Reviews

Mind in a Physical World: An Essay on the Mind-Body Problem and Mental Causation. By JAEGWON KIM. Cambridge: MIT Press/Bradford, 2000. viii + 146 pages. Paper. $17.00.

Can we find a place for the mind in a fundamentally physical universe? First published in 1998, *Mind in a Physical World* remains an important work for readers interested in the mind-body problem, mental causation, and general issues of emergence and reduction. Based on four Townsend Lectures Kim delivered at Berkeley in 1996, the book examines the difficulties associated with claiming both that the mental is real (there is robust mental causation) and that all things are ultimately physical. Although the mind-body problem is of considerable interest to those in the religion-and-science discussion, the book's real contribution to that conversation is its suggestions for understanding the general relationship between higher and lower property levels—physics to chemistry, chemistry to biology, biology to psychology, psychology to sociology. Kim concedes that there are indeed emergent causal properties, thus avoiding the conclusion that "all causal powers seep down, ending up deposited at the most basic level of microphysics" (p. 84), but points out that such properties remain *micro*based; that is, they supervene upon configurations of their microconstituents. Accordingly, robust claims of the significance of such causal emergence are blocked. Moreover, Kim identifies the putative causal powers of the mind with its brain state realizers.

The questions Kim addresses are familiar: Are properties at the higher levels in some sense reducible to those at the lower levels, or can we speak about the real emergence of new properties? Can higher-level properties be realized by lower-level properties without being in some sense reducible to those properties? Is the notion of supervenience useful in conceiving the relationship between property levels, that is, can supervenience be construed as a metaphysical relation capturing the dependency of the higher levels on the lower levels?

With temerity, adroitness, and clarity Kim stakes out his position over and against a host of contemporary philosophers including Lynne Rudder Baker, Ned Block, Tyler Burge, Donald Davidson, Jerry Fodor, Terence Horgan, Frank Jackson, Philip Pettit, Hilary Putnam, John Searle, and even himself. Arguably the leading thinker of supervenience over the last twenty-five years, Kim deepens his recent criticisms, claiming that supervenience is simply not capable of performing the task assigned to it, for it does not offer the kind of restraint upon the distribution of higher-level properties necessary to capture the notion of *determination* of the higher by the lower. This is particularly true in the mind-body case where supervenience's failure to articulate an asymmetric dependency relation

[*Zygon*, vol. 41, no. 2 (June 2006).]
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between the mental and physical makes it compatible with a number of mutually exclusive options such as emergentism, epiphenomenalism, reductive physicalism, dualism, and even neutral monism.

In Chapter 1 Kim briefly sketches the history of the mind-body problem as it developed from identity theory in the 1950s through the criticisms of Putnam and Davidson. Putnam famously argued that no mental state is identifiable with a single physical/biological state. This multiple realizability of psychological states doomed the effort to find "type-type" reductions of mental and neurophysiological properties. Davidson's anomalist argument further challenged the identity theory by showing that the anomalousness and normativity of the mental entailed that there could be no psychophysical laws connecting mental and physical kinds. Kim points out that the dominant view in the past twenty-five years has been nonreductive physicalism, the assertion that, although only physical entities ultimately exist, there are nonetheless irreducible mental properties. (Nonreductive physicalism increasingly crops up in the religion/science discussion these days.)

This attempt to save the "autonomy" of the mental has been carried on by two traditions—those advocating a Davidsonian-inspired anomalous monism and those arguing one or more strands of functionalism. The latter explicitly drew on the notion of *realization* to connect the mental and physical, thus allowing for the scientific investigation of functional states in abstraction from the mechanics of their physical realization. Functionalism's commitment to the multiple realization of mental states seemed consistent with supervenience and, as Kim points out, appears to many today to be consistent with the notion that higher-level properties "emerge" from underlying physical conditions. The three notions form a type of triumvirate. The mental emerges from the physical yet nonetheless supervenes upon the physical in which it is realized.

Kim's discussion of the layered model and mereological (whole/part) supervenience is directly applicable to the religion-science conversation. As most in that discussion assume, the world is layered, not separated into isolated domains. The biological, physiochemical, and psychological comprise different layers of one physical reality. Given that the religion-science discussion rejects substance dualism in favor of a layered view, the task in the discussion often has been to preserve a place for the religious and human in a fundamentally physical universe. Recently, the notion of downward causation has become important. Accordingly, while the mind may not be of a different order of being than the body, it nonetheless is ontologically very special, because it emerges from underlying physical conditions and subsequently acquires the requisite causal powers to *affect* those physical events. On this view, higher-level properties can causally influence the distribution of lower-level properties. Against this notion of downward causality, Kim plausibly claims that, while higher-level causal properties do indeed emerge, these properties nonetheless inherit all of their causal power from the lower levels.

In the next two chapters Kim examines an argument that seemingly establishes that, because each and every higher-order property is instantiated if a certain lower-level property is instantiated, ultimate causal power must reside at the lowest level, for example, microphysics. Kim knows that this is problematic, because, given the truth of Alexander's dictum (to be real is to have causal powers), upper-level properties become *epiphenomenal*. Clearly, such an "epiphenomenal supervenience" applied to the mind-body problem is disastrous, for it denies mental

causation entirely. The mental is to the physical as a series of shadows cast by a moving vehicle. More generally, higher-level properties are merely the shadows in the macroworld of the underlying events and processes of microphysics. This is the unwanted generalization suggested by the supervenience argument.

In chapter 3 Kim offers devastating arguments against those who would settle for less than real mental causation—Burge's proposal allowing both mental and physical explanation of the same mental phenomena, Horgan and Baker's construal of mental causation in terms of counterfactual dependencies, Pettit and Jackson's notion of program explanations appealing to causal relevance in the absence of causal efficacy.

After disposing of these views, Kim offers his constructive proposal for all those worried that generalization of the supervenience argument entails that all causal power is located at the fundamental level of microphysics. The distinction Kim draws is between *levels* and *orders*. Levels concern the micro-macro ordering from physics through biology; orders concern the instantiation of first- or second-order properties within the same level. Important is Kim's notion of a microbased property. Such a property is constituted by microconstituents—the microparts of the object and the properties and relations possessed by those parts. These microbased properties constitute emergent *macroproperties*. Kim points out that a table with a mass of 10 kilograms has a property that none of its microconstituents have. Analogously, the table must possess causal powers that none of its microconstituents have. But such emergent properties are quite mundane; there is no hint of the robust property of emergence sometimes touted in the religion-and-science discussion.

Kim points out that when we speak of mereological supervenience we are "speaking often quite loosely" (p. 85). We are not claiming that a macroproperty supervenes on a micro but rather that such a property is instantiated if there is a certain configuration of the micro (microconstituents having certain properties and relations). Furthermore, this configuration is itself a macroproperty. According to Kim, we must distinguish mereological supervenience *between* levels, from intralevel supervenience of the second-order properties (for example, mind) upon first-order properties (for example, neurophysical) (p. 86).

In the final chapter Kim gives his solution to the mind-body dilemma. He construes mental properties as second-order functional properties individuated by their causal roles but nonetheless identical to first-order properties realizing them. For instance, pain is individuated with respect to certain inputs/outputs and state changes but is nonetheless identical with some neurophysical property from which it inherits its real causal power. But what about multiple realization? Kim boldly proclaims that supposedly multiply realizable functional properties are, in truth, not real properties but rather particular ways of thinking and talking that serve epistemic and conceptual needs. Strictly speaking, the property of having a headache is the *group* of its first-order realizing properties.

Kim's book is unabashedly metaphysical. It does not duck the hard questions of causal efficacy of supervenient levels by retreating behind the façade of deflationary accounts claiming there is no problem. Kim knows there *is* a problem: How is mental causation possible in a physical universe? For Kim mental causation is possible because there is a reductive identification of second-order mental properties and their first-order physical realizers, realizers that themselves are

microbased properties, that is, properties instantiated when and only when their microparts are instantiated in appropriate configurations. While this may not give the nonreductivists in the religion-science discussion much to cheer about, they surely must at least respond to Kim's challenge. They need, moreover, to answer this question: How can it be that there is anything causally interesting for the religion-science conversation in the emergent entities and properties of the higher levels?

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Sacred Cosmos: Christian Faith and the Challenge of Naturalism. By TERENCE L. NICHOLS. The Christian Practice of Everyday Life Series. Grand Rapids, Mich.: Brazos, 2003. 240 pages. Paper. $17.99.

Terence Nichols's work interrelates an argument for a sacred cosmos with an extended polemic against naturalism. Commenting on the secularization of Europe, where churches are increasingly empty and the somewhat differentiated secularization in America, where many churches and Jewish synagogues are themselves secularized, Nichols disagrees with Peter Berger's assessment that the root cause is capitalism. After all, he argues, greed and love of money were not uncommon in the medieval and Renaissance times. Instead, the problem arises because with the advent of science the modern era began to conceive of God as separate from nature and then from everyday life (p. 9). Once God has been separated from the conception of the natural world, the philosophy of naturalism inserts itself in the chasm. As Nichols defines it, naturalism "is the belief that nature is all that exists, and that everything can be explained by natural causes and therefore by science" (p. 10). Throughout, Nichols's argument is against naturalism, not science, which he repeatedly calls the complement of Christianity, its "sister discipline."

As an alternative to naturalism, Nichols proposes that nature is part of "a hierarchy of being, in which created realities express the beauty, majesty, and design of God. In this sense, nature can be seen as a sacred cosmos, a kind of sacrament that makes God present, rather than as a self-sufficient material system that leaves God out of the picture" (p. 10). In fact, he argues that Christian thought can offer an account of the evidence that is superior to that of naturalism. Attempting to execute this superior account, he focuses on four areas: theories of the origin of the universe (chap. 4); the evolution of the universe (chap. 5); human nature (chaps. 6 and 7); and miracles (chap. 8). In each area, Nichols reexamines the scientific evidence, finds naturalism sorely inadequate, and attempts to show how Christian thought can succeed at the very point where naturalism would hide its own weakness.

Nichols sees "a kind of unity . . . between spirit and nature, and that the ultimate purpose of nature is to express, as a kind of sacrament, the divine context that sustains and orders it" (p. 13). Quite sensibly, he allows an operational or methodological naturalism in the pursuit of scientific understanding, while he argues against a metaphysical naturalism. Nichols defends traditional Christian beliefs of a transcendent creator, miracles, the resurrection of Jesus, and the kind

of human soul that can have an immortal afterlife as consistent with the actual evidence of contemporary science. He portrays nature nested within a divine context and argues that this divine context exerts its own causality in the natural order. Nichols helpfully illustrates how context can exert causality with the example of how an automobile is built:

> A modern automobile is built for a planet with a certain gravity, a solid surface, and oxygen in the atmosphere, for a culture with paved roads, petroleum, metallurgy, plastics, and electronics, for intelligent beings of certain size, with two arms and legs, eyesight, etc. Imagine a modern automobile transported to a very different planet, or back to antiquity, and one can immediately appreciate the role of context in its design. (p. 58)

Analogously, he argues that the divine context is the best way to understand the very possibility of science.

Nichols points out that "we do not fully understand what matter is" (p. 178), but he does not believe that matter and spirit are so different as to preclude their interaction. He follows Karl Rahner in suggesting that matter is "limited and crystallized spirit" (p. 50). Understanding matter in this way allows him to understand the relationship of God and nature in terms of an inner unity nested within a context of an even greater difference, that is, the classic Thomistic, analogical understanding. Nichols further attempts to connect spirit and matter through "a unity of information" (p. 50).

Here Nichols might have tied the threads of his account more tightly together by adding that such a unity of information is possible, and meaningful, only to *persons*, whether divine or human. To his credit, he does later note: "Our knowledge of revelation is more like our knowledge of another person, something that cannot be measured by experiment" (p. 205), and "We can give a scientific account of the physical processes going on in a person, but it is very hard to give a coherent scientific account of free will, mental causation, spiritual and mystical experiences, afterlife, and so on" (p. 211). The underlying import of the personal is implied throughout his account, even where not made explicit.

One of the strengths of Nichols's work is the way he combines the ancient insights of Plato, Aristotle, Augustine, Aquinas, and others with contemporary scientists such as Einstein or Paul Dirac. He holds that the sacramental character of nature, "more than a memorial, but less than direct seeing" (p. 64), "makes God present" through its physical signs, signs that can be beautiful. Against the modernist notion that beauty is in the eye of the beholder, he observes that the ancients, medievals, and contemporary scientists disagree with a subjectivist account of beauty. As Dirac and Murray Gell-Mann contend, beauty is as good a test of many physical theories as we can hope to have (p. 65). Nonetheless, the beauty discoverable in nature is imperfect. Its incompletion, death, and suffering distinguish it from God but thereby serve to point to something greater, just as a sacrament might do.

As Nichols engages various Big-Bang theories, he notes that naturalism, on its own terms, should be able to explain something as important as the origin of the universe. He examines the actual theories and concludes that such eminent scientists as Alan Guth, Peter Atkins, and Stephen Hawking share the common blunder of confusing a balance of forces with net zero for ontological nothingness (pp. 76–77). Hence, naturalism fails a crucial test of its own theory.

Similarly, he presents an in-depth argument for directed evolution, in which there is an overall increase in information and beauty but not one where God guides every detail. Here he engages many of the figures in the current literature but significantly the work of New Zealand microbiologist Michael Denton (pp. 101 ff.). This argument, and Denton's research, deserves commentary from those in the field. Nichols warns theologians that because evolution is still an incomplete theory it must be incorporated into theology with a certain degree of caution. Nichols's principle, unlike the majority of writers, is that the physical universe is not closed but open to God (Spirit), and he understands this openness in two ways: God acts on the whole and, under certain conditions such as those conducive to faith, in specific situations (p. 122).

Nichols's thoughts on miracles (chap. 8) follow from this fundamental openness of the cosmos to God. Nichols argues that the evidence for miracles is respectable and that it is unscientific to ignore it; David Hume's definition of miracle is misleading; miracles are "signs of divine action that, like grace, do not violate nature but work through it" and thus reveal its openness to the divine context; and a better understanding of miracles would help the contemporary discussion about divine action (p. 186).

Nichols launches a mini-polemic against emergentism. He poses four questions to emergentists: (1) Can it explain how we have a personal relationship with God? (2) Can it explain human freedom? (3) Can it explain how God has personal qualities and relationships? (4) Can it explain near-death experiences (NDEs)? (p. 155). In a fascinating discussion of NDE, Nichols cites the work of the well-known Elisabeth Kübler-Ross, but he places even greater weight on a controlled study by an Atlanta cardiologist, Michael Sabom (164–65). If it holds up, Nichols's conclusion that consciousness can exist outside the brain (p. 164) would prove fatal to the premises of emergentism.

For the boldness of his undertaking, for its originality and challenge to so many of the assumptions *au courant*, Nichols's work deserves close attention from those involved in the science-theology discussion. Having twice used this book in university courses, I personally have seen its profound impact on students. I know of a doctoral student at a leading university who has called it the best introduction he knows of to the basic issues, one that is especially accessible to a wider audience. This is a serious work and a new benchmark in the science-theology conversation.

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The Faith of Biology & The Biology of Faith: Order, Meaning, and Free Will in Modern Medical Science. By ROBERT POLLACK. Columbia Series in Science and Religion. New York: Columbia Univ. Press, 2000. xvi + 125 pages. $19.95.

To say "I am a scientist" is to say next to nothing. To say "I am a biologist" is to say a little more. But to say "I am a population geneticist trained in neutral theory with a specific concentration in the population dynamics of pathogenic enterobacteria, most notably *E. coli*, carrying the genes for the heat-labile toxins

that cause hemolytic diarrhea" is, well, to have revealed one's hand, and in much the same way that one might say not simply that one is religious or even a Christian but "I am a Lutheran of the Swedish Covenant, established in the United States in 1842, of a congregation that broke with the general church in 1863, as well as abstaining from the synods of 1896, 1917, and 1923 but accepting affiliate membership in the Missouri Synod in 1959."

Each of those statements is, of course, fictitious, but each reveals the specificity, particularity, and subjectivity inherent in both science and religion, for one is not simply a scientist anymore than one is simply religious. One practices a particular religion just as one practices a particular science. In both cases, one is informed (quite literally, formed within) by those particularities.

Thus it was that I read with great delight Robert Pollack's *The Faith of Biology & The Biology of Faith*, for it is a presentation of one man's attempt to articulate his experience of melding within his person, within his own subjectivity, the vagaries and specificities of two particularities: molecular biology and Judaism. As Pollack himself says, "I am not a representative of religion as such, nor of science as such. I am a particular person with a history of experience in one religion and in one science: a Jewish molecular biologist" (p. 2). There is a great deal that any reader, even a nontheist, can learn from this Jewish molecular biologist, for to read the book is to become a spectator to one man's endeavor to weave those two seemingly opposing entities, science (molecular biology) and religion (Judaism), into the warp and woof of a whole cloth, an integrated human self (Pollack).

The book is a transcription of Pollack's 1999 Schoff Memorial Lectures delivered at Columbia University where Pollack is a professor of biological sciences and director of the Center for the Study of Science and Religion. The book is divided into three main chapters, each comprising one of the Schoff lectures; the requisite preface and acknowledgments sections; and an Introduction in which Pollack orients the material found within his lectures by explaining his own view of his religion.

In the first chapter, "Order versus Meaning: Science and Religion," Pollack writes: "This book is about the boundary of the knowable and the unknowable. Science works at the boundary of the known and the unknown, a different place entirely. The unknowable as a notion does not come easily to the scientifically minded. Dealing with it is a project full of paradox, requiring that one talk about the unutterable and anatomize the immeasurable" (p. 12), and my heart smiles. For me, it is always a distinct pleasure to see someone, especially a scientist, come to that oh-so-pointed Kierkegaardian realization. Moreover, Pollack goes on to say "I chose to work at this new boundary, nevertheless, *because I have the habits of thought of a scientist*" (p. 12; emphasis added). As a scientist, Pollack is obliged to explore and attempt to understand any phenomenon or experience that presents itself to him, including that of the religious. And yet, as Pollack observes,

> Science proceeds by the testing of hypotheses, but because a hypothesis that can stand up to testing expands the territory of the known, scientific hypotheses about the unknowable are not meaningful. Put another way, it is not worth a moment of anyone's time to seek the proof through science of any religious belief. And as this book is about the consequences of potential unknowability—a notion as foreign to many reasonable nonscientists as it is to the scientific method—I needed first to provide some working terminology for the unknowable without calling upon the tools of scientific hypothesis testing. (p. 13)

The rest of the first chapter is engaged in articulating the relationship between insight, revelation, and the unknowable, including the observation that insight about the unknown (a habit of science) is no more reproducible than revelation about the unknowable (a habit of religion). Asking both science and religion to face each other squarely and each accept the truths and realties of the other, Pollack chides scientists for denying the existence of what he considers the essence of religious experience, the unknowable, just as, on the other hand, he asks that religionists accept that science cannot give us meaning.

At this point in his argument, however, he makes an existential move. If rational science leads us to the point of meaninglessness, divesting the world we live in of purpose, one of the options is to choose free will, to choose to choose meaning, albeit by taking an irrational path to that meaning. Pollack takes this path himself by choosing to embody Judaism.

This leads to the topic of his second chapter, "The Meaning Is in the Order: DNA-Based Medicine," in which he argues that "the current practices of molecular biology of disease and of my religion of Judaism would contribute to an improvement in medical care if each were to appreciate the insights gained by the other" (p. 39). Here, what is of interest to Pollack is how to keep ourselves wholly and truly human. This desire is reflected especially in his views on the medical utility of the placebo effect and why the medical efficacy of placebos has been overlooked in the medical literature with certain grave ethical and patient-care consequences.

Chapter 3, "Meaning beyond Order: The Science of One Life at a Time," discusses the dangers and possibilities of genetic medicine, in which it is easy to confuse statistical scientific probability with individual lived actuality. To illustrate he talks about what commonly are called "Jewish diseases," the most infamous of which is probably Tay-Sachs. Quoting the Chief Rabbi of London, "'There are no Jewish diseases,' only the past consequences of violent anti-Semitism" (p. 90), Pollack also says: "There are no DNA sequences common to all Jews and absent from all non-Jews; there is nothing in the human genome that makes or diagnoses a person as a Jew" (p. 85). Pollack emphasizes his point further in the sections on "Biological Judaism: Bad Science, Bad Religion" and "Sacred Diversity: The Religious Meaning of Common Ancestry."

In the book's Postscript Pollack writes, "If this book has been as useful to read as it was to write, I think it can only be because in some way I have helped you to acknowledge a wish of your own" (p. 106). My wish would be that everyone involved in the science-religion domain would take the time to read this small book, inasmuch as each individual wishes to work through the particularity of him- or herself toward wholeness. But that cannot be everyone's wish, for, as Pollack notes, the "notion that nothing exists except what is knowable is wholly unprovable" (p. 17).

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