

Book Reviews

view that admits multiple sources of knowledge besides science. To counteract some of the harms caused by treating the environment reductionistically as a mere resource, I was taught to think vocationally, with science as a useful tool for achieving some of the broader goals which my Christian worldview said were important. Based on my experience, I think this provides a more therapeutic prescription.

Reviewed by Loren Haarsma, associate professor of physics, Calvin University, Grand Rapids, MI 49546.

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CONSCIOUSNESS AND MATTER: Mind, Brain, and Cosmos in the Dialogue Between Science and Theology by Kirill Kopeikin and Alexei V. Nesteruk, eds. Pickwick, 2024. 262 pages. Paperback; \$35.00. ISBN: 9781666776997.

This is a notable interdisciplinary volume that tackles the complex relationship between the mind and body, exploring it within the broader context of dialogue between science and theology. The collection draws heavily from Eastern Orthodox theological frameworks, using patristic language and thought to engage with the central theme of the mind-body problem. It aims to offer a theologically informed critique of materialistic naturalism and reductionism in the scientific study of consciousness while providing new avenues of thought by integrating theological perspectives. In this review, I will give a brief overview of all nine essays but, more importantly, I will focus on the unifying arguments across the volume and highlight the essays that offer the most significant contributions.

The book's contributors come from academic traditions centered in Eastern Europe, primarily Russia and Greece. Each author's expertise combines scientific, philosophical, and theological perspectives demonstrating impressive multidisciplinary competency and synthesis. While the perspectives vary, their common theological foundation, Eastern Christian thought, provides a cohesive thread. The editors successfully bring together essays that engage with the "hard problem of consciousness," challenging the adequacy of materialistic and reductionistic explanations of mental activity and offering both scientific and theological alternatives.

The essays are organized around two primary approaches to understanding consciousness: one that moves from the brain outward toward the cosmos, and another that begins with the phenomena of consciousness and works inward to the material. This dual structure, as outlined in the introduction, allows for an engagement with consciousness that respects both the microcosmic (individual brain activity) and macrocosmic (the relationship between consciousness and the cosmos) dimensions of human experience. Both approaches, however, are united in their rejection of materialist reductionism and their embrace of various forms of dualism—whether it be the classical Cartesian

division of mind and body or theological distinctions such as creator and creation.

The first four chapters take a critical stance toward the reductionist paradigm of materialism. Tatyana Chernigovskaya's opening essay sets the tone by exposing the limitations of artificial intelligence and neural network models in accounting for the full scope of human subjectivity. Chernigovskaya argues that "meanings are more important than algorithms and structures" (pp. 5,7). In other words, the richness of human experience depends on the phenomenological and cannot be reduced to parallel physical processes alone. The critique of materialist reductionism is carried forward by Kiryanov in chapter 2, highlighting the unnecessary metaphysical assumptions that underlie much of contemporary science's dependence on ontological reductionism. Alexander Kaplan's contribution in chapter 3 continues this trajectory by exploring the way in which individual brain activity contributes to the creation of mental models that shape how a person inhabits the world. Each of these chapters points to the insufficiency of any approach that seeks to explain consciousness solely in terms of material phenomena.

A particularly innovative contribution comes from Kavokin in chapter 4, where he introduces quantum mechanics into the discussion of consciousness. Kavokin draws on the condensation of polaritons and the superfluidity of polariton condensates—where light-matter particles enter a unified quantum state, moving together without resistance like a frictionless liquid—to suggest that quantum states may influence the operations of human thought. He links this theory to biblical metaphors of light, proposing that the exciton-polariton model could offer insights into free will and determinism. However, while this quantum-based synthesis is imaginative, it risks overextending itself by drawing speculative theological conclusions from scientific data.

The second half of the book shifts toward a more cosmological approach, with chapters 5 through 9 examining consciousness in relation to the broader cosmos. Alexei Nesteruk's contribution stands out as particularly significant in this section. Nesteruk brings together cosmology, theology, and phenomenology to frame consciousness as a reflection of the universe's complex structure. Addressing the "hard problem," he bridges the dual nature of first-person subjective experience with third-person objective observation. Nesteruk uses patristic theological concepts like hypostasis (the unique, individual expression of a nature or essence in a distinct, relational form) to account for the interplay between the microcosmic and macrocosmic dimensions of the person, offering a profound theological and patristic reframing of the study of consciousness.

Kirill Kopeikin's essay in chapter 6 builds on Nesteruk's insights by integrating theological concepts, such as *creatio*

ex nihilo and *Theosis* (the divinization or transformative process of sharing the divine nature of the godhead), with quantum mechanics. Kopeikin argues that subjective knowledge, the very act of knowing, can alter reality itself, suggesting a panentheistic understanding of the world in which the divine is deeply intertwined with material existence. His theological engagement with quantum theory is one of the most explicit examples of Orthodox theology in the volume, drawing on the concept of the *Logos* to argue that consciousness and the cosmos are fundamentally interconnected.

Chapter 7 offers a brief but intriguing detour from the main thrust of the volume. Kobozev's exploration of the neglected work of chemist Sergey Krivovichev challenges methodological naturalism by offering a fresh voice from outside the usual academic authorities. This chapter adds diversity to the volume's interdisciplinary dialogue, though it remains somewhat disconnected from the broader theological concerns of the book.

The final chapters, including a lengthy essay by Walker Trimble, bring the conversation back to ethical and theological concerns. Trimble draws on an impressive array of classical, patristic, and modern sources to argue for a pre-modern understanding of the person as an agent shaped by the incarnational theology of the *Logos*. In doing so, he critiques Cartesian dualism and the metaphysical categories of modern philosophy, suggesting that a hypostatic model of human flourishing better accounts for the ethical and spiritual dimensions of human life. This final chapter offers a fitting conclusion to a volume that is deeply concerned with the ethical implications of its theological and scientific inquiry.

The volume is a wide-ranging and ambitious work that succeeds in placing Orthodox theology in dialogue with contemporary scientific debates about consciousness. The interdisciplinary nature of the volume is one of its greatest strengths, as it brings together insights from neuroscience, quantum mechanics, cosmology, and theology in a manner that is both rigorous and imaginative. The book's critique of materialistic reductionism is particularly valuable, as it highlights the limitations of purely scientific approaches to the study of consciousness and opens up new possibilities for theological engagement.

Nonetheless, the book is not without its limitations. The theological reflections, while often insightful, can at times feel speculative or overly reliant on scientific theories that are themselves still in development. The quantum-based approaches in particular run the risk of overextending theological claims based on emerging scientific data. Furthermore, while the volume brings together a diverse range of disciplines, it is less diverse in its theological perspectives, with most of the contributors adhering to a broadly dualistic framework. This can make the volume

feel somewhat monolithic in its approach to the mind-body problem, despite its interdisciplinary aspirations.

Consciousness and Matter offers a rich and provocative contribution to the dialogue between science and theology. For those interested in the intersection of science and theology, particularly from an Eastern Orthodox perspective, this book is a significant and worthwhile contribution.

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PHYSICS

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ON THE ORIGIN OF TIME: Stephen Hawking's Final Theory by Thomas Hertog. Bantam Books, 2023. 313 pages. Hardcover; \$28.99. ISBN: 9780593128442.

The two most vexing problems for naturalistic cosmologies are the beginning of time and the exquisite fine tuning of numerous physical parameters that make life possible. The late theoretical physicist and cosmologist Stephen Hawking, a professed atheist, wrote: "It would be very difficult to explain why the universe should have begun in just this way, except as the act of a God who intended to create beings like us."¹ *On the Origin of Time* is the culmination of Hawking's quest for a theory of everything that aims to explain the universe without reference to a transcendent deity. In language accessible to a scientifically educated reader, Hawking's close collaborator, theoretical physicist Thomas Hertog, charts Hawking's abstract journey toward a final theory by use of analogies and thought experiments. The reader unfamiliar with advanced mathematics will be grateful not to find pages filled with exotic calculations but, rather, an engaging science lesson enriched by personal anecdotes of a poignant friendship. Hawking's final theory is brilliant and, if true, would be quite elegant. There are reasons, however, to doubt whether his theory accurately models reality.

The first challenge for any naturalistic ultimate theory is the metaphysical implication of a beginning in time. Astronomical observations of the red shift of distant starlight provide strong evidence that the universe is expanding, and that the cosmic microwave background radiation confirms a beginning. Hawking's theory abolishes the notion of time zero by folding the first moment of time into a perpendicular dimension of space, as the indeterminacy principle renders time and space indistinguishable within the initial Planck interval. Hawking presents his "no boundary hypothesis" geometrically as a rounded (rather than pointed) origin on the time chart of the universe, and mathematically with equations written in imaginary time notation. His conclusion that the quantum fuzziness of time zero, rendering initial Planck time indistinguishable