Natural, Supernatural, and Transcendence

NATURALIZING TRANSCENDENCE IN THE NEW COSMOLOGIES OF EMERGENCE

by Donald M. Braxton

Abstract. Recent discourse on emergence within the natural sciences offers a superior alternative to traditional notions of transcendence. *Emergence* is a term of common parlance in the natural sciences. It designates moments when various systems develop an internal dynamic that generates an entirely new level of complexity, a qualitatively different mode of existence that cannot simply be reduced to its constituent parts. To the natural scientist, emergence is an expression of transcendence without reference to final causality or central organizing principle. Autopoietic emergence is more congruent with contemporary understandings of the universe than the traditional anthropomorphizing concept of teleological design. In this article I offer both an interpretation of emergence as a new category for the interpretation of divinity and an explanation for traditional anthropomorphism rooted in contemporary cognitive sciences.

Keywords: cognitive science; design; emergence; feedback loop; stigmergy; teleology; theology; transcendence.

In his excellent article "Creation and Providence" (1985) Julian Hartt lays out what he calls the classical "theological consensus" regarding the Christian doctrines of creation and providence. While acknowledging the diversity of theological nuances in the period from Origen to John Calvin, he suggests that no serious challenges were mounted to this basic consensus; by and large, all Christian theology agreed on a hierarchical, finite

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universe that had been created out of nothing (*ex nihilo*) and was sufficient to achieve divine purpose. This worldview assumed a providential and educative function to pain and suffering and allowed for the possibility of miraculous interventions, especially in the case of Jesus. Almost all Christians through the Reformation looked forward to a termination of the universe at the command of God. Since the advent of modernity, and particularly the Enlightenment critics of religion, Hartt continues, all of these convictions have been rendered questionable if not indefensible. According to him, the premodern consensus constituted a complete and systematic teleological explanation of reality, the rupture of which has rendered theological discourse in the modern age particularly vexing: "The modern scientific age can fairly be said to have begun with a direct challenge to the teleological explanation of nature. . . . When this view triumphs, humankind has either to be assimilated without significant remainder into nature or to appear as the eternal outsider, an alien dubiously present anywhere anytime" (1985, 152).

I agree with Hartt's assessment that universal teleology has been rendered questionable and that Christianity must rethink itself if it is to remain relevant to the best knowledge we currently possess about the universe, its operations, and our place in it. Scientifically informed Christianity in the West has undergone a serious and radical displacement as a result of the Enlightenment and must face the significance of the change. The two most powerful Christian responses to the Enlightenment—Friedrich Schleiermacher's Romantic turn to the feeling of absolute dependence and its offspring of variegated liberal essentialisms, on one hand, and Karl Barth's neoorthodox repristination of theological discourse and its narrative-theology offspring, on the other—inadequately face the challenges of the modern world. They also do not, in my opinion, attempt to come to terms with the revolutions in understandings of the human condition made available by the Enlightenment's most visible product: modern science. At the heart of the upcoming theological revolution is what theological discourse means by the idea of *transcendence*, especially the idea of a transcendent God.

WHY AN EVOLVED AND EVOLVING FAITH IS OUR FUTURE IF WE ARE TO HAVE A FUTURE

The latter half of the twentieth century presided over the coalescence of a compelling story common for all humanity. What began as an account of the explanation of the origins of species in the nineteenth century expanded in the twentieth century to include the human species and the various ecosystems of the planet and then further to embrace the planet itself and eventually the entirety of the cosmos. In his 1839 travelogue *The Voyage of the Beagle* Charles Darwin ([1839] 1965) presaged this paradigm shift when he spoke of coming close to "the mystery of mysteries," the processes gov-

erning the emergence of novel species. By the end of the nineteenth century the evolutionary account of life on our planet had become the reigning theory of the life sciences. Theodosius Dobzhansky would speak for almost all biologists when he wrote "Nothing in biology makes sense except in light of evolution" (1973, 125). With the advent of relativity in physics, the assumptions of the fixity of space and time gave way to the malleability of these former constants. As scientists in astronomy, astrophysics, and cosmology during the middle decades of the twentieth century amassed an impressive array of empirical evidence for current theories of the origins of our solar system, the Milky Way, the Local Group, and, on the farthest horizons of human knowing, the Big Bang singularity, a common evolutionary paradigm emerged that placed all heretofore received creation accounts in question—what has been dubbed by Loyal Rue (1999; 2005) as "everybody's story." To cite cosmologist Timothy Ferris, "it seems permissible and helpful . . . to regard living creatures, planets, stars, galaxies, and the atoms and molecules of which they are made as products of cosmic evolution" (1997, 194). At the beginning of the twenty-first century, therefore, we live and move and have our being in a world radically redefined intellectually.

Yet even as we know more about our universe and our place in it, signs alert us to a dangerous disjunction between what we know and how we are living. All around us, the principal indices of the health and well-being of our environment are in steady decline. Air quality, water quality and availability, the behavior of weather systems, the state of our oceans, soil erosion, biodiversity, and deforestation, among other indices, clearly display the burdens our species places upon our home. At the same time, we witness rising human populations coupled with rising expectations for consumption. We observe political unrest fueled by advancing environmental degradation in places like Sudan, Ethiopia, Somalia, Brazil, Ecuador, and Israel. We participate in wars driven in part, if not entirely, by geopolitical ambitions to control the remaining fossil fuels on which human living patterns have been built. In the end, none of us is outside the impact of the crisis.

We have been progressively interwoven into a global network of economic, political, and ecological relations collectively known as globalization. When the price of Nike stock plunges we see real-time reactions on Wall Street. When political unrest destabilizes Middle Eastern oil sources, we see a hike in gasoline prices around the world almost immediately. When a nuclear accident occurs in Russia, milk in Scandinavia must be dumped. So advanced is this global integration that the very idea of the early modern nation-state and its sovereignty appear progressively inadequate to explain political processes and, indeed, may be potentially antiquated in our world of transnational corporations, international political and economic bodies, and global-level systems of treaties and negotiations (Carlson and

Owens 2003). To read the annual *State of the World Report* (2004) is to eavesdrop on the long, slow keen of a planet in precipitous environmental danger and the global struggle of its population to evolve new political, economic, and cultural systems that are up to the challenge.

Within the walls of the much smaller world of Christian theology, it is not always clear that this keen of travail is heard or that its challenge to theology and Christian ethics is adequately measured. To be sure, church bodies and seminaries, academic theologians and ministers continue to appeal to the image of the responsible steward, question excessive consumption patterns, fight for social and ecological justice, and nurture a spirituality of appreciation for the beauty of God's creation. Such measures, however, seem progressively weak in the face of the sheer scope of the crisis and out of touch with the revolution in our understandings made available by current natural sciences. The concepts with which Christian theologians seek to address the problems of the environmental crisis predate the modern scientific revolution. They function within a worldview that is inherently dualistic, teleological, and anthropocentric, and all three of these premises—dualism, cosmic teleology, and anthropocentrism—have been rendered untenable in the face of our common evolutionary story. The room in which all of our theological furniture has existed for so many years has changed. Simply rearranging that collection of furniture does not come to grips with the fundamental paradigm shift of our new story of cosmic evolution. The new cosmologies of emergence change the context in which all theologizing can take place. As Larry Rasmussen notes in his *Earth Community Earth Ethics*, most Christian theologies of the twentieth century have been "miserably deficient as cosmologies" (1996, 188).

How can Christian theology and ethics be adequately oriented to the environmental crisis if the underlying theology requires antiquated assumptions? How can Christian theology engage the best knowledge provided by the modern natural sciences if it is unaware that the cosmological background has changed against which all theologizing can take place? The question I ponder here is whether Christian theology can embrace its own evolution in our time.

The various facets of these questions constitute a theological and ethical agenda far beyond the scope of this essay or the abilities of its author. What I propose to do here is simply (1) outline the new cosmologies of emergence and (2) situate the nature and task of theologizing within that framework. These two topics do not answer other pressing concerns such as what consequences this new cosmology will have for specific theological categories such as God, creation, salvation, providence, sin, grace, or eschatology. These are themes that theologians such as Gordon Kaufman, Rasmussen, Sallie McFague, and Rosemary Radford Ruether have already begun to address far more ably than I can. Here I note only that with these authors I believe that the consequences will be rather profound. Nor will

I explore in this context how Christianity is to be understood against the backdrop of other religious traditions, although this too seems of fundamental importance for our quest for an evolved and evolving faith, not merely a Christian faith that embraces evolution.

EVERYBODY'S STORY: COSMOLOGIES OF EMERGENCE

The twentieth century witnessed the coalescence of a broadly integrated cosmology that is evolutionary in orientation. I call it a ***cosmology of emergence***, because emergence is the central metaphor of how the productivity and complexity of the universe is conceived. Not only is it the common, transcultural story of our species, the planet, and our cosmos, it is also the necessary context in which Christianity will come to understand itself as an evolved and evolving religion.

Since the late 1970s two new catchwords have surfaced in the natural sciences: *chaos* and *complexity* (Gleick 1987; Lewin 1992; Waldrop 1992; Kauffman 1993; 1995; Holland 1995; 1998; Sole and Goodwin 2000; Camazine et al. 2001; Johnson 2001; Morowitz 2001; Taylor 2001; Ward 2001; Regis 2003; Strogatz 2003). Fueled by the post-World War II computing boom, the natural sciences were beginning to confront problems often regarded as too difficult to engage productively. The source of the difficulty was the fact that this collection of problems entailed multiple variable systems, nonlinear chaotic phenomena, and elusive thresholds of unpredictable emergent properties. Exponential growth in computational power, however, was beginning to open doors to calculations that prior to this period were unimaginable.

These days, all of us benefit routinely from various applications of the sheer computational clout produced by this revolution. Modern weather prediction technologies, the synchronization of complex traffic-signal systems, and the personalized suggestions to be found on widely popular software such that used by *amazon.com* and *google.com* are practical derivations of this body of theory. The essence of these models is that they imitate a ubiquitous phenomenon in nature: the fact that networks of independently acting entities seem to possess an almost magical ability to self-organize in novel configurations, which scientists call emergence. As Cornell University mathematics professor and veteran complexity modeler Steven Strogatz explains, "whether the nodes in the network are neurons or computers, people or power plants, everyone is connected to everyone else" such that interconnected networks display the capacity to create something more than the mere sum of their parts, that is, generate genuinely novel and significantly more complex levels of order (Strogatz 2003, 232).

The study of these networks and the attempt to generalize their underlying principles are central tasks of the new field of complexity. Strogatz explains: ". . . complex networks are the natural setting for the most mysterious forms of group behavior facing science today. If the day should

ever come that we understand how life emerges from a dance of lifeless chemicals, or how consciousness arises from billions of unconscious neurons, that understanding will surely rest on a deep theory of complex networks" (2003, 232).

Although complexity theory is far removed from a so-called deep theory of complex networks, it has managed to generate some impressive complex adaptive systems with important real-world applications. It also has articulated a set of guidelines for the contours of self-organization in our natural and cultural worlds. At the heart of complexity studies is the discovery of the dynamics of self-organization in natural and cultural systems. Self-organization occurs as a result of two basic factors: (1) a set of positive and negative feedback loops and (2) information transfers in the form of stimulation from the governing environment and cues from other agents within the system.

A positive feedback loop is a self-reinforcing algorithm built into the behavioral repertoire of any agent within a network. Take, for example, birds that nest in colonies. A basic positive feedback loop would be: When given a choice, nest in proximity to others of your own kind (Wiens 1989). An example from the context of termite mound building: When a mound of sand saturated with a specific pheromone is encountered, add another granule to it (Camazine 2001). From genetics: When a certain chemical is present, synthesize a certain protein (Kauffman 1993). From the field of human behavior: When caught in a traffic jam for a certain period of time, seek the first available side street around it (Johnson 2001). Each of these examples is a simple rule that has the effect of creating a self-reinforcing process. Each time the rule is iterated its results stimulate a repetition of the same behavior. Positive feedback loops are the source of growth in self-organizing systems.

A negative feedback loop counters the potential for unchecked growth implicit in all positive feedback loops. Whereas a positive feedback loop amplifies behavior, negative feedback introduces inhibitions to the same behavior. To continue with each of the above examples, we simply add a qualification to the initial positive-behavior rule: When given a chance to nest, seek out the presence of others of your own kind unless the area is too crowded. When a mound of sand is encountered, add another granule to it unless it exceeds a certain size. When a certain chemical is encountered, synthesize a certain protein unless the detected chemical exceeds a certain level. When in a traffic jam for a certain period of time, seek the first available side street unless a certain number of other cars begin to fill that street, too. In this more complex algorithm the rule contains both autocatalytic and inhibitory parameters. Depending on the information the agent receives from the environment, a specified behavior may "turn on" or "turn off." The complex structures we see all around us result from the combinatorial options provided by these finely tuned behavioral param-

eters, which have themselves been sculpted over long stretches of time in the evolutionary process.

Positive and negative feedback loops produce the self-regulatory systems that govern many of the structures we see in the natural and cultural world. As Scott Camazine and colleagues (2001) suggest, they can explain the regularity of sand dune ridges in desert landscapes, the building of neural pathways in the human brain, the patterns found on zebras, and the patterns of pigmentation on fish. It is far from clear how far self-organizational systems might be meaningfully deployed in the natural and cultural world, but their presence seems ubiquitous. Part of the excitement of this growing field is that researchers believe that they are on to something the extent of which is mysterious. To cite a common refrain from the field, complexity studies is a new science "at the edge of order and chaos."

To activate the application of a behavioral algorithm, an agent must be stimulated by some external source. The agent can receive such stimulating information from several sources. First, information can come from the environment in which an agent exists. In the case of the nesting bird, it may be the level of ambient light indicating the need to end its feeding behavior and seek out a nesting location. For the termite, it may be thermal information that triggers construction behavior. For the protein synthesis example, it is the appearance in the environment of mRNA. For the traffic jam example, the information will come from the physical limitations of a roadway.

Second, information can come from cues originating among other agents in the network: the squawking of birds, the rustle of termites, the mutation in a cluster of cancer cells, the turn signals of other cars on the roadway. This information can start a process, speed it up, shut it down, or merely slow it down. Any of the above communicates to the agent information that triggers the application of the algorithm. The point of this form of information transfer is that agents in any system have the ability to modify the environment and thereby alter a rule's application. Taken together, information from the environment and other agents signals to any agent in a system the need to engage in or desist from some behavior.

Information can be communicated from a third source that is neither the larger environment nor a fellow agent: New information can result from the structure created by the behavior itself. This form of feedback bears the specialized name of ***stigmergy*** (Sole and Goodwin 2000). A classic example is termite mound building in which the emergent structure of, say, a wall within a mound triggers a modification in the application of the behavioral algorithm employed by the termites. Another example is how paper wasps construct nests (Camazine et al. 2001), where the emergent structure of the initial stages of nest building results in a modification of the iteration patterns and the creation of a novel phase of building. An example from the human behavioral realm might be in the selection of

specific house plans as a result of an already existing pattern of completed housing units within a subdivision.

Perhaps the most important insight from all of these examples is the ability of linked but autonomous agents to produce complex patterns that possess the appearance of large-scale design. Take the classic case of the bee hive. The exquisite complexity of bee colonies has impressed human beings for centuries. From the coordinated seeking of the foragers to the specialized behavior of the food storers and nest builders, the tasks of brood workers, and the specialized activities of the queen, it is tempting to infer that there is in this highly differentiated system a centralized command-and-control center. As Steven Johnson explains, however, "colonies are the exact opposite of command economies" (2001, 31). There is no central organizational template for the hive located, say, in the genetics of the queen bee. On the contrary, it is a very complex and structured community resulting from the pursuit of some very basic rules stimulated by environmental conditions. The hive does not exist as a Platonic ideal that is then realized in space and time, and it is not a teleological goal built into the genetics of a nymph. It is best understood as an emergent property, utterly novel and unanticipated by the world, that results from the interaction of various forces in specific states of order and disarray, organization and chaos.

The dynamism that drives such self-organizational matrices is the same set of forces that shapes evolution in general. Structures of order both similar to and different from antecedent states interact with novel environmental conditions. The environment exercises selective pressures that determine the structure's ability to replicate itself—to complete its algorithmic instructions. The "design" appearance to which we human beings most often respond as observers of nature and culture is the result of the long expanses of time that have sculpted the form and behavior of life, weather systems, or whatever we are observing. Entities can in the loosest sense be said to be "designed," but that design emerges not as a result of a centralized top-down intelligence but from autocatalytic processes crashing against environmental constraints. As Johnson says in relation to the queen bee misunderstanding, "the matriarch doesn't train her servants to protect her, evolution does" (2001, 31). Organization is achieved in a long process of bottom-up tweaking, decentralized and amorphous, not a top-down crafting by a master plan. From the vantage point of cosmology and the religions, making this transition from our inherited teleological assumptions to the roiling bottom-up effervescence of the world is the crucial challenge. We need to rethink how we conceive the sources of transcendence.

To look at the world trained with the eyes of complexity theory is to see a universe composed of nested structures. The basic laws of physics create activities that make the emergence of chemistry possible. Chemical interactions give rise to the possibility of the highly specialized forms of self-

organization we find in biological systems. The rules of biological systems give rise to the emergent properties we witness in the marvelous products of evolution: ecosystems, vertebrates, sentience, and human consciousness. The simple genetic codes at the basis of life, however long, complex, or redundant, of A, G, C, and T are simple algorithmic rules that initiate building patterns that create organisms. Even the seemingly lofty patterns of human thought and behavior are beginning to open themselves to correlations with genetic patterns. Each layer of the universe is a new and sophisticated property of the cosmos that we inhabit, both transcendent of its preceding matrix and latent within the combinatorial options of its antecedent laws. Stuart Kauffman likes to call this feature of complexity "order for free" (1995, 71). Cell biologist Ursula Goodenough calls it "something more from nothing but" (1998, 28). The resultant cosmology is a Russian stacking-doll world in which various levels of order are nested within larger networks that create the conditions under which creative new emergent properties coalesce. This quality of the world is what we have tended to call transcendence, envisioning it primarily as the result of teleological pull from a design and designer that originates from outside the system. In other words, we have thematized the omni-miraculousness and generosity of the universe's self-organizational capacities through a top-down entelechy. In the next section I argue that this inference is a natural but misleading outcome of the evolutionary design of our minds.

AN EVOLUTIONARY PERSPECTIVE ON THE THEOLOGIZING MIND

How are we to think about the theological task against the background of a cosmology of emergence? If transcendence is naturalized and thus understood as the world's inherent ability, if the cosmos cannot be understood teleologically in the sense of a top-down design pulling the world toward some inherent, providential outcome, and if human cognitive abilities are not an alien presence within the evolutionary landscape but rather explainable products of it, what does this imply for Christian theology? The best way to discover answers to these questions is to look to the disciplines that study the human mind within an evolutionary perspective. These growing fields are called evolutionary psychology and the cognitive sciences. On the basis of what they have to say about our repertoire of inherited religious conceptions we may be able to speculate about the future of Christian theology.

Evolutionary psychology suggests that the human mind-brain can be best understood as a product of our deep evolutionary past (Boyer 2001). In contrast to more shallow perspectives that emphasize, say, the last 5,000 years of human cultural history, evolutionary psychology suggests that our minds are the product of a far more ancient history, one characterized for 99 percent of its history by the environmental conditions of our foraging past (Mithen 1996; Burkert 1996). Because the various uses to which we

have put our evolved mental apparatus have been truly novel in the last 5,000 years of cultural history, the point of evolutionary theory is clearly not to say that we are dealing with the "nothing buts" of reductionism. Rather, it is to underscore the fact that the structure of our minds and the pathways whereby we process information display all the marks, and potential constraints, of our deep evolutionary past. In terms of complexity theory, Christian theology is an emergent property of the biological and cultural underpinnings of its deeper evolutionary history. Those underpinnings define both the ways in which novel configurations can emerge and the constraints under which they operate. The questions I have posed focus essentially on whether the human species possesses the cognitive adaptability to undergo a form of cultural evolution, a rethinking of our faiths and traditions against the backdrop of our emergent awareness of our common cosmic story.

Evolutionary psychology and the cognitive sciences give us insight into a wide array of mechanisms that emerged in our evolutionary past. We discover in the pages of this literature such important mental tools as natural-history intelligence, folk physics, a theory of mind, and social intelligence (Pinker 1999). For our purposes, the most important devices in our evolved, mental toolbox are our natural-history and social intelligences.

Natural-history intelligence describes the systems of automatic inferences we draw about our natural world (Atran 1990). Human beings come equipped with an evolved set of intuitive insights about the natural world. At a very early age in our development as human beings we display the ability to discriminate between animate and inanimate objects. Among animate objects we intuitively distinguish between flora and fauna, and within the category of fauna we distinguish between potential predators and prey. Even landscapes are readily assessed by our built-in natural-history intelligence. Human beings even today tend to prefer environments that replicate conditions ideal for foraging communities. Thus, evolutionary psychologists have documented many of the ways in which our Pleistocene past has been carried via our evolved mental architecture into our present.

Similarly, evolutionary psychologists point out the ways in which we have carried into the present many aspects of an evolved repertoire of inferences regarding social interaction. Human beings are highly specialized social animals. Our success as a species depends upon our ability to facilitate cooperation in our foraging existence. To be successful as a foraging people, human beings have developed highly sophisticated sets of psychological insights that cognitive sciences refer to as folk psychology (Mithen 1996). We learn to read other members of our social units to detect approval and disapproval, to ruminate on the various cues to others' states of mind, and to calculate prestige and our own location within hierarchical communal organizations.

Evolutionary psychology suggests that what we call religion in our species is the novel, emergent property of these two (natural-history and social) intelligences. Archaeological evidence points to the fact that early religion involves one of two clusters of ideas. One is that animistic understandings entail thinking about natural objects and settings as possessed of mental states analogous to human beings. We speculate about the mental states of trees, forests, the moon, storms, and various animals. Such speculations form the basis of all later personifications of the forces of nature to which we are subject including the deities that later evolve into the gods of Western monotheisms.[1] The other is that we see evidence of people beginning to think of themselves as animals and other natural forces, what scholars of religion call totemism (Evans-Pritchard 2002). First explained sociologically by Emile Durkheim, totemism entails the mental representation of human collectivities as natural forces. Often such representations have centered on aspects of the natural world on which people were most dependent—particular food sources, animals of great ferocity, or landscapes especially propitious to their survival. To understand how totemism has been carried to the present context we need only to attend to the widespread totemism associated with organized sports in American society. Our modern religions are, from the vantage point of evolutionary psychology, novel variations enabled and constrained by these two early religious expressions.

Anthropologist of religion Stewart Guthrie (1993) proposes that religions as we have come to know them and the Christian theologizing mind are sophisticated forms of anthropomorphism—defined simply as the ascription of human qualities to nonhuman realities. Human beings routinely attribute human intentionality to their surroundings. We note that the sky looks angry. We name our automobiles and speak of their moods. We routinely see faces in the moon, clouds, trees, food, and cliffs. We ascribe moral qualities to animals such as evil to sharks and goodness to dolphins, disloyalty to cats and loyalty to dogs, and so on. In the hands of the human religious imagination, the world is populated with human-but-not-human intentionalities.

Anthropomorphism is widespread because human beings possess a hyperactive agency-detection system (Barrett 2004). According to Guthrie (1993), human beings evolved a propensity to overascribe humanlike qualities to the nonhuman world because it conferred important survival advantages with few negative consequences. In our evolutionary adaptation, the detection of agency in our environments was crucial to our success. As a social species organized into tribal units, vigilance for human agency around us was a high priority. We needed to detect the presence not only of human friend or foe but also of predators and potential prey. These needs were met by a streamlined agency-detection system that came equipped with a default setting in the positive. That is, in situations of

interpretive ambiguity (What was that noise? What is that pattern in the bushes?) human beings are wired to ascribe agency until disproved. The benefits of such a default setting are immense. It activates automatically our fight-or-flight response so that, in situations where seconds mean the difference between life and death, we have an edge. If we are right, if it really is a potentially dangerous entity, we can respond with greater efficiency. If we are incorrect and see agency in places where it is not, we pay a very small price in the expense of energy. In the tradeoff of survival, on one hand, and moments of false alarm, on the other, it is a good deal for our species.

If we draw together these three aspects of humanity's evolved religious repertoire—animism, totemism, and anthropomorphism—I believe that we have a fairly plausible explanation for the shape of our theologizing mind up to now: In the face of emergent order in the natural world, our minds are predisposed to overascribe agency. Our species evolved religion by animating the natural world with minds like ours and by celebrating the power of our own growing sense of collective identities in totemic representations. Eventually these representations evolved into the one transcendent deity of Western monotheism. Theology to this day continues to anthropomorphize evolutionary processes into teleological systems, because we still possess a hyperactive agency-detection device that predisposes us to derive great satisfaction from rendering decentralized and impersonal forces into a centralized and personal schema. When we face the intricate order in the examples of autocatalytic systems in our natural world, we all come equipped with a default setting that ascribes order to an intelligent designer, a centralized, top-down, transcendent organizer of the natural world that we call *the gods* or *God*. Yet complexity theory suggests that such order can come "for free"—that it is a bottom-up, emergent property of self-organizing systems requiring no teleological designer. If transcendence is invoked, it is in the natural form of novel configurations of basic algorithms operating on the edge of chaos and order. The gratuity of the moment is understood better as a welling up of creativity than as a divine intervention of a world-transcending, superintelligent agency.

Thinking through the consequences of this transition is the challenge, in my opinion, of twenty-first–century Christian and religious thought and the ethics we derive from that thought. Whether we can make the transition seems to me the key question behind the development of a satisfactory response to our declining natural world.

NATURALIZING TRANSCENDENCE: EMERGENCE AS THE NEW VOCABULARY FOR SACRALITY

If the above arguments regarding the insights of complexity studies and the anthropomorphizing tendencies of the theologizing mind are persua-

sive, what are the consequences for Christian theology and ethics? I want to suggest four major changes: (1) the creation of new vocabularies of sacrality; (2) the decentering of Christianity and the embrace of pluralism at evolutionary, cultural, and ethical-environmental levels; (3) the valorization of chaos amid order; and (4) an ethics of "created co-creators," to use Philip Hefner's (1993) helpful choice of terms.

Does religion have the capacity to evolve beyond its supernaturalistic origins into a new consciousness and new vocabularies in which the earth is its focus of reverence, religion and its gods are themselves emergent properties of the universe, and the various emergent centers of reverence that humans express are not manifestations of otherworldly intrusions but natural voices of the planet in us? In McFague's language (1997), can our supernatural theologies become super, natural theologies? As naturalized voices religious and Christian witnesses are neither more nor less than our creations, participatory in the sacrality of the world's gratuity. They are both authentic expressions of our local perceptions of bottom-up sacrality and parts of the voice of the earth and the cosmos itself. This status gives our religious expressions both centripetal force in the locality of their expressions—that is, the authenticity of our local creation stories to particular places and times—and centrifugal force in the larger dynamics of the abundance of cosmic creativity. Centrifugally, our persons, communities, and religious articulations ground us and urge us outward into new encounters, seeking, as all living traditions do, that magic recipe of chaos and order, that edge of chaos that is the emergence of new patterns of a sacred complexity. Here is to be found the locus of humility and acceptance before the forces of life that we cannot control. Centripetally, we are pulled inward toward the reverence for the sophisticated network of relations that make what we are in our persons, communities, and religions possible. It is the time of celebration of the life-enabling forces that sustain us. These two modes of grace, local and universal, natural and transcendent, are the new forms of sacrality within the cosmologies of emergence.

Can Christianity undergo the evolutionary steps of naturalizing its visions of transcendence and casting off the vestiges of its triumphalist past? The Abrahamic monotheisms of Christianity, Judaism, and Islam are all the recipients of a curious conflation of universalized and tribal god-conceptions. On one hand, this divinity is still the jealous God of Israelite religion, a tribal supernatural being whose holy will, revealed in a particular scriptural heritage, mandates exclusive devotion and the subjugation of all other religions, even as the practitioners of some of those monotheistic traditions have forsworn overt aggression. Of course, in our time we are also especially mindful that many of those expressions have made no such commitment. On the other hand, our monotheisms have attempted to escape the trap of their tribal roots by distinguishing essence from historical substance—with varying degrees of success. A difficulty always pointed

out by so-called narrative theologians is that the more universalized and essentialist these expressions become, the less recognizable they are as expressions of any real religious communities. Kaufman acknowledges this inevitable concern to his own constructive theological proposals in the final words of his recent book, *In the Beginning . . . Creativity* (2004): "There will be those who say that in this theology God has really disappeared in the mists of mystery and that true faith in God is thus also gone."

Evolutionary cosmologies of emergence neither require the sacrifice of particularity in the mists of mystery or philosophical essence nor pull with them the triumphalism of the jealous God of the Abrahamic monotheisms. In this new vision of the marvelous nested biological and cultural communities of the cosmos we are given a new model for understanding our religions. We see them as local expressions of cultural emergence nested among the forces of our larger world. They are the cultural birthings of our place and time, neither the final revelation nor empty trivialities. They are ours, natural and human creations, and they do not merit the absolutization to which they have been subjected by the dualistic and teleological morphologies of the past. Nor are they otherworldly intrusions, cosmic blueprints by which we hubristically remake, conquer, or manage this planet.

If we return to the central concern of Rasmussen's work (1996), the articulation of an earth faith and ethics, the new cosmologies of emergence call for the self-effacement of Christianity in the midst of other religions and the earth itself. Christianity moves beyond host-guest models of interreligious relations to become simply one among the many religious construals of the world in what may even be the reemergence of a polytheistic culture. This pluralism will be the fountainhead of novel cultural constructions by means of which religion will take its next evolutionary steps. However, all such theisms, along with the nontheistic religions of the world, take their place within the context of the complex emergence of the earth community. At the broadest level of human experience the earth is the most complex emergent process with which we have direct contact. World religions must become religions of our world. The world itself can become an important object of faith and reverence. And from this transformation in the objects of faith and our reverence, new possibilities for ethical life may emerge. Culture, like biological processes, requires the chaotic conditions of agencies, in this case, religions, following algorithmic patterns within interconnected systems to create the kinds of new emergences driving evolution. Christians cannot and should not simply rejoice in the replication of themselves. As biodiversity underwrites the resiliency and productivity of ecosystems, so cultural diversity will be the hallmark of any pathway into the future for our species.

The Abrahamic monotheisms always have valorized order over chaos, the reign of God over the feast of fools, and the commandments and ordinances of the jealous God over the feisty shenanigans of the trickster fig-

ure. Yet, if we learn anything from the cosmologies of emergence, it is that order and growth are the products of chaos. It cannot be that Yahweh merely slays Tiamat to bring forth the earth; rather, Yahweh is enamored of her chaotic dances, and of that love is born the offspring of the cosmos. Rasmussen pursues this line of thought in his own *Earth Community Earth Ethics* in what to me seems the most provocative chapter in the text, "The Gifts of Darkness." In his quest for more viable symbols of the earth community, he does not shun the forces of darkness, gestation, and chaos: "Notice this carefully, then, for the sake of the earth: new life always begins in darkness, in dark wombs or dark soil, even dark tombs. New life is the gift of darkness" (1996, 226).

In the spirit of the jealous God, Christians have been too closely allied with the civilizational order of a world-destroying, Eurocentric crusade to build the kingdom of God so narrowly understood as "more of us." The wilderness, in the imagination of the West, has always been that which must be tamed rather than that which is the hope of our future. Our cosmologies of emergence now teach us the folly of the monocultures of Western civilization, be they agricultural or simply cultural, whether it is in the globalization dreams of the World Trade Organization or in the dreams of conservative evangelists hot on the trail of our generation of "freedom fighters" in the sands of Iraq. A greater appreciation of the disordered and chaotic is perhaps the most important step in concretizing the cosmologies of emergence in the symbol systems of tomorrow.

To see religions and their ethical systems with the eyes of emergence imagery is to emphasize the role and responsibilities of humans in the co-creation of their cultures. It is to see the systems of dependencies in which all such cultural constructs are nested. If the former insight forces human beings to understand the role they have played in the birth of their own gods, the latter forces them never to forget the complex interconnections on which their existence depends. Hefner's understanding of human beings as created co-creators captures the basic consequence of emergence cosmologies for theological anthropology. It is his purpose both to emphasize nature as the matrix of our existence and to underscore the fundamental and natural creativity of human beings. It is not a derivative task of humanity granted by a transcendent God but rather the upwelling of the universe itself in us. More important, the fundamental creative power in our hands is also that which makes it possible to destroy the earth on which we depend. If the gods are born in our hands, it may be that they will die the same way.

I am conscious of how insufficient these brief comments are in articulating the next evolutionary steps faced by Christianity on the world stage. I also am not entirely confident that Christianity possesses the ability to take them. Perhaps it does. Certainly Christianity lives by the hope that life springs forth from dark places. If that is your hope as well, and you

find the arguments regarding the cosmologies of emergence persuasive, I invite you to think further—and take your own place in the emergence of the dream of an earth community and earth ethics.

NOTE

1.   It generally is assumed that the Yahweh myth existed in some cultural form before it evolved into true monotheism. Recent studies indicate that Yahweh functioned as a member of the Canaanite pantheon, perhaps as the son of El. He was regularly associated with bull imagery and given many of the fertility functions of Ba'al (see Smith [1990] 2002, 54–64, 83 ff.).

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