufficient conditions about human actions in order to reduce the statement to lower level languages; “the physicist has no way to pick out the relevant subset of events that constitute the action . . .”

(Kauffman 2008, 76). Thus, eliminative reductionism fails, which seems to suggest that teleological language is nonreducible and emergent.

Charley Hardwick has made a similar argument to that of Stuart Kauffman. He asks us to consider a solar marker constructed by the Anasazi Indians in New Mexico between 950 and 1150 A.D. He writes: "From a purely objective standpoint, the configuration of the slabs and the angles of the sun explain physically the patterns of light cast by the slabs. Yet we can recognize them as a solar marker only because their physical states and configuration are realized in a *cultural role*" (Hardwick 1996, 40, my emphasis). Hardwick concludes that the property of being a solar marker is emergent with respect to physics. That is, even if we knew all *physical properties*, this would still not lead us to conclude that the slab of rocks constitutes a solar marker, that we can identify its cultural role. The construction of the solar marker is connected to the intentions of subjective beings and cannot therefore be an object of ontological reduction.

Given the nonreducibility of teleological language, some emergence theorists further suggest that *agency* becomes a feature of reality. Kauffman argues that it is appropriate to use teleological language when discussing the life and function of a bacterium and what it must do in order to survive and flourish in its specific environment. A bacterium that swims up the glucose gradient does so to get food. For this to be possible, it has to be able to discriminate between presence of glucose and absence of glucose; it has to be able to *interpret* signs correctly, otherwise a mistake could be made which could prove fatal for the bacterium. The bacterium thus "chooses" to act a certain way, although that term must be "pared down to its absolute minimum since we are seeking a minimal physical system to which one might apply teleological language" (Kauffman and Clayton 2006, 505). Kauffman, therefore, suggests that the bacterium is actually an agent, and once this is true "meaning and 'ought' enter the universe" (Kauffman 2008, 87–88).

According to Kauffman, the reality of "meaning" and "ought" sheds some light on how we should understand the human mind. The emergentist picture that seems to be growing out of science suggests that the mind is not just an algorithmic machine, it is a "meaning and doing organic system" (Kauffman 2008, 177). According to the computational model, which has been favored by reductionists, the mind is merely a computational system (albeit a highly effective one) and it can be fully explained in terms of carrying out algorithmic procedures. One assumption in this model is that the computations made by the mind are devoid of meaning, "they are purely syntactic" (Kauffman 2008, 192). Kauffman believes this view to be false, because meaning is intimately connected to agency. Recalling the story of how the bacterium swims up the glucose gradient to get food, it was suggested that the bacterium was looking for signs of the presence of glucose, and that it has a certain value for the bacterium. More properly, we can say that the

bacterium's reception of the glucose *gives* it meaning. The same can be said about us humans; we make meanings. The human mind sees a potential chassis in an engine block; it sees a potential statue in a simple rock, and so on. Far from being devoid of meaning, mind is infused with it. Kauffman argues that this seems to suggest that meaning is irreducible, essential, and an unavoidable part of the mind. On this account mind is a meaning-producing property and consequently an emergent property of nature.

Loyal Rue has expressed a similar understanding in his view of the irreducibility of *teleology*. On Rue's view "goal-seeking" behavior involves certain concepts which seem to go beyond the world and language of physics (Rue 2011, 56). He argues that several reductionists have tried to replace teleological language with the language of chemistry and physics. But, says Rue, the problem for thinkers inclined to view reality from the perspective of reductionism is that they have failed to realize that many sciences and theories, like evolutionary theory, assume the teleological nature of living biological systems from the start. For example, when trying to explain how new traits arise they usually make the following claim: "functional traits are there because in the past they served the *goal* of reproductive fitness." And goal, in this context, is a teleological term, not a strictly functional term. Hence, teleology is being presupposed in Darwinian explanations, which suggests that teleology is an emergent and irreducible part of nature (Rue 2011, 58).

Several religious naturalists therefore conclude that—given the irreducibility of the biosphere, the emergence of teleological language, the reality of meaning and values, and the new nonreductionist view of mind as an emergent and irreducible property—we seem to have all the necessary ingredients for a religious worldview.

Religious naturalists draw heavily on the concept of emergence in order to formulate a position that is fully naturalistic and consistent with the idea that there are some aspects of nature and reality that we can properly view as religiously significant. According to religious naturalists such as Hardwick, Kauffman, and Rue, the concept of emergence can help to finally bridge the gap between naturalism and religion. The concept of emergence is however not only used by religious naturalists who have adopted a completely naturalistic outlook on reality; there are also recent thinkers who believe the concept of emergence might prove helpful in rendering theistic beliefs more acceptable in an age of science. The problem of divine action, or divine causality, has been given extra attention by these thinkers.

EMERGENCE AND DIVINE ACTION

Classical theists normally maintain that there necessarily exists a supernatural being or "person without a body (i.e., a spirit) who necessarily is eternal, perfectly free, omnipotent, omniscient, perfectly good, and the

creator of all things” (Swinburne 2004, 7). God is further suggested to be able to perform miracles, if God wishes to do so. By miracles one usually refers to events or happenings in the universe which in some sense violate natural laws; special acts performed by God in order to bring about a certain outcome in history. This notion of God as a breaker of natural laws, laws which God supposedly once established, has come under heavy criticism, from outside as well as inside of theological circles. Theologians Phillip Clayton and Arthur Peacocke are both concerned about this concept of God as a lawbreaker which they feel threatens the practices of science and the rationality of God. Clayton writes: “Scientific activity presupposes that causal histories are reconstructible in principle, which they would not be if the cause of some specific phenomenon lay outside the natural order altogether” (Clayton 2004, 163). And if we allow someone or something to interrupt this causal history “science as we know it would be impossible” (Clayton 2004). Peacocke worries that the idea of a God who both sustains the laws of nature and at the same time intervenes in such ways as to break the same laws will undermine the rationality of God. If God were to break natural laws in order to produce a certain event, then it would almost appear as if God “had second thoughts whether he can achieve his purposes” (Peacocke 1993, 142).

The philosophical view from which these sorts of problems arise is, according to Clayton and Peacocke, *ontological dualism* which in this context is the view that God exists independently of the universe, and that reality is constituted by at least two ontological categories: matter and spirit. This ontology, which classical theism is based on, creates a problem since it implies that God, as spirit, has to break the natural laws that govern the organization of matter in order to achieve some valuable purpose. A new ontology has to be proposed. Peacocke and Clayton suggest that we come to adopt panentheism, the view which suggests that “the world is, as it were, ‘in God’ but God is ‘more than’ the world” (Peacocke and Clayton 2007, 22). This perspective, they suggest, can overcome the ontological difference between God and the world, and hopefully help to create a model of divine action that seems more in tune with modern science. The panentheistic analogy, the description of how God interacts with the world, is described in the following way:

... just as human consciousness (mental properties and their causal effects) can lead to changes in the physical world, so also a divine agent could bring about changes in the physical world—if this agent were related to the world in a way analogous to the relationship of our ‘minds’ to our bodies. (Clayton 1997, 258–259)

In this sense, divine causation would be similar to how emergence theorists picture downward causation and the relationship between mind and body, and God would be able to influence “particular events, or

patterns of events, in the world” without interrupting the causal nexus and the regularities studied by the different sciences (Peacocke 2009, 275). God could bring about occurrences by “whole-part influences on the world-as-a-whole” (Peacocke 2009, 274). Thus, we would have a model for divine causality that is scientifically adequate, a model that is able to avoid both reductive materialism and dualism.

THE CONNECTION BETWEEN EMERGENT PROPERTIES AND A RELIGIOUS CONCEPTION OF REALITY

Religious naturalists, as I have shown, want to affirm naturalism and the possibility of affirming a religious conceptualization of reality. They argue that there is some kind of connection between emergent properties and a religious conception of reality. For example, they argue for a religious conception of reality based on the observation that the biosphere seems irreducible, in the sense that it is not possible to deduce high-level properties from low-level physics. We are not able, according to Kauffman, to predict the course of the biosphere. Thus, the biological world seems emergent with respect to physics. Moreover, religious naturalists have argued that reductionism seems to fail, given its inability to account for teleological and intentional language. Therefore, agency, meaning, and values seem to enter the world, and we can properly say that the world can be religiously interpreted. Well, is there a connection between the existence of emergent properties and some kind of religious reality? I think that the answer depends on whether we interpret the arguments put forward by religious naturalists realistically or pragmatically.

If one interprets these arguments realistically then they seem to encounter some problems. Religious naturalism would in this case be an ontological thesis according to which there are independently existing religious aspects of the natural order—that there are some objective aspects of the natural order that it is appropriate to consider religiously significant, independently of anyone’s judgment. Consider Stuart Kauffman’s and Gordon Kaufman’s view of God as *creativity*, which they have referred to as the coming into being of new realities and possibilities. Since God becomes identified with the evolutionary process, the course of which we cannot predict for epistemological reasons, God also becomes a mystery (Kaufman 2004, 74–75). However, as some religious naturalists rightly note, the word *creativity*, let alone God, is not used by scientists when describing emergence theory. It is, one should say, an extrascientific interpretation of empirical data, or a metaphysical add-on. Ontologically speaking, it seems that the terms *God* or *creativity* do not contribute anything to our understanding of nature. It would almost seem as if these terms are ontologically superfluous. Moreover, it is rather unlikely that these philosophical or theological interpretations can be derived deductively from emergence

theories as presently stated. Thus, from a realist perspective, religious naturalism appears to offer an ontology that goes beyond emergence theory, an ontology that cannot be derived from theories of emergence.

Religious naturalism may however avoid these problems if we interpret its claims nonontologically. That is to say, religious naturalism is not a set of propositions about reality and what it is like. They could instead, I would suggest, be construed as *attitude-promoting propositions*. An attitude-promoting proposition is a proposition which we come do adopt since it promotes an attitude that is pragmatically beneficial. With respect to religious naturalism, it is possible to identify several such beliefs. Religious naturalists argue, for example, that we should, given the ecological crisis, adopt beliefs that are ecologically sound, which will make us more likely to behave in ecologically responsible ways. The primary function of religious discourse is therefore not to describe independently existing religious aspects of reality, but rather to invoke an appropriate disposition that will make us more likely to behave in such ways as to support the health of the ecosystem. Some may interpret this as a kind of antirealism with respect to religious discourse. I do not think that this interpretation is correct. For example, the term *God* properly refers to a real aspect of nature, namely the evolutionary process, and it therefore has a referent in the actual world. So, rather than viewing it as a type of antirealism, it would be more appropriate to consider it as an expression of pragmatic realism (Pihlström 1999, 7, 58).

By pragmatic realism, I mean a synthesis of realism and pragmatism, a kind of realism that is sensitive to our pragmatic goals manifested in the different human practices. Following John Dewey, it can be said that pragmatism starts from the actual situation of human beings, the limitations and capacities that are involved in being a human subject. Truth or what reality is like are always connected to human practices, and in thinking about truth we must reflect on what practical difference the truth of a proposition is understood to make in the scheme of things. It represents an instrumental approach to knowledge and a rejection of meaningless speculations of things unobservable, for example, abstract objects detached from human experience (Campbell 1995, 14; Diggins 1995, 2). Characteristic of the American pragmatist tradition is the attempt to find plausible and attractive alternatives to essentialism and foundationalism. The latter has been found problematic by pragmatic thinkers since truth is only available from within a human practice, “not from any higher standpoint” (no God’s eye point of view) (Kolenda 1999, 240). Further reason for rejecting foundationalist conceptions of truth is that pragmatists are highly skeptical of commitments “to something external, whether it be reality, objectivity, or causality” (Diggins 1995, 456). Richard Rorty says the following concerning the antifoundationalist strands of pragmatism:

They think that the question whether my inquiries trace a natural order of reasons or merely respond to the demands of justification prevalent in my culture is, like the question whether the physical world is found or made, one to which the answer can make *no practical difference*. (Rorty 1997, 6, my emphasis)

Essentialism is rejected for quite similar reasons. There is no unconceptualized readymade world out there waiting to be discovered, and what we deem as “real must be relevant to our *practical interests*” (Pihlström 1999, 87) Then, a pragmatic conception of religious discourse recommends that we should adopt a certain religious view, not because it offers the best description of an independently existing religious object (whether it be God or perhaps nature), but because it serves our practical interests, in this case a healthy ecosystem in which organisms of all kinds can live and flourish. And I suggest that this type of realism fits quite well with the perspective of several religious naturalists.

Let’s say, however, that we stick with a realist interpretation of religious naturalism. Would such an interpretation render religious naturalism completely empty of force? The answer to this question depends on how we view the arguments put forward by religious naturalists. If construed as a *positive* argument, meaning that there is a necessary connection between the reality of emergence and religious aspects of nature, it would have to be considered unsuccessful. As I suggested earlier, it does not seem to be possible to deduce these philosophical and theological interpretations from emergence theories as presently conceived. One who studies emergence theory and who comes to recognize the positive ontological status of emergent properties, that there seem to be emergent properties that are ontologically irreducible (for example, mental properties), is not deductively, or empirically, forced to adopt a religious conceptualization of the same properties. Something would indeed be missing if these types of arguments are taken as arguments in the positive sense. It would perhaps be better to understand the connection in terms of a negative argument. A negative argument would in this way be an argument that shows that it is possible that *X* is true by virtue of *Y* being true without there being a necessary relationship between *X* and *Y*. With respect to the discussion of emergence, one could interpret the argument as saying the following: By showing the falsity of reductionism and by demonstrating the positive status of an alternative ontology, namely emergence, the reality of a religious worldview comes to be ontologically conceivable. Hence, there is no *necessary* connection between the ontology of emergence and a religious worldview, but the former makes the latter at least possible. This would seem to be the most charitable approach to the discussion about how to understand the relationship between emergent properties and a religious conception of reality, if we take the metaphysical background theory to be realism. However, I would still suggest that pragmatic realism

offers the best approach when trying to understand the project of religious naturalism.

PANENTHEISM, EMERGENCE, AND ONTOLOGICAL DUALISM

As previously described, several theologians maintain that we must construct a model of divine causality that can avoid ontological dualism. They feel that this can be done by incorporating recent constructions of emergence theories. Both Peacocke and Clayton argue that this ontology is best interpreted as affirming monism; that is to say, that ultimately there is only one reality and everything existing “can be broken down into whatever physicists deem ultimately to constitute matter/energy” (Clayton 2000, 643; Peacocke and Clayton 2007, 12). This ontology, according to Peacocke and Clayton, can help the discussion between science and religion progress and to avoid both dualism and eliminative materialism. Furthermore, they argue that the theory that seems to grow out of neuroscience of how the mind interacts with the body through top-down causation can be used as an analogy for how we should understand God’s possible interaction with the world. I suggest, however, that Peacocke and Clayton ultimately fail to avoid ontological dualism.

It appears that panentheism as it is articulated by these two thinkers seems to collapse into dualism, regardless of it being construed as a *global* or *local* ontological thesis. By a global ontology of reality, I denote a thesis about what constitutes reality *as a whole*. A local ontology, on the other hand, focuses on a specific phenomenon within the world and what the best ontological interpretation of it may be.

With respect to a global ontology of reality, panentheists seem unable to avoid dualism; indeed, one should actually expect them to adopt a global dualism, otherwise God becomes identical with physical reality. According to the thesis of emergent monism only one thing exists, namely that which ultimately constitutes matter and/or energy. But this seems incompatible with Peacocke’s and Clayton’s assertion that God is more than the physical world. Because if God is more than the physical world, reality would be constituted by at least two ontological categories: matter and spirit. Hence, emergent monism, the view that there is only one category of existence available to us, is not true. Emergent monism, the metaphysical assumption of their view, seems to contradict the doctrine of panentheism, which puts Peacocke’s and Clayton’s project in an awkward position. They would have to choose between either affirming emergent monism and then deny the existence of God (or reduce God to the physical world which would make this into a kind of pantheism), or they could affirm the reality of God and that God is more than matter, but then be committed to global ontological dualism which would contradict

emergent monism. Therefore, as a global ontology and a thesis about reality as a whole, panentheism cannot avoid dualism.

But let's consider the second ontological thesis. According to this view maybe Peacocke and Clayton affirm global ontological dualism but remain nondualistic with respect to the local issue of how God interacts with the world. They could be interpreted as arguing that there are only natural causes in the world and that there is no room for any supernatural causes that violate or contradict the laws of nature. If God so chooses to cause something in reality, this will be done through natural causes. Hence, they would embrace monism with respect to the local issue of causality (that there are only natural causes in the universe) without having to embrace a global form of monism. God's interaction, in virtue of being noninterventionist, would therefore be nondualistic.

However, even with respect to the local issue of divine causality, it remains uncertain if panentheism is capable of completely bypassing ontological dualism. Both Peacocke and Clayton maintain that it is theoretically possible for God to act specifically in the universe, to intervene "in the physical realm at certain points," and that God is having purposes "which he is working out in the world" (Peacocke 1993, 135; Clayton 1997, 180). Neither Peacocke nor Clayton wants to deny that God can carry out specific purposes in the world, which if denied would imply a kind of Deism, something they believe is incompatible with a Christian conception of God as both the creator and sustainer of world. Therefore, they need a model of divine action soft enough to allow the possibility of specific divine causes without those causes breaking natural laws. But—and here lies a problem—if they maintain that here are happenings in the causal web that are the product of divine intention, then one should presumably assume that there is a difference between, one could say, ordinary causes which are not caused by God, and those events that are specifically caused by God. This difference between natural causes and nonnatural/extranatural causes must be ontological. Otherwise they become, as Clayton notes, identical, and there would no longer be any "reason to interpret it [an effect in the world] as an instance of divine action" (Clayton 2004, 193). But, given that there are particular instances of divine influence on the world according to their view, that we seem to have causes that are nonnatural, it seems that Clayton's and Peacocke's panentheistic model is not antidualistic after all. On the contrary, panentheism is in need of a dualistic account of divine action, given that they do not want to equate divine causes with natural causes. Thus, they seem to be committed to local ontological dualism as well, and emergence theory seems to offer no way out of this predicament.

When panentheism is unable to avoid ontological dualism, or as suggested is actually dependent on dualism in order to offer a robust account of divine action, it seems that the distinction between panentheism and classical theism becomes blurred. One has to call into question their harsh

critique of classical theism, which they have accused of being antiscientific as a result of its commitment to ontological dualism. I will, however, not dwell on this issue; instead I will focus on the larger question of whether emergent phenomena or properties are ontologically nonreducible, a view presupposed by both religious naturalists and panentheists.

EMERGENCE, NATURALISM, AND NONREDUCIBILITY

As I described earlier, naturalists and panentheists in this discussion maintain the positive ontological status of emergent properties. Two arguments have been outlined. One arises from the fact that the biosphere seems emergent with respect to physics, that it is not possible to know what kind of organism the biological process likely will produce. The other argument says that the attempt to replace teleological language with physical language is doomed to fail; hence this form of language is emergent and nonreducible. The argument from teleological language has furthermore been taken by religious naturalists to support the reality of agency and the view of mind as meaning-producing.

Well, do these arguments succeed in establishing the reality of emergent properties/phenomena? It seems that one has to answer in the negative. Consider the argument from the irreducibility of the biosphere. According to Stuart Kauffman, it is impossible to predict the course of evolution due to the vast amount of information and variables that have to be taken into account; it is epistemologically overwhelming. Interesting as this is, it is problematic to derive any ontological conclusions from an epistemological problem, which furthermore has not been established as a *genuine* epistemological problem, that is, that the object of investigation belongs to a realm that transcends what we as humans can have no knowledge of. Kauffman, it seems, has not established this as a genuine epistemological problem as such and a reductionist could, for example, maintain that we will be able, if given enough time, to discern the relevant variables necessary for carrying out such a computation. Clayton and Kauffman, however, are aware of this objection and argue that this is indeed a genuine epistemological problem, a problem that stems from the nature and history of causal properties:

It is not just that, after the fact, *we* cannot explain a given pre-adaptation in purely physical terms . . . Much more, before the particular causal feature began to confer selective advantage the world was such that the particular causal feature *was not yet distinguished* from among all the other causal properties of the organism and its parts. (Kauffman and Clayton 2006, 514)

And this, they continue, “implies that we cannot prestate the configuration space of the biosphere. One cannot know ahead of time the kinds of entities, processes and functionalities that will come to exist” (Kauffman and Clayton 2006).

This is an interesting argument, and it seems to support some kind of emergence, which may aid naturalists and theists in bridging the gap between epistemology and ontology so that a more robust account of emergent properties can be offered. Kauffman and Clayton (2006) try to show that the epistemological problem of predicting property/organism *X* is related to the ontology of property/organism *X*.

However, a problem seems to face the emergentist here. Given the epistemological position of emergence, the idea that emergent properties/phenomena are ultimately unexplainable and unpredictable (something they mean should invite a sense of religious wonder), it is not possible to give a case for the causal effectiveness of emergent properties or to offer a positive account of emergence relations. If you maintain that emergent properties are ultimately a mystery, that they transcend human knowing (that we are facing a genuine epistemological problem), then you also have no way of determining if these properties can exert causal effectiveness and hence be considered ontologically real. One who adopts weak emergence, like Clayton and Kauffman, is therefore not justified in adopting strong emergence, as the epistemology of the emergentist position makes it difficult, if not impossible, to make any ontological judgments regarding the nature and causal reach of emergent properties. Weak emergence would, contrary to what Clayton and Kauffman argue, actually invite a kind of agnosticism concerning the ontology of emergent properties; and thus, there seems to be a conflict between weak and strong emergence, something I maintain challenges the successfulness of emergence-based constructions of both pantheism and religious naturalism. As mentioned above, they aim to show that the epistemological problem of predicting property/organism *X* is connected to the ontology of property/organism *X*; but given the epistemology of their position they are prohibited from making ontological claims and thus they can't offer a positive account of the interaction between emergent properties and their material base, something they have to do in order to establish a robust version of emergence.

Hence, one has to conclude that Clayton and Kauffman have not succeeded in showing that we are empirically justified in believing in the strong form of emergence according to which emergent properties are causally effective (that they have causal powers of their own). Instead there are hidden assumptions in their argument, or metaphysical interpretations of emergent properties, which we are not empirically forced to adopt, and not able to adopt given weak emergence. Thus, we should remain skeptical regarding the idea that reality is constituted by different levels. Indeed, given this, it would be even more difficult for a naturalist or pantheist to justify a religious interpretation of reality based on emergence if one cannot properly state the relationship between these different levels, or to find reasons that these levels in fact exist.

Let's reflect on the second argument, the argument from teleological or intentional language. This argument, I think, has some force to it and I think that Clayton, Hardwick, and Kauffman are correct in maintaining the irreducibility of teleological/intentional language. It is quite difficult to imagine that one could replace teleological language with physical language, that lower level language is sufficient to replace high-level languages. Higher level language seems infused with normativity, for example, when we give reasons for a specific action, and strictly physical language seems unable to account for normative propositions, such as those that involve "means-ends explanations." But, even though it may be true that eliminative reductionism fails, that some aspects of our language seem to, in lack of better words, transcend physical language, it is not at all clear why one should believe that this supports the belief in the ontological existence of emergent properties. Clayton, Hardwick, and Kauffman seem to suggest that semantic nonreductionism in some sense supports ontological nonreductionism; that is to say, that we can derive ontological truths from the nature and function of particular aspects of language. But why should we believe that? Semantic irreducibility seems fully compatible with a materialistic, physicalist, or reductionist ontology. One could, for example, hold that nature is all there is, there is no causal happening at higher levels without a physical change in lower levels (higher level causality is epiphenomenal), or deny the talk of levels completely, without being committed to a view of teleological/language as reducible to or replaceable by physical language. Ontological reductionism and semantic reductionism are logically independent of each other. It therefore seems incorrect to claim that the former necessarily implies the latter, and thus, we have good reasons to remain skeptical concerning Clayton's, Hardwick's, and Kauffman's argument for the reality of emergence based on the fact that several areas of language seem to go beyond physical reality.

DRAWING THE THREADS TOGETHER

In this article, I have highlighted the concept of emergence as it is used in the intersection between science and theology, both by naturalists and theists. I have tried to show that the connection between the positive ontological status of emergent properties and a religious conception of reality appears unclear, especially if one chooses to interpret these properties realistically, in the sense that there are objectively existing aspects of reality that we can properly call religious. I have suggested that religious or metaphysical interpretations of emergence theory are not deductively valid, and that one is not forced to adopt these extrascientific conclusions even if one recognizes the positive ontological status of emergent properties. Furthermore, it seems that, ontologically speaking, religious concepts employed by these naturalists do not contribute anything to our understanding of reality. To

escape these problems, I have suggested that religious concepts used by religious naturalists should instead be interpreted pragmatically in terms of attitude-promoting propositions. Furthermore, I have argued that the pantheistic position proposed by Philip Clayton and Arthur Peacocke is unable to avoid global ontological dualism (a thesis about reality as a whole) as well as local ontological dualism (with respect to the issue of causality).

In conclusion, it seems that the concept of emergence has little philosophical/metaphysical value in the science–religion dialogue. To try to defend a religious conception of reality, or construe theological concepts, based on the idea that reality is constituted by different emergent levels seems problematic, especially since a positive account of the relationship between these levels and their material base has not been offered, and probably cannot be offered. While the concept of emergence certainly has some value in other areas of philosophy, such as philosophy of mind, one must wonder what it can contribute in the science–religion discussion and issues concerning the ontological and epistemological adequacy of religious interpretations. As emergence theories are presently stated, one should conclude that those who want to reconcile science and religion, or combine religion with naturalism, may have to look elsewhere.

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REFERENCES

- Campbell, James. 1995. *Understanding John Dewey*. Chicago, IL: Open Court Publishing Company.
- Chalmers, David. 1995. "Strong and Weak Emergence." In *The Re-Emergence of Emergence*, ed. Philip Clayton and Paul Davies. New York: Oxford University Press.
- Clayton, Philip. 1997. *God and Contemporary Science*. Edinburgh: Edinburgh University Press.
- . 2000. "Neuroscience, the Person, and God: An Emergentist Account." *Zygon: Journal of Science and Religion* 35:613–52.
- . 2004. *Mind and Emergence: From Quantum to Consciousness*. New York: Oxford University Press.
- Diggins, John. 1995. *The Promise of Pragmatism: Modernism and the Crisis of Knowledge and Authority*. Chicago, IL: University of Chicago Press.
- Drees, Willem B. 2010. *Religion and Science in Context: A Guide to the Debates*. New York: Routledge.
- Ellis, George F. R. 2006. "On the Nature of Emergent Reality." In *The Re-Emergence of Emergence*, ed. Philip Clayton and Paul Davies, 79–107. New York: Oxford University Press.
- Goodenough, Ursula. 1998. *The Sacred Depths of Nature*. New York: Oxford University Press.
- Hardwick, Charley D. 1996. *Events of Grace*. Cambridge: Cambridge University Press.
- Haight, John F. 2003. *Deeper Than Darwin: The Prospect for Religion in the Age of Evolution*. Boulder, CO: Westview Press.
- . 2006. *Is Nature Enough? Meaning and Truth in the Age of Science*. New York: Cambridge University Press.

- Jackelén, Antje. 2006. "Emergence Everywhere?! Reflections on Philip Clayton's Mind and Emergence." *Zygon: Journal of Science and Religion* 41:623–32.
- Kaufman, Gordon D. 2004. *In the Beginning . . . Creativity*. Minneapolis, MN: Fortress Press.
- . 2007. "A Religious Interpretation of Emergence: Creativity as God." *Zygon: Journal of Science and Religion* 42:915–28.
- Kauffman, Stuart. 2008. *Reinventing the Sacred: A New View of Science, Reason and Religion*. New York: Basic Books.
- Kauffman, Stuart, and Philip Clayton. 2006. "On Emergence, Agency, and Organization." *Biology and Philosophy* 21:501–21.
- Kim, Jaegwon. 1995. "The Myth of Nonreductive Materialism." In *Contemporary Materialism: A Reader*, ed. Paul K. Moser and J. D. Trout., 133–50. London: Routledge.
- Kolenda, Konstantin. 1999. "American Pragmatism and the Humanist Tradition." In *Pragmatism: From Progressivism to Postmodernism*, ed. David Depew and Robert Hollinger, 238–55. London: Praeger.
- Niño El-Hani, Charbel, and Claus Emmeche. 2000. "On Some Theoretical Grounds for an Organism-Centered Biology: Property Emergence, Supervenience, and Downward Causation." *Theory in Biosciences* 119:234–75.
- Peacocke, Arthur. 1993. *Theology for a Scientific Age: Being and Becoming—Natural, Divine and Human*. Minneapolis, MN: Fortress Press.
- . 2009. "Emergence, Mind, and Divine Action: The Hierarchy of the Sciences in Relation to the Human Mind-Brain-Body." In *The Re-Emergence of Emergence*, ed. Philip Clayton and Paul Davies, 257–78. New York: Oxford University Press.
- Peacocke, Arthur, and Philip Clayton, eds. 2007. *All That Is: A Naturalistic Faith for the Twenty-First Century*. Minneapolis, MN: Fortress Press.
- Pihlström, Sami. 1999. *Pragmatism and Philosophical Anthropology: Understanding Our Human Life in a Human World*. New York: Peter Lang.
- Rolston, Holmes. 1987. *Science and Religion: A Critical Survey*. Philadelphia, PA: Temple University Press.
- Rorty, Richard. 1997. "Religious Faith, Intellectual Responsibility, and Romance." In *Pragmatism, Neo-Pragmatism, and Religion: Conversations with Richard Rorty*, ed. Donald A. Crosby and Charley D. Hardwick, 3–21. New York: Peter Lang.
- Rue, Loyal. 2011. *Nature Is Enough: Religious Naturalism and the Meaning of Life*. Albany: State University of New York Press.
- Swinburne, Richard. 2004. *The Existence of God*, 2nd ed. New York: Oxford University Press.