

Reviews

Explaining Consciousness—The “Hard Problem.” Edited by JONATHAN SHEAR.
Cambridge, Mass.: M.I.T. Press, 1997. 422 pages. \$40.00.

The most surprising aspect of *Explaining Consciousness* is not that its thirty-one contributing authors fail to explain consciousness in its twenty-eight chapters but that these authors are so varied in their expectations of readers and in the care with which they argue their positions. This is probably due to the fact that the chapters, edited by Jonathan Shear, adjunct instructor of philosophy at Virginia Commonwealth University, first appeared as papers in a special series of the *Journal of Consciousness Studies*, where Shear is a managing editor. Nevertheless, this uneven quality does little to obscure the value of this volume as a compilation of approaches to consciousness from authors in the fields of philosophy, cognitive neuroscience, computational science, and physics.

All of these approaches are unified by the central theme of the “hard problem” of consciousness, set out in the first chapter by David Chalmers, professor of philosophy and Associate Director of the Center for Consciousness Studies at the University of Arizona. The crux of the consciousness problem, argues Chalmers, lies in nothing less than explaining how subjective experience arises from any physical system. As hard as this problem is, it brings effective focus to the essays in *Explaining Consciousness*. Readers interested in a variety of accomplished answers to this specific question involving consciousness and teachers looking for a solid senior-level undergraduate or graduate text will find much of use here. Especially interesting is the sense from the book that, in philosophical circles at least, the heyday of reductionistic physicalism (i.e., materialism) is coming to a close with the development of a loose consensus of a nonreductionistic monism, which takes experience to be a fundamental aspect of reality.

Chalmers has the first and last word in *Explaining Consciousness*. He opens the discussion with the aforementioned chapter entitled “Facing Up to the Problem of Consciousness,” which is a highly condensed version of his book *The Conscious Mind* (New York: Oxford Univ. Press, 1996), and closes it in the last chapter, “Moving Forward on the Problem of Consciousness,” his response to all that has gone before. Chalmers effectively sets up the “hard” and “easy” distinction by labeling as “easy” any problem that can be “explained in terms of computational or neural mechanisms” (p. 9). These include the usual focal areas of cognitive neuroscience, such as motor control, sleep, memory, attention, language, and emotion. The “really hard problem is the problem of *experience*” (p. 10). Chalmers chides those authors who utilize the “ambiguity of the term ‘consciousness,’” beginning their works “with an invocation of the mystery of consciousness” but finally only

putting forward a “theory of one of the more straightforward phenomena—of reportability, of introspective access, or whatever” (p. 11). Ultimately, Chalmers says, “the reader is left feeling like the victim of a bait-and-switch” (p. 11).

After addressing examples of this approach taken from the work of Francis Crick and Christof Koch, Bernard Baars, Gerald Edelman, and Daniel Dennett, Chalmers argues that the strategies used by these authors fall short of bridging the “explanatory gap” (p. 13) between functioning physical systems and subjective experience. He also dismisses answers proposed from quantum mechanics, saying that these “may stem from a Law of Minimization of Mystery: consciousness is mysterious and quantum mechanics is mysterious, so maybe the two mysteries have a common source” (p. 17). Interestingly, while Chalmers in the first chapter criticizes past proposals in this vein by Roger Penrose, professor of mathematics at the University of Oxford, and Stuart R. Hameroff, professor of anesthesiology and psychology at the University of Arizona, he seems to change his mind in the last chapter, finding in the paper by Penrose and Hameroff “a kinship with Whitehead’s metaphysics” (p. 415), which resembles his own.

It is clear that Chalmers is intent on explaining consciousness, that he knows he is a long way from doing it, and that he is convinced that a materialistic approach (i.e., science as usual) will never do it. So he has proposed a nonreductive theory of consciousness that connects “the properties of physical processes to the properties of experience” (p. 22). But, as he characterizes it, this is no mere correlational approach. He aims to go beyond a theory in which “complex brain state B is associated with complex experience C,’ and so on for a huge array of data points” to one where we “know how and why these correlations hold; and we answer this question by pointing to simple and fundamental underlying laws” (p. 401). To this end, Chalmers proposes a fundamental *double aspect principle*, which is based on C. E. Shannon’s information theory (“A Mathematical Theory of Communication,” *Bell Systems Technical Journal* 27 [1948]: 379–423) and on Bertrand Russell’s idea that “the intrinsic properties underlying physical dispositions are themselves *experiential* properties” (p. 405). Chalmers’s double aspect principle states “that information (or at least some information) has two basic aspects, a physical aspect and a phenomenal aspect” (p. 27). This is the most controversial of Chalmers’s speculations, and it, along with the “hard” problem, provides the main foci for the other chapters.

These responses to Chalmers’s statement of the problem and to his proposal are loosely categorized by Shear into six areas: deflationary perspectives (e.g., Dennett, Patricia Smith Churchland), the explanatory gap (e.g., Colin McGinn, Eugene O. Mills, David Hodgson), physics (e.g., Penrose, Henry P. Stapp), neuroscience and cognitive science (e.g., Crick and Koch, Baars), rethinking nature (e.g., William Seager, Benjamin Libet, Gregg H. Rosenberg), and first-person perspectives (e.g., Max Velmans, Francisco Varela).

The two sections “Physics” and “Rethinking Nature” could have been combined, for they address the same basic problem. Indeed, the “physics” essay “Physics, Machines, and the Hard Problem,” by Douglas J. Bilodeau, an experimental services specialist at the Indiana University Cyclotron Facility, is a philosophical proposal, including “an alternative to the familiar myth of God the Clock Maker,” which uses terms such as “nucleation of Being,” although Bilodeau has not “the slightest idea” what this means (p. 232). The chapter by Penrose and Hameroff,

appearing also under the category “physics,” is flawed as well, this time from its incomplete consideration of neurobiology. The proposal put forward here is that any cell or group of cells capable of sustaining “quantum coherence among, for example, 10^9 tubulins [in cellular microtubules] for 500 msec might be capable of having conscious experience” (p. 192). Unfortunately, the authors provide no reason to restrict their proposal to neuronal microtubules, and so one can raise the question of whether their thesis allows the absurdity of one’s liver or one’s big toe, both of which have microtubules in abundance, to have conscious experiences.

By far the best chapters in the book are those by Chalmers, Stapp, a physicist at Lawrence Berkeley National Laboratory, Seager, professor of philosophy at the University of Toronto, and Varela, director of research in the Unit of Neurodynamics in the Laboratory of Cognitive Neuroscience and Brain Imaging at CNRS in France. Stapp provides a clear proposal from quantum mechanics that experience is basic to reality. Seager provides a useful panpsychist proposal that carefully considers important philosophical objections to panpsychism. Varela argues strongly that “lived, first hand experience is a proper *field of phenomena*, irreducible to anything else” (p. 355) and proposes a synthesis of neuroscientific and phenomenological methodologies to map this field. These chapters typify the growing conviction in consciousness studies that, for scientific progress to be made on the hard problem of subjective experience, eliminative materialism will itself have to be eliminated, supplanted by the philosophical and scientific ascendance of experience.

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Science and Theology: The New Consonance. Edited by TED PETERS. Boulder, Colo.: Westview Press, 1998. vii + 256 pages. \$55.00.

Ted Peters is professor of theology at Pacific Lutheran Theological Seminary and the Graduate Theological Union in Berkeley, and research scholar for the Center for Theology and the Natural Sciences. In this volume he has brought together a number of recently published essays by prominent scholars in the field and arranged them into two broad areas: Physics and Faith and Evolution, Ethics, and Eschatology. In an introductory essay, “Toward a Consonance,” Peters examines “Eight Ways Science and Theology Battle and Make Peace” (p. 13). Sixth on the list and his preferred organizing principle for the volume is “hypothetical consonance.” *Consonance*, a term originally introduced by Ernan McMullin, signifies the effort to look “for areas of correspondence or connection between the understanding of nature discerned scientifically and the understanding of the world as God’s creation discerned theologically” (p. 1). *Hypothetical* means that theologians should be willing to subject their claims about God to “critical evaluation in light of data gained from the natural sciences” (p. 10). Science, of course, should reciprocate by being open to theology for increased insight and understanding.

With few exceptions—an autobiographical sketch by John Polkinghorne (perhaps the least relevant selection) and an address by Pope John Paul II—these essays

represent the primary research interests of their well-known authors. A savvy reader, even in the absence of a table of contents and author identification with each selection, would be able, we wager, to identify most contributors from the topic and characteristic development of a thesis alone. This reader might also conclude that consonance is indeed the preferred approach of the group. A brief profile of the more representative essays easily establishes this.

Physicist Paul Davies surveys the current understanding of the cosmos and life before saying “no” to the title question, “Is the Universe Absurd?” and “yes” along the way to extraterrestrial life and cosmic purpose—interests for which, as a Templeton Prize winner, he is widely known.

Robert John Russell, Peters’s colleague at CTNS (described as a “hybrid” for his training in both physics and theology), follows with his own question, “Does the ‘God’ Who Acts Really Act in Nature?” Russell speculates, and with good reason, that God may act in an objective noninterventionist manner in and through the indeterminacy of quantum events, an approach known as “bottom-up.” Those of us who have followed the development of Russell’s adventures of ideas have been impressed with his willingness to take on the theoretical discoveries of science directly, refusing to use philosophical jargon to buffer the impact and drawing from the encounter constructive conclusions for theology.

Philosopher and theologian Nancey Murphy’s subsequent essay, “Theology, Cosmology, and Ethics,” represents an alternative top-down approach to divine action. By integrating an ethical account of the natural hierarchy in an inquiry about “the ultimate good for human life” (p. 112), she develops an argument for the requirement of a theological system at its top. Murphy concludes with an intriguing suggestion for “subjunctive theology,” that is, an examination of “boundary questions arising from cosmology and ethics,” such as the anthropic principle, in the light of responses from various religious traditions.

In “So Human an Animal: Evolution and Ethics,” Francisco J. Ayala arrives at a similar conclusion, that science is incomplete, but from his field of biology. Despite the reductionist strategies of E. O. Wilson and others, he claims that the Ten Commandments are effectively beyond biology in that, while ethical behavior is emergent from evolution, it is “not adaptive in itself.” Different realms of human interest—the moral, aesthetic, and theological—are based in but mostly autonomous of biology.

In his essay “Creation Versus Evolution,” theologian Wolfhart Pannenberg discusses evolution with respect to theological doctrines regarding the creation of animals and human beings. In his comments on a number of issues, such as the biblical witness, novelty in natural history, the human soul, and emergence and the divine spirit, Pannenberg employs concepts taken from the sciences of self-organization in close association with theological ones. The correspondence is more than metaphorical but somewhat less than univocal, likely somewhere in between, perhaps “isomorphic” (a connection at the level of deep structure).

The title of the next essay, “Biocultural Evolution and the Created Co-Creator,” already tells the reader that its author, Philip Hefner, director of the Zygon Center for Religion and Science, intends to carry forward his important contributions to theological anthropology. Hefner’s selection is a fine introduction to his thought for those who lack familiarity with his central thesis that *Homo sapiens* is created through evolutionary processes and fully embedded with nature, and yet

also a co-creator with specific teleological responsibilities in the great “project” of nature.

Arthur Peacocke, Oxford theologian and biochemist (another hybrid), explores the range of responses to the deceptively simple question, “Can we honestly say: ‘It’s all in the genes?’” (a more attractive title than Peacocke’s choice, “A Map of Scientific Knowledge, Genetics, Evolution, and Theology”). Reductionistic scientism would answer “yes.” But Peacocke, building on his notion of a hierarchy of disciplines that reflect levels of human being, argues powerfully for a negative response. Peacocke promotes the notion of a form of transcendence to be found in human culture, language, artistic production, and ideas that bespeaks a meaningful and irreducible encounter with the “all encompassing reality that is named ‘God’” (p. 207). Note that Murphy, Ayala, and Peacocke hold a common central conviction, which Murphy calls “supervenience,” that religiously significant meaning is to be found grounded in, but transcendent of, the operations of the physical and biological worlds.

The environment is the subject of Audrey Chapman’s “The Greening of Science, Theology, and Ethics.” Chapman, who directs the Program for Dialogue between Science and Religion for the American Association for the Advancement of Science, argues for the greater inclusiveness of science in matters of environmental ethics and theology. Rather than pursuing the task herself, she offers an extremely useful set of “methodological options and potential approaches,” a how-to for environmental ethicists and theologians who would become scientifically informed. Because of its rich pragmatic approach, this essay is highly recommended.

An essay entitled “Evolution, Tragedy, and Hope,” by John Haught, Distinguished Professor of Theology and founder of the Georgetown Center for the Study of Science and Religion, anchors the volume and quite appropriately. It echoes a common theme treated by a number of contributors: Is there a point to the universe? Haught describes the current fashionable “cosmic pessimism” held by some prominent scientists and philosophers, whose existential attitudes we suspect were mentored by some early encounter with Bertrand Russell’s *Invictus*-like tragic hero in “A Free Man’s Worship.” A key, says Haught, lies in the kind of God to which we subscribe in faith. “Religiously pallid notions of God as designer,” the God of many philosophers and scientists as well, won’t do. His correction is to introduce the dimension of kenosis, or self-emptying, into a “richer and more nuanced” image of God as “the infinitely generous ground of new possibilities for a world-becoming” that can enhance scientific insight without compromising faith.

Other contributions include the wise reflections of Charles Townes, Nobel laureate in physics, and several chapters dedicated to a discussion of an address by Pope John Paul II to the Pontifical Academy of Sciences. George Coyne, S.J., director of the Vatican Observatory, places the pope’s address in doctrinal and historical perspective. Theologian Anne M. Clifford, C.S.J., noting the pope’s insistence that the human soul must be imparted to the human body, itself the product of evolutionary processes, argues that it would be best to move beyond such dualism to a more holistic and evolutionary framework.

The “new” consonance is the aim of this volume, but the old dissonance, or significant attention to it, is not absent. The key is not to allow dissonance to dictate the discussion. This valuable collection reflects a maturation of the dialogue wherein concepts, attitudes, and perspectives from theology are advanced,

not in reaction but in proaction—that is, as items on the agenda rather than as ad hoc responses to a scientifically driven discussion. What the contributors to this excellent volume have in common is abiding hope in such a dialogue and willingness to contribute to its fulfillment.

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Super, Natural Christians: How We Should Love Nature. By SALLIE MCFAGUE. Minneapolis: Fortress Press, 1997. 208 pages. \$16.00 (paper).

Sallie McFague combines ecological and theological concerns in her current work to construct a view of the natural world that can ensure its survival. McFague challenges us to love nature as a fulfilled end in itself, not as a means for humanity's pleasure or betterment. The current interest in ecology and conservation is not enough to meet this challenge. Consequently, we need a change in sensibility about nature, and that requires a change in our image of nature. Recognizing that our society's dualistic subject-object perspectives are particularly dominant in how people regard and interact with nature, McFague takes us through a critique of Cartesian, dualistic structures in the first half of her book. She urges us to break away from viewing nature with an arrogant eye as an object distanced from ourselves. She challenges us to see nature with a loving eye as a valued subject with which we are interdependent but that is different from ourselves.

The first step in changing sensibility is to realize that all views of nature are constructed, and there are numerous ways to interpret nature. The subject-subject view that McFague constructs is, therefore, not directly descriptive of nature but rather is one metaphoric model among others. In this regard, McFague has used the same methodology to construct a model of nature that she has used previously to construct a model of God. The important point about recognizing that our images of nature are constructed is that we have a choice about how we interpret nature, and what model we choose determines the well-being of both nature and humanity. McFague urges us to choose the subject-subject model she constructs precisely because it leads us into less destructive relationships with nature than those based on a subject-object model.

McFague's subject-subject interpretation of ecological interdependence is distinctively informed by and gains impetus from a Christian view of relationship with God and neighbor. In light of the present-day destruction of nature, the Christian exhortation to love and care for one another and to aid the suffering outcast needs now to be applied to nature, the new poor. McFague draws upon a Christian liberation understanding of others as intrinsically valuable. She exhorts us to view nature as valuable in itself not because it is a symbol of the divine and can teach us about God or help us to love God. A "Christian nature spirituality" requires treating nature, which is loved by God and suffers like Jesus, as a subject deserving of respect and care simply because of the richness of its existence. This is powerful incarnational theology.

In her third and fourth chapters, McFague draws on a medieval, pre-Cartesian view of nature to reconstruct a functional cosmology, that is, a concept of relationship between humanity and nature. Like the medieval model, the subject-subject model of ecological interdependence she constructs presents radical relationality and interconnectedness. But where the medieval emphasizes unity to the detriment of individuality and difference, the ecological recognizes and celebrates individuality in the midst of unity, in interconnectedness. In this regard, McFague's model of ecological interdependence is compatible with a postmodern sensibility. It recognizes the radical difference that divides the human being from the wood tick. It also recognizes brutality and evil in nature and humanity.

McFague points out that since Plato an arrogant sight-based perspective has been equated with rationality and the "purest" and "truest" knowledge of an object. Sight is disassociated from the rest of the body's senses; sight is disembodied. But knowing nature as a subject requires a loving eye that is embodied. It involves touching, hearing, smelling, and tasting nature and results in a sense of self in relationship with and responsive to nature. The ecological self is enmeshed in and responds to the world as subject to subject. In particular it pays attention to embodied others in all their particularities and differences, in their responsiveness and resistance to ourselves (p. 94). It recognizes the limits set by others and the importance of boundaries that preserve difference. In this case, the preservation of difference is particularly important because our interaction takes place with nature not as a single entity but as a great variety of subjects with different characteristics. We are influenced by and dependent on an extraordinary range of beings that we cannot define in terms of ourselves or measure against ourselves.

McFague argues that whether we are exploring ponds or encountering backyard bugs, intimate experiences of nature form our view of who we are in relationship to nature. Close up, hands-on, down-to-earth encounters are essential to developing a loving eye (p. 123). However, for most, a first naïveté about nature, a "sense of wonder at and connection with other living things" (p. 111), is lost or never develops. The result is a view of nature that is destructive of both nature and humanity. McFague states that, as adults, we must develop a second naïveté through which we pay close attention to the details of difference while consciously recognizing our interdependence. The goal is to discover objects in nature as subjects in their own world. "The loving eye, then, is the eye of the second naïveté, educated so as to help us embrace intimacy while recognizing difference" (p. 116).

McFague suggests that developing a second naïveté requires both the close attention to detail of scientific perception and the use of aesthetic imagination. Here, scientific immersion in nature becomes a tool for unfolding detail and difference, while at the same time it fosters an intimate appreciation of nature rather than functioning as merely the controlling observation of an object. Minute observations, such as those of nature writers, that express wonder, difference, and interconnectedness help us develop a love for nature. The result of loving nature is a new cosmology that can save the natural world.

Possibly because her focus is on human/nature relationships and her immediate concern is that nature not be abused, McFague does not extensively clarify what she means by the natural world. Does it go beyond backyard nature and wilderness? It is probable, in light of her cosmology, that what she means by nature

encompasses the vast realm of natural science as well as disciplines such as astronomy and physics. Certainly she establishes a philosophical framework combining the scientific and the theological that can be extended to other scientific fields. Further, her abbreviated presentation of nature does not at all affect its significance for ecology.

Although McFague stresses the importance of recognizing differences, she does not clarify how her model of interdependence avoids the stultifying unity of the medieval model in which the uniqueness of individuals is suppressed. Beyond treating nature as a subject, even with all that her model encompasses, she does not offer an in-depth analysis of how ecological interdependence maintains both unity and individual difference and/or a balance between the two. In nature, the balance between the ecological system as a whole and the survival and evolution of individuals is delicate and complex. This problem needs further assessment and clarification within a subject-subject model in order to facilitate regarding nature as a subject.

Super, Natural Christians is a powerful contribution to ecological thought. It digs deep into cultural barriers that threaten the preservation of our world, and, as such, it is transformative theology; through it, both we and our relationship with nature are transformed. McFague offers a viable way to prevent the destruction of nature and ourselves. She accomplishes this by turning our attention away from ourselves and toward paying loving attention to nature.

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