REVIEWS

Esther Lightcap Meek, *Loving to Know: Introducing Covenant Epistemology*. Eugene, OR: Cascade Books, 2011. Pp. xviii+518. ISBN 13: 978-1-60899-928-6. $49.

This book represents the harvest of years of critical and constructive engagement with many of the questions and problems at the heart of contemporary epistemological studies. It also represents the fruit of years of teaching and guiding others in convivial discussions about the correspondence between intellectual formation and human flourishing.

At the heart of this book is an argument intended to demonstrate "how some features of human knowing make startlingly profound sense when construed personally, and to suggest, in light of this, that being intentional about the personal and covenantal aspects of knowing will prove profitable and healing" (179) at not only the individual level but the social and cultural levels as well. To construe knowledge in personal terms involves recognizing that all acts of knowing are situated within the context of "unfolding, covenantally constituted, interpersonal relationship" (xiv).

Meek intends her work to provide a kind of intellectual "therapy" (6), and hopes that the result of her efforts will include the "existential transformation" of the reader and not just the "receipt of information" (469). She intersperses her account of "covenant epistemology" with various "textures," excurses designed to flesh out her arguments and encourage a kind of dialogical engagement on the part of the reader; one is left with the feeling of having taken part in a seminar rather than simply having read a book. This is very much in keeping with her desire to inspire the kind of renewal that will overcome the "philosophical and cultural fallout that continues to deaden the outlook of ordinary people" (17; cf. 50-51).

The book unfolds over the course of five distinct sections, the first of which is devoted largely to an exposition of what Meek sees as the dangerously distorted account of knowledge that is regnant in late modern Western thought and culture. She argues that our preoccupation with "*information*, *facts*, *statements*, *and proofs*"(7, emphasis in the original) reflects an impersonal and unsustainable account of knowledge that is responsible for a variety of problematic dichotomies the likes of which inhibit human flourishing (e.g., objective/subjective, facts/values, theory/practice, reason/faith, mind/body, etc.). She thus introduces her own efforts not only as a philosophical alternative to academic studies of the nature of knowledge but as a modest contribution to the task of cultural renewal.

Many of the chapters that follow are presented as "conversations" with various scholars whose efforts contribute in some way to Meek's own; in part two, her conversation partners include Michael Polanyi and James Loder. Meek is compelled by Polanyi's account of subsidiary-tacit integration, and follows him in holding that such acts of integration (and the acts of indwelling and interiorization they imply) are evident in all acts of knowing. She is also convinced (again, following Polanyi) that such acts of integration and indwelling are what enable us to make "contact with reality" (97) and thus to pursue reliable knowledge of the world. In the first of two "conversations" she pursues with Loder, she highlights Loder's account of knowing as an experience of transformation, and also adopts his strategy to proceed in a manner that not only describes transformative knowing but "evokes it" (123-124).

In part three, Meek moves decisively in a direction that takes her to the heart of her argument: by engaging the work of John Frame and Mike Williams, she shifts to an explicitly personalistic mode of inquiry. Frame provides her with a means of articulating the covenantal nature of all knowledge; in particular, his description of the "situational," "existential," and

"normative" dimensions of knowledge help tease apart the dimensions of covenantal relations (158-164), and also introduces the necessarily theological tenor or ground of all covenantal accounts of knowing (i.e., human knowing and being is covenantal in nature because of the covenantal character and actions of God). Williams, on the other hand, helps advance Frame's work by highlighting the distinctly personal character of all covenantal relations. In other words, Williams helps Meek put Frame's account of covenant squarely within an interpersonal, relational context.

The fourth section is the longest, chiefly because it is here that Meek develops her arguments in ways that go considerably beyond her earlier work: here she sets forth her understanding of "interpersonhood," which she proposes as a way of describing the ontological ground of covenant epistemology. She draws in this section on John Macmurray, Martin Buber, James Loder (again), David Schnarch, Colin Gunton, and Philip Rolnick and their insights into the personal shape of both knowing and being. Following Macmurray, she argues that not only is knowing personal in nature but so too is existence itself; she also highlights the way Macmurray's emphasis on agency helps expound the relational character of both knowing and being. Following Buber, she contends that knowing and being are better understood in terms of "encounter" than "experience" (250-252), and that knowing is chiefly a matter of learning how to be known; this also helps her further elucidate the theological dimension of knowing and being. Her second "conversation" with Loder and his account of the four-dimensional context wherein transformational knowing takes place (i.e., the intersection of the self, the world, the void, and the holy) helps round out her exposition of the covenantal shape of knowledge. Schnarch contributes a psychological model for understanding covenant relations, namely, the "psychotherapeutic concept of differentiation," which Meek suggests "doubles as a key to effective knowing" (310) inasmuch as it affords an image of relationality that fosters true mutuality (i.e., one that accommodates independence and interdependence while avoiding autonomy and absorption). Gunton's trinitarian theology provides a means of thinking about the ultimate ground of personal knowing and being, especially his account of the perichoretic relations of the three divine persons. In particular, the doctrine of *perichoresis* helps make the point that personal relations are "asymmetrical" in nature: their "logic" is that of "gift and reception" rather than absolute mutuality (339). The concept of giftedness takes Meek to Rolnick's recent work and his description of the way that mutual donation offers an account of relations that recognizes both dependence and independence, and one that identifies the goal of all personal relations as friendship or communion.

In the fifth and final section of the book, Meek outlines "etiquette" for practicing and pursuing the kind of knowing she commends. She first draws together the threads of the various "conversations" pursued in earlier sections and weaves them into an integrated summary of her thesis: covenant epistemology is a more truthful account of human knowing because acknowledging the personal, relational nature of knowledge results in a "deeper objectivity than impersonal objectivity" (400). She then identifies five key practices or disciplines necessary for pursuing covenantal knowing: these include desire (both active and passive, i.e., love and longing), composure (fidelity to the integrity of oneself and that of others), comportment (humility before and obedience to that which is true and real), strategy (placing oneself attentively "in the path of knowing," 454), and consummation (cultivation of relationships marked by intimacy and on-going mutual discovery). Any account of knowing, she suggests, will imply an account of being, and she offers covenant epistemology as a way of understanding knowing that encourages a way of being marked by *shalom* ("health, safety, rest, completeness, wholeness, welfare, perfection, blessing, harmony," 473-475) and friendship with the world, with others, and with God.

Specialists may want to quibble about Meek's reading of the scholars whose work she engages, but her clear and consistent focus has more to do with her own constructive proposals than with attempting anything like a definitive reading of her sources; she is forthright about concerns she herself has about certain

elements of their work (including Polanyi's). In other words, serious criticism of Meek's arguments would need to be grounded in analysis of her overall efforts, and her achievement in this regard is considerable.

One thing that Meek might have explored more thoroughly has to do with the necessarily multi-model or interdisciplinary nature of knowledge and knowing. She is more than aware of the dangers of epistemological reductionism and should by no means be read as suggesting that all knowing can be circumscribed in a uniform manner; the excurses scattered throughout the book tend in quite the opposite direction, as does her suggestion that the celebration of the Eucharist is a paradigmatic way of describing the enactment of interpersonhood (467). But in order truly to break out of contemporary epistemology's preoccupation with the "objects, source, nature, and justification of knowledge" (396), what one needs is an account of both the continuity and discontinuity between various modes of knowledge (e.g., physical, chemical, biological, ecological, sociological, philosophical, etc.). Given her concern with cultural renewal and the accreditation of the knowledge of "ordinary" knowers, focused attention to this question would have helped demonstrate the very real value her efforts have beyond academic philosophy.

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Robert B. Brandom, *Perspectives on Pragmatism: Classical, Recent, and Contemporary*. Cambridge, MA and London, England: Harvard University Press, 2011. Pp. 248. ISBN: 978-0-674-05808-8. $35.00 hb.

Perspectives on Pragmatism is a collection of essays by Robert Brandom (2000, 2002, 2004, 2008:1-30, 2009a, 2009b) that forge his rationalist pragmatism from the pragmatic side rather than from the rationalist side as in his *Reason in Philosophy* (2009c). While the volume *feels* like a collection of essays rather than a cohesive volume (the volume somewhat lacks a unifying thread), there are certainly enough topical fibers that knit chapters together and make the book worth reading if you are familiar with Brandom's previous work, and especially if you are keen on seeing the relation betweem pragmatism and analytic philosophy of language or wish to see how Polanyi's thought has elements in common with an important contemporary philosopher's ideas.

The story begins with Kant, who introduces two "master ideas": (i) a *normative conception of judgment*, the claim that we undertake a commitment when applying concepts and (ii) a *methodological pragmatism*, the understanding of discursive content in terms of what individuals are doing when they apply concepts (1-4). To these two master ideas a third is added, which is in germinal form in Hegel but completed by the classical American pragmatists: (iii) the *naturalization* of experience (and the world), not as the passive reception of raw data about the world, but as the result of a historically-developed (and evolving) learning activity (see 5-13). The latter of these three ideas is important for Brandom because it reverses the traditional order of explanation of the world and human activity. Rather than the *representationalist* view where we begin with the notion of representational content and then use this content to make sense of the world and the activity of subjects, the fundamental pragmatist begins with the activity of subjects (what subjects do) and uses this to explain representational content and the world (11).

Chapter 1 situates classical American philosophy in relation to other philosophical traditions, points to certain historical factors that shaped its genesis (specifically the Civil War), and offers a characterization of pragmatism as a type of non-reductive empiricism. Brandom's picture of classical American pragmatism is of a philosophy shaped by advances in the biological sciences and a strong rejection of certitude because of the horrors of the Civil War, yet unwilling to abandon the quest for truth for a dogmatic romanticism or bleak post-modernism.

Chapter 2 analyzes a number of different kinds of pragmatism and argues against one quite forcefully. The key to Brandom's analysis is a distinction between

two basic types of pragmatism: a *narrow* variety that focuses on evaluating beliefs in terms of their ability to satisfy desires (a true belief is one that satisfies my desires), while a broader variety is tied to a theory of language that prioritizes the *practice of using language* over the merely literal (formally-generated) content (56-58). His pragmatist insight is that any account of the word-world relation must be sensitive to how agents *use* words and this will involve paying attention to norms implicit in discursive practice (see 76).

Chapters 3–5 turn the clock forward to the pragmatism of Wilfried Sellars and Richard Rorty. The aim of chapter 3 is to show how Sellars's arguments against empiricism in "Empiricism and the Philosophy of Mind" is situated in the larger context of his work, specifically the part which argues that various forms of empiricism cannot account for modal vocabulary. Chapter 4 is an exegesis on how Rorty's antagonism to an impersonal, objective reality does not amount to a dangerous irrationalism or norm-empty subjectivism but is compatible with there being both *truth* and *knowledge*. Chapter 5 is a critical appraisal of Rorty's pragmatic stance concerning epistemic norms: the view that any privileging of certain representations (e.g. first-person reports about perceptual givens or inferences undergirded by some meaning-analytic connection) "is ultimately intelligible only in terms of social practices that involve implicitly recognizing or acknowledging such authority" (120, see 123). Brandom argues that Rorty's extreme form of pragmatism about norms leads Rorty to the radical conclusion that there were no truths (or facts) before vocabularies (or representations) to express them. But, Brandom convincingly argues that once we distinguish *acts of claiming* from *what is claimed*, Rorty's conclusion simply does not follow since there may be no true *acts of claiming* about electrons before the introduction of the term "electron," but this does not mean that what could be claimed about electrons fails to be true.

Finally, chapters 6 and 7 situate rationalist pragmatism within the contemporary versions of analytic pragmatism. Chapter 6 lays out the traditional project of classical semantic analysis where one vocabulary (or set of locutions) is made sense of in terms of another, e.g., number theory in first-order logic or mental states in physical states. After articulating a Wittgensteinian version of the pragmatist challenge to this project—that our focus should shift from *meaning* to *use*—Brandom argues that the formalist, semanticist programs can be made complementary to a natural-historical, pragmatic program (158-165). The way to this end is not by a divide-and-conquer approach where the *semantic program* is concerned with features like systematicity and the literal meaning of expressions while the *pragmatic program* is concerned with features like implicature and what a speaker means in using an expression (à la Grice). Instead, Brandom proposes that "we can deepen our semantics by the addition of pragmatics" and this involves a detailed and somewhat abstract account of how our vocabulary means what it does in virtue of how it is used (165; see 165-189). Chapter 7 considers the current state of anti-representationalism—a rejection of the view that the concept of *representation* plays the fundamental explanatory role in semantic theory—post Rorty's rejection of it in *Philosophy and the Mirror of Nature*. While Brandom sides with the Rorty-Sellars rejection of a workable notion of "experience" that might fall into the Myth of the Given, Brandom parts with Rorty in the latter's wholesale rejection of the concept (see 197).

All in all, there appear to be two points to take home. First, the semantic-phenomenalist-empiricist way of looking at the meaning of linguistic expressions in terms of its merely referential, descriptive, or representational content opens itself up to serious problems. A representationalist perspective either collapses into an epistemological skepticism due to a gulf between word and world or bottoms out as a foundationalism employing a sensory given or cognitively transparent meaning. But Brandom, drawing from exegeses of Rorty, Sellars, and Quine, concludes that both of these options are untenable. Second, given the dead-ends of a representationalist perspective, we need not fall into the gloom of a *global anti-representationalism* where the notion of representation should be cut out of philosophy altogether. Instead, Brandom proposes a pragmatic shift

in perspective that focuses on the roles that practice, action, and linguistic doings play in determining what a linguistic expression means.

I have some minor complaints. First, while Brandom's command of figures is certainly synoptic, the book lacks certain bibliographic information that is important from a forensic point of view. Also, providing greater clarification by way of exegesis or engagement with the scholarly literature would have offered a sharper, more textured, and smoother perspective on the detailed landscape (e.g., a quote from Rorty on p.6; a reference to Perry and Lewis on p.192; a reference to Ruth Millikan's "selectional teleosemantics" on p. 194). I do not mean to suggest that any of Brandom's references or exegetical work is inaccurate—precisely the opposite—but this type of apparatus is necessary for facilitating critical engagement. Second, I would have liked to see more engagement with, and reference to, contemporary figures (especially pragmatists) who argue against traditional strains of representational semantics for a pragmatic semantics (e.g. David Boersema, Francois Recanati, Robyn Carston, relevance theorists, *et alia*).

Although Brandom makes no mention of Polanyi throughout the book, there are a number of reasons for Polanyians to be interested in his work and for Brandom to include Polanyi in his multi-lensed view of pragmatism. Brandom works with the implicit/explicit distinction throughout the book (e.g., 47), rejects a spectator view of knowledge (40-41), rejects non-personal knowledge without collapsing into mere subjectivism (chapter 4), is sensitive to the fact that experience is an active process that is conditioned by the evolution of the species, and pursues a vision that is in the spirit of a "post-critical" philosophy rather than one that is distinctly modern or post-modern. All of these points of connection make the book worth reading and open up a question for both Polanyians and Brandom to consider: what are the principal points of connection (and disconnection) between Michael Polanyi and the pragmatist tradition (both old and new)?[1]

Brandom, Robert B. 2000. Vocabularies of Pragmatism: Synthesizing Naturalism and Historicism. In *Rorty and His Critics*, edited by Robert B. Brandom. Malden, MA: Blackwell, pp.156-183.

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Clark Moustakas, *Heuristic Research: Design, Methodology, and Applications*. Thousand Oaks, California: SAGE, 1990. Pp.129. ISBN-0-8039-3882-9. $73.00, pb.

I have never read a book devoted to the process of discovery which was more imbued with the epistemological insights of Michael Polanyi than *Heuristic Research: Design, Methodology and Applications*. Literally from the first page to the last paragraph, and fourteen times in between in this brief volume, Moustakas refers to Polanyi's works. Rejecting the dispassionate, objectivist model of much scientific research, Mousta-

kas plunges deep into the implications of Polanyi's concepts of personal knowledge, tacit knowing and indwelling to find a creative path to discovery in the human sciences, humanities and psychotherapy. These concepts are not mere add-ons to buttress Moustakas' arguments. They are the bedrock of his work.

Moustakas is a graduate of Columbia University (Ed.D, PhD in Educational and Clinical Psychology) and Union Institute (philosophy). He is the author of numerous books and articles published in over fourteen languages including the work under review, only now being reviewed in *Tradition and Discovery* 22 years after it was published. In 1981, he co-founded the Center for Humanistic Studies, now the Michigan School for Professional Psychology in Detroit, where he is emeritus professor. He is a Core Faculty member in psychology at the Union Institute in Cincinnati. In 1956, with Carl Rogers and Abraham Maslow, Moustakas forged the humanistic psychology movement. He was instrumental in establishing the Association for Humanistic Psychology and the *Journal of Humanistic Psychology*.

Moustakas' central concerns have to do with the emotional lives of children and adults. Throughout his career, which began in the early 1950s, Moustakas has clearly operated outside the mainstream of positivist orthodoxy in psychology. He has been instrumental in establishing successful educational institutions which embody his and his cohorts' alternative views!

Moustakas' approach to "human research" is totally in keeping with Polanyi's understanding that on the "inter-human level" … "[m]utuality prevails to such an extent here that the logical category of an observer facing an object placed on a lower logical level becomes altogether inapplicable. The I-It situation has been gradually transformed into an I-Thou relation" (*PK* 346). And further, "the knowledge of another person" will become "a critical reflection on our own knowledge" and involve the one in an exchange with the other in which they "mutually question, inform, criticize and persuade each other"(*PK* 373f). Everything Moustakas sets forth in this book reflects this Polanyian frame of reference regarding mutuality. Therefore it comes as no surprise that Moustakas' favorite way of collecting data is the "conversational interview" or "dialogue." "Dialogue is the preferred approach in that it aims toward encouraging expression, elucidation, and disclosure of the experience being investigated" (47). Expanding on this approach, Moustakas quotes Martin Buber (*The Knowledge of Man*, 86): "The interhuman opens out what would otherwise remain unopened" and Weber (*Phenomenology and Pedagogy,* 68): "... it is only in relating to the other person as a human being that interviewing is really possible... when the interviewer and the participant are both caught up in the phenomenon being discussed" (48).

In the introduction, Moustakas cites Polanyi as a "resource and inspiration"(9). In Chapter 2, he moves to an explication of the conceptual basis of heuristic research. He begins by saying that "Underlying all other concepts in heuristic research, at the base of all heuristic discovery, is the power of revelation in tacit knowing" (21). He cites Polanyi's famous statement: "*we can know more than we can tell"* (*TD* 4).

Using the concept of *intuition* as the bridge between the tacit and the explicit, Moustakas says that intuition makes immediate knowledge possible. Like Polanyi (*KB* 118), Moustakas sees intuition as a skill related to the recognition of patterns." Without the intuitive capacity to form patterns, relationships and references, essential material for scientific knowledge is denied or lost" (23f).

Moustakas next elaborates his understanding of *indwelling* in a manner that is clearly in essential agreement with Polanyi. Moustakas says that to understand something fully, "one dwells inside the subsidiary and focal factors to draw from them every nuance, texture, fact and meaning" (24). Later, discussing psychotherapy, he says that: "I dwell inside my experience with a person to understand the essential parameters of my knowledge" (110). Furthermore, "in my interaction with this person I must check out my knowledge. In doing this I employ an *internal frame of reference*" (111, italics in the original). The "internal frame of reference" refers to his knowledge of the "parameters,

structures, themes and horizons" which he indwells and from which he explores the different facets of the person's world, "coming to know them in the context of the person's way of being" (110). This understanding of indwelling as relying on a "framework" is consonant with Polany's definition of indwelling as "a utilization of a *framework* for unfolding our understanding in accordance with the indications and standards imposed by the *framework*" (*KB* 134, italics mine).

To the foregoing concepts Moustakas adds *focusing*, which he defines as "the clearing of an inward space to enable one to tap into thoughts and feelings that are essential to clarifying a question[;] elucidating its constituents; making contact with core themes; and explicating the themes." Focusing enables the researcher to "identify qualities of an experience that have remained out of conscious reach primarily because the individual has not paused long enough to examine his or her experience of the phenomenon" (25).

Ending Chapter 2, Moustakas introduces what he calls the six "phases" of heuristic research: "initial engagement, immersion, incubation, illumination, explication and creative synthesis" (27). He explains each phase by relating it explicitly to one or more of Polanyi's concepts, including "passionate concern" for a question, tacit awareness, intuition, indwelling, internal frames of reference and universal intent (27-32). He closes this section with a discussion of the validation of heuristic research stating that "...validity in heuristic research is not a quantitative measurement that can be determined by correlations or statistics. The question of validity is one of meaning" (32). Referring to Polanyi (*KB* 120), Moustakas agrees that there can be no rules to guide verification that can be relied on in the last resort."What is presented as truth...can be accredited only on the grounds of personal knowledge..." (33).

Chapter 3 is devoted to research design and methodology. Moustakas begins by discussing in more depth the critical importance of formulating the question to be researched. He quotes Polanyi (*KB* 118): "All true scientific research starts with hitting on a deep and promising problem, and this is half the discovery" (40). In the spirit of Polanyi, Moustakas says that the heuristic researcher "learns to love the question. It becomes a kind of song into which the researcher breathes life not only because the question leads to an answer, but also because the question itself is infused in the researcher's being. It creates a thirst to discover..." (43).

The heart of Chapter 3 is contained in the "Outline Guide of Procedures for Analysis of Data" (51). Here Moustakas gives concrete form to the conceptual framework which he has elucidated earlier. He envisions a team of researchers led by a primary researcher who deals directly with "participants," who are the subjects of a research project. The primary researcher incorporates (indwells) the findings and critiques of his co-researchers *and participants* as he moves through the various steps of the analysis. Variations on this format may include studies done by only one researcher working with several participants.

Moustakas suggests eight critical steps in the process of analyzing the data collected by the primary researcher and his co-researchers.1) Gathering all the data from one participant. 2) Immersion in the material until it is understood. 3) Constructing an "individual depiction" of the experience. 4,5) In the light of his own research, absorbing, analyzing and revising the individual depictions formulated by his co-workers and *sharing the results with individual participants to determine accuracy of understanding*. 6) Developing a "composite depiction," based on "immersion" in the material "until the universal qualities and themes of the experience are thoroughly internalized and understood" (52). 7) Based on the raw material and individual depictions of all co-researchers, the primary researcher selects two or three participants who exemplify the group as a whole and constructs "individual portraits" of these persons which best exemplify the dominant themes of the phenomenon investigated. 8) A "creative synthesis" of the experience is developed which is "a recognition of tacit-intuitive awarenesses of the researcher, knowledge that has been incubating over months ..." (52).

Chapter 4 presents examples of heuristic research in verbatim form under the headings of

"the initial interview," "individual depictions," "composite depictions," "exemplary portraits," and "the creative synthesis." These examples make for fascinating reading. They cover 21 research topics, including "The Experience of Touch in Blindness," "Growing up in a Fatherless Home," "Interaction Rhythms" and "The Experience of Writing Poetry."

In Chapter 5, the final section of the book, titled "Applications of Heuristic Research," Moustakas illustrates the insightful discoveries to be made by applying his heuristic approach to the study of loneliness, "the symbolic growth experience" and psychotherapy. Verbatim data from participants illustrate these applications of heuristic research in a vivid and engaging way.

Moustakas' treatment of psychotherapy has exciting implications for applying Polanyian concepts to current theoretical developments in psychoanalysis and psychotherapy, especially as articulated by the "intersubjective" theorists in self psychology. The book is also laden with anticipatory possibilities for exploring in the social sciences and humanities. The place of metaphor in heuristic research, which is so evident in this work, warrants further attention for its crucial role in the process of discovery. In sum, *Heuristic Research* is a veritable manual for sailing uncharted seas in search of "known" but unthought new lands. I recommend it highly to readers of *TAD*.

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Terrence W. Deacon, *Incomplete Nature: How Mind Emerged from Matter*. New York and London: W. W. Norton, 2012. Pp. xv+602. ISNB 978-0393-04991-6. USA $29.95; Can. $34.50, hb.

A key chapter of this book is on the concept of *work*, and this concept figures prominently in its other parts. The book itself requires considerable work from the engaged reader, principally because of four outstanding features: its stunning originality, its demanding technical character, its comprehensive scope, and its impressive interdisciplinary approach. The required effort or work is well worthwhile, however, because the book provides a promising way of at least beginning to account for and understand the daunting and to-date frustrating problems relating to the emergence of life from nonlife and the emergence of mental functionings and capacities from less complex forms of life. It does so while bringing to light the pitfalls and inadequacies of reductionism, dualism, computational models of mind, and existing supervenience theories.

Deacon points out that many of the current approaches to the matter-life and matter-mind problems tacitly presuppose the implicit dualism of an external homunculus required to interpret the reference, significance, and value of physico-chemical processes such as those in the brain or in computer processes and programs. Epiphenomenalism or eliminative materialism seeks to avoid this problem of interpretation and meaning by basically dismissing its importance, but in doing so creates intractable problems of its own. Computer programs and processes, however elaborate, have no inherent meaning, only the meanings assigned or imputed to them by their external creators and users. In this way they differ radically from the nervous systems and brains of organisms, with their internal, self-directed, self-actualizing modes of interpretation and meaning. In many other ways, which Deacon is careful to indicate, these approaches fail to explain or even adequately begin to explain, the distinctive functions and powers of life and mind. What is needed, he contends, is a radically different approach or strikingly new paradigm, the lineaments of which he seeks to lay out in his book.

This approach requires, among other things, bringing back Aristotle's formal and final causes, giving them a prominent role in both life and mind, and showing how they relate to Aristotle's material and efficient causes. The formal causes are such things as the "geometry" of complexly entwined, hierarchical levels of organization and the "generals" or universals to which exceedingly complex life forms such as humans are capable of responding. These, in turn, give rise to powers of self-definition and self-awareness, as well as to capacities of creativity and self-agency.

The multiple lower levels of organization that make life possible support and underlie newer and higher levels of organization that make possible, in their turn, ever more sophisticated mental processes in more developed forms of life. But "support and underlie" do not mean "reducible to," because the higher levels of organization have their own distinctive properties and powers that are unique to them and that cannot be reduced to the properties and powers of lower levels.

Moreover, these higher levels of organization do not simply *add to* the lower levels. To a significant extent, they subtract from, inhibit, or constrain many of the lower-level properties and processes that, if left intact, would make the emergence of the higher levels impossible. Relatively simple efficient causes and effects, and their "thermodynamic" traits give way to the kinds of work that can be facilitated and performed by the organizational and consequent cognitive capabilities introduced at higher levels. "Morphodynamic" (spontaneous order generating and sustaining) processes build on but also reverse thermodynamic ones that tend relentlessly toward disorder, and the two together provide a basis for emergence of the "teleodynamic" (end-seeking, consequence-oriented, final-causal) processes of life and mind. At some point of emergent evolution, an organism such as a human being becomes capable not only of the agential and self-sustaining behavior characteristic of all forms of life in differing degrees but to have a model of itself that pervades its actions. And it acquires the semiotic capability of envisioning and responding to universals, giving to them causal significance in their own right.

The key to these powers is not so much what is present as what is *absent*, Deacon argues. In both cases, nothing—like zero in the number series—is paradoxically something, and something of great significance. The living world and the human self are, in this reckoning, incomplete because of their orientations toward that which is not—not functioning as simple thermodynamics (i.e., ordinary physics and chemistry), not simple self-ordering systems, not mere material particulars, not something already attained but only intended, and not a substantial, separate self. That which is not is thus paradoxically able to have multiple effects in the world.

Emergence of all types requires for Deacon the introduction of genuine novelty, and not just more of the same thing or type of thing that goes on at lower levels of organization or functioning. The lower levels make possible the higher ones, but the higher ones are not just the lower ones in different guises or manifestations. There is something genuinely new under the sun. The old is not left behind, but it is also not merely manifested or reproduced in slightly different form.

This summary does not do justice to the subtlety, sophistication, and originality with which Deacon develops his ideas. His book is highly suggestive and points the way to new ways of thinking and conceiving of research programs. But I have two criticisms to make of it. His "absentialism" (as he terms it) is a useful foil to reductive materialism, which seeks to view life and mind entirely in mechanical and thermodynamic terms and to dissolve complex wholes and organizational systems into the traits and capabilities of their separate parts. While it is true that some, though not all, old properties need to be left behind in order for new ones to emerge, this is hardly the whole story. The new ones are positive capacities in their own right. They do not merely constrain or cordon off some old properties. Much more accentuation, development, and clarification of the positive aspect are needed in Deacon's analysis.

My second criticism is that Deacon more often than not is content simply to indicate or describe processes and developments involved in the origins of life and mind without venturing to explain how they can do so. By indicating what these processes and developments are, and how they relate to one another, he makes an important contribution. But precisely in what specific ways they are able to function as they do to produce life and mind is left mostly unanalyzed and unaccounted for. The hard problem of consciousness, in particular, still remains, generally as hard as before.

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Thomas Jay Oord (ed.). *The Polkinghorne Reader: Science, Faith and the Search for Meaning,* (ed.) . West Conschohocken, PA: Templeton Press, 2010. Pp. 246. $15.96, pb. ISBN 978-1-59947-315-4. London: SPCK. £14.99. ISBN 978-0-281-06053-5.

In our scientific and technological era, John Polkinghorne says that for many persons being a physicist and theologian seems like being "a vegetarian butcher." Science and theology do not digest well together. Correcting this presumption, Thomas Jay Oord has presented, with the advice and cooperation of John Polkinghorne, a full menu of Polkinghorne's views on The World (Part I), God (Part II), and Christianity (Part III). The rich three course fare selected from the publications of a distinguished scientist and theologian combine well to serve a lively, lucid, and learned treatment of some of the most basic issues between science and theology today. More importantly, Polkinghorne's work is a demonstration of how a very competent mathematical physicist finds not just compatibility between science and Christian theology but also a way of life lived with openness, Christian faith, and advanced scientific knowledge.

Polkinghorne was for over twenty years a scientist and professor in mathematical physics at Cambridge University before deciding in 1979 to become a priest and theologian in the Anglican Church. He has published over 35 books (including his most popular *The Quantum World* [1984]), lectured widely in America and Europe, was knighted by Queen Elizabeth, and received the 2002 Templeton Prize for expanding our views of human purpose and ultimate reality. Oord has deftly selected from the many books of Polkinghorne a coherent and comprehensive overview of how Polkinghorne finds science and Christian theology to be "cousins" complementing each other and forming a progressive understanding of human being in the world today. Were it not for Oord's helpful citations of the sources and dates of Polkinghorne's publications from which *The Polkinghorne Reader* is composed, one might think that the book's fluency is a synthesis by Polkinghorne himself.

In each of its three parts, Polkinghorne faces some of the toughest issues between science and theology. Through them we see both a way science and theology can complement each other yet maintain their independence and fidelity to their disciplinary field. In the following, brief selections from each of the three main parts, I show Polkinghorne's main approach to science and theology, and where he stands on basic issues that for many seem irreconcilable.

Polkinghorne begins in Part I with the popular and dominating view in both the public and much of the academic world that science is a type of expert study that finds immutable facts. Drawing on current studies in the philosophy of science, he undermines this view by introducing the role of "the spectacles behind the eyes" that guide and shape our knowing. Next he refutes the idea of scientific reasoning as leading to a "totally specifiable verification" by showing how scientific reasoning is progressive, not the whole truth, but a "verisimilitude." Verisimilitudinous knowledge is reliable without being exhaustive (31). This open outlook toward what we now know and have yet to know comes from Polkinghorne's understanding of the physical world from particle physics to its relation to current evolutionary biology and the continuing development of Christian theology. Interpreting quantum mechanics and the origins of the cosmos, considering both bottom up and top down causation in physics and biology, Polkinghorne suggests that for science the "resulting worldview is certainly not that of a dull mechanical regularity… has more than a touch of the organismic about it… (27) and if subatomic particles are not 'more real' than cells or persons, they are not more fundamental either" (26). Reductionism based on a materialist view of reality is denied by another look at what science is finding in both physics and biology. Science shares with theology the continuing challenge of understanding reality in ways that may be surprising or even revolutionary.

Polkinghorne describes his approach to both science and theology as "critical realism." Critical realism takes seriously the physical reality of the world but it entails at least three things. First, "it has to recognize

that at any particular moment verisimilitude is all that can be claimed as science's achievement…" (21). "Second, our everyday notions of objectivity may prove insufficient as we move into regimes ever more remote from our experience" (22). "Third, a critical realism is not blind to the role of judgment in the pursuit of science" because "there are always unspecifiable discretionary elements involved" (22). By seeing this wider range of human knowledge and experience, Polkinghorne suggests that both science and theology share through critical realism an epistemological common ground in their search for and in the understanding of truth. Inherent in this open and verisimilitudinous approach is also the challenge of possible revision, and here Polkinghorne puts an emphasis on a closer look at the history of science and the history of theology. This outlook is shown consistently throughout the next two parts of the book. While Polkinghorne often uses "religion" and "theology" interchangeably, his primary concern is for the relationship of science and Christian theology today. However, he holds the same principle of openness toward other world faiths that he does for the verisimilitude that he finds in the pursuit of truth in science and theology. "No one can pretend to attain some magisterial vantage point from which neutral adjudication could be given. We can listen to each other, but we cannot presume to speak for each other" (231).

In Part II, Polkinghorne turns to the meaning of God in our world of science. Here he perpetuates the exclusive reference to God as "he" which is a clue to how traditional, though progressive in relation to science, his theology is. God is not a part of reality as in metaphysical monism, nor the final or first member of a series of beings (88). God's reality is necessary to answer why there is something and not nothing. Every chain of explanation has to have a starting point (91). In theology, we have to talk about God analogically. Here we face the paradox that "the most real" is "He" who is most elusive. If God is personal, "he" will manifest himself in ways unlike "the dreary uniformity of the action of a force" and will reveal God's self in ways appropriate to the divine nature. The philosophical criterion of coherence is not the measure of everything, and philosophical clarity may have to yield to empirical reality as quantum physics has shown us (90). This approach opens the way for understanding elements in religious experience and in complex issues such as the Christian doctrine of the incarnation, the Trinity, and the resurrection. Again verisimilitude plays an important role in understanding what we believe to be true.

Since both science and theology seek the truest understanding of reality through their distinctive fields, the arena for their interaction is natural theology which is searching for knowledge of God by reason and inspection of the world (94). Each inquiry has something important to say. What natural theology finds may be limited to only a "supreme being," but then there is more to understanding the world than its physical elements. Natural theology can help treat whether the world has significance and purpose. Polkinghorne sees the rationality and beauty of the cosmos expanded by science's achievements as reflective of "the Mind" that holds it in being. While this view, he admits, is not a logical demonstration, it is an intellectually satisfying one (98).

Turning to Christianity in Part III, Polkinghorne begins with scripture because natural theology is not enough for the fundamental foundations of his religious beliefs. That foundation lies in his "encounter with God in Christ, mediated through the Church, the sacraments, and of course the reading of scripture" (147). Discussion of science and religion is a second order task of trying to harmonize and integrate his experience and beliefs as a Christian and a scientist. Because of its foundational function, scripture is important. It is not to be read literally but with understanding of its nature and context. The Bible is not a "divinely guaranteed textbook but a prime means by which we come to know God's dealings with humankind and particularly his self-utterance in Jesus Christ" (149). This view also means that scripture is evidential, a means by which we know what Jesus was like and what that tells us about God. Here Polkinghorne notes a distinction between science and religion. He does not need to read Clerk Maxwell's *Treatise on Electricity and Magnetism* in order to use his equations, but he does need to read the gospels to reckon with Christ (151).

Polkinghorne discusses many of the traditional conflicts between science and religion in Christianity such as prayer, miracles, the resurrection, and the Trinity. His ability to find complementarity between science and religion reveals how his career has thoughtfully related them both. One example is his discussion of the resurrection as a scientist and theologian. First, he uses his critical realist approach like a scientist looking at the evidence reported in the New Testament, especially the gospels and the apostle Paul. Looking at critical biblical and theological scholarship since the nineteenth century and debating whether the resurrection was a post-Easter faith arising from the reflection of Jesus' followers or an actual event, Polkinghorne concludes that it is an actual event. "The resurrection of Jesus is a great act of God, but its singularity is its timing, not its nature, for it is a historical anticipation of the eschatological destiny of the whole of humankind" (187). Here Polkinghorne speaks as both physicist and as theologian suggesting that like the moment of the big bang at the origin of the universe, the resurrection is a "foretaste and guarantee of what will await all of us beyond history" (187).

These brief glimpses into this book are only appetizers for a rare combination of a gifted person in both physics and theology. The scope and complexity of argument is inviting to further inquiry into the general subject of science and theology. In many ways it is a confessional presentation, a physicist who was also nurtured from childhood in the Christian faith and learned to find positive relations between physics and theology that extend generally into the larger concern over the questions about science and theology today.

For readers of *Tradition and Discovery: The Polanyi Society Periodical*, they will notice a strong kinship between Polkinghorne's philosophy of science and Michael Polanyi's thought. Polanyi is mentioned supportively several times, and I noticed there are at least twenty-one places where Polanyi's concepts of tacit knowing and personal knowledge in scientific tradition, authority, skills, discovery, verification, and beliefs are related. Polanyi did not explicitly develop a theology as Polkinghorne does, but I think he would have appreciated his work without endorsing it because of Polkinghorne's view that our knowledge of reality is not exhaustive and Polanyi's concern for overcoming the gulf between science and religion based on the false ideal of scientific detachment and objectivity.

As mentioned above, Polkinghorne brings science and theology into constructive relationship through critical realism and verisimilitude. Critical realism calls for an examination of evidence and cautions against finality in judgment. Verisimilitude settles for truth in terms of approximation, not absolute correspondence or completeness. These standards of judgment entail an openness to modification. Thinking of the opposition to theology current in the public forum, such standards may not work well with them because verisimilitude lacks their absoluteness. On the other hand, Polkinghorne's work in this book and his others can help a sincere seeker to find ways of taking both science and theology seriously, not as a disjunctive choice but as a continuing and creative interchange and a choice of personal faith.

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