REVIEWS

Parker Palmer and Arthur Zajonc, with Megan Scribner. *The Heart of Higher Education: A Call to Renewal. Transforming the University Through Collegial Conversations*. San Francisco, Jossey Bass: 2010. Pp. 256. ISBN 978-0-470-48790-7. $24.95, hb.

The authors of this volume invite readers to join a conversation about integrative education inspired in part by a 2007 conference, "Uncovering the Heart of Higher Education: Integrative Learning for Compassionate Action in an Interconnected World." In fact, the practice of conversation is central to the book as it seeks to model something of a conversation. Parker Palmer, currently Senior Advisor to the Fetzer Institute, and Arthur Zajonc, Professor of Physics at Amherst College, contribute three chapters each, while Megan Scribner, an advisor to the Fetzer Institute, puts together a series of appendices that that illustrate different dimensions of integrative education, many of which were presented at that 2007 conference.

Perhaps a good place to start the review is by asking, "What do the authors mean by integrative education?" The answer evolves as the book progresses. Palmer initially accepts a widely-shared understanding of integrative education as one that accepts a widely-shared understanding of integrative education that seems to connect courses in the major, courses in the major with those beyond the major, as well as curricular and co-curricular experiences (8). Zajonc further clarifies this type of education by distinguishing it from interdisciplinary education (90). In the latter, professors often juxtapose knowledge from different disciplines, leaving it to students to connect the dots on their own. In contrast, integrative education makes an explicit attempt to connect diverse disciplines into a larger, more comprehensive whole. By the end of the book, integrative learning has become more expansive as Palmer calls for a curriculum that integrates all human faculties (both intellectual and emotional), as well as "our capacity for relational, contemplative, and bodily knowing" in ways that "employ," "deploy," and "delight" in their creative, sometimes conflictual, interactions (152). In sum, integrative education, as used in this book, refers to a course of study and pedagogy that promotes a kind of personal and communal wholeness.

A large portion of the conversation in this book is devoted to articulating the tacit philosophical basis for integrative education. Palmer and Zajonc do so in different but complementary ways. In the first two chapters, Palmer responds to five criticisms often leveled at integrative education: (1) it has weak philosophical foundations, (2) integrative education is messy, (3) emotions don't belong in the classroom, (4) academic work requires solitude, and (5) academics and spirituality don't mix. In responding to these complaints, Palmer articulates a philosophical perspective that he explicitly says is inspired by Polanyi's insights into tacit knowledge and indwelling. As Palmer builds on Polanyi, he argues that "[h]uman knowing, rightly understood, has paradoxical roots—mind and heart, hard data and soft intuition, individual insight and communal sifting and winnowing…" (22).

He goes on to suggest that "community" is best seen as an "ontological reality, an epistemological necessity, a pedagogical asset, and an ethical corrective" (25). The claim that community is ontological reality is supported by new insights into the interdependence of all that exits. That community is an epistemological necessity is evident not only from the social character of our external worlds, but also because some of the most profound knowledge is derived from attempts to enter into relationship with what is being studied. Although this point clearly resonates with Polanyi's idea of indwelling, Palmer relates it to the work of geneticist Barbara McClintock, who says that part of the secret to great science is developing "a feeling for

the organism" (28). Given the communal character of both ontology and epistemology, Palmer argues that it only makes sense that practicing a hospitality that nurtures relationships between teacher and student will enhance student learning (29-31). Moreover, a communal philosophy will more likely lead to engaged lives (31-33).

Zajonc picks up the conversation biographically by telling how he overcame what he calls the "divided life" of his college education in the 1960's through a relationship with a physics professor (53-56). He connects integrative education to the findings of "the new sciences" that begin to treat nature as activity, rather than simply object (67). In particular, Zajonc draws from work in quantum physics (66-69), as well as theories of entanglement and emergence (77-81) to make his point. He illustrates the payoff by contrasting economics as taught from an impoverished perspective with an economics that reckons more with the relational complexity of human beings (82-86).

In turning to the practice of integrative education, Zajonc commends contemplative pedagogies as ways to teach with this new relational, active view of knowledge in mind. Calling for an "epistemology of love," he describes a way of knowing that moves through several stages: respect, gentleness, intimacy, vulnerability, participation, transformation, and imaginative insight (93-96). He follows this schematic presentation with a call to connect our teaching to research on student development (101-104) and student interest in spirituality (115-122). He also shares his own experiences with experiential learning and describes how others use contemplative pedagogies (108-115).

Palmer concludes the book with a practical guide to staging transformative conversations on campus. Using his experience at the Highlander Research Center in the mid-70's as a paradigm of transformative conversation, Palmer argues that a small, thoughtful group of committed people can foment social change. Acknowledging the privatization and loneliness of academia, as well as the loss of "quietude" (127-128, 145), he invites us to start small-scale conversations with stakeholders that can—even should—include not only colleagues, but also administrators, alumni, and students (128-131). He deconstructs attitudes that often preclude our participation in such conversations before giving tips and prompts for the conversation, the gist of which is continually to connect personal stories to ideas to action and vice versa (138-49). The end result is that he counsels us to develop small-scale communities of resistance and transformation within our larger institutional homes.

Along the way, the authors make several trenchant criticisms of higher education. Besides those implied above, they call attention to how education is often characterized by allegiance to a kind of orthodoxy that can be as stifling—more stifling, even—than religious orthodoxy (23, 48). They point out a widespread unwillingness to admit the weak philosophical grounds for traditional pedagogies (24). They name the hypocrisy of academics who demand that attention be given only to rational thought but refuse to acknowledge decades of research-based thinking on the necessary contributions of emotions to rational thought (42).

Yet Palmer and Zajonc remain optimistic, in part because of the stories contained in the appendixes to the book. These stories cover a wide range of efforts to foster at least some kind of integration on college campuses. These efforts include classroom experiences with service-learning and contemplative pedagogies (Appendix A). Other efforts describe experiments outside the classroom with theme dorms and service-learning (Appendix B). Still other efforts come in the form of administrative initiatives to bridge various campus divides (Appendix C), such as the formation of an informal council of elders who serve as advisor to the President at one school.

Although the book is not literally a conversation between a philosopher and a physicist (after all they author chapters individually), the book embodies a conversational tone and feel, and that feel includes overlap and repetition, just as live conversations do. It also mimics live conversations in how one voice picks up on and amplifies ideas of another speaker,

without repeating them. A good example is the way in which Zajonc's account of the basis for a philosophy of integrative education builds on and extends Palmer's discussion by rooting it in the findings of the sciences.

The conversational tone of the book is both strength and weakness. A strength is the ease of reading for its several intended audiences (faculty, administrators, and students). The weakness is that the book misses the kind of precision many academics will want. For example, it is careless—and misleading—for Palmer to say that Polanyi thinks that all knowledge is rooted in the subjective (28). Also, as noted earlier, the definition of integrative education evolves as the book progresses, which might reinforce some suspicions that the term has no substance. The more cynical of us—or even the more optimistic among us in our more cynical moments—might also wonder if Palmer and Zajonc have reckoned sufficiently with the institutional and cultural barriers to implementing the sort of transformative educational strategies they advocate here. I suspect, however, that the authors would be nonplussed by any of these concerns and instead invite us to make them part of the conversation.

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Steven Johnson. *Where Good Ideas Come From: The Natural History of Innovation.* New York: Riverhead Books, 2010. Pp. 326. ISBN 978-1-59448-771-2. $26.95, hb.

What are the circumstances that promote the production of innovations? In this lucid and engaging book, Steven Johnson suggests seven basic patterns that are heuristically potent.The same properties and patterns conducive to fruitful new ideas and developments can be found at many levels within the natural as well as the human world. Johnson illustrates this claim by stating, "It is not a figure of speech to say that the pattern of 'competition'—a term often associated with innovation—plays a critical role in the behavior of marketplaces, in the interaction between a swarm of sperm cells and an egg, and in the ecosystem-scale battle between organisms for finite energy sources" (18).

The book at hand can be seen as something of a summary of what Johnson has learned through his work-related experiences in information technology and the ideas he has explored in his previous six books. Earlier I read with pleasure and profit his *Emergence: The Connected Lives of Ants, Brains, Cities, and Software* and his book on Joseph Priestly, *The Invention of Air: A Story of Science, Faith, Revolution, and the Birth of America. Where Good Ideas Come From*, like *Emergence*, is protean in character. It proceeds by way of offering a sprinkling of several page vignettes of the processes whereby significant discoveries and inventions came to be. Johnson enjoys following the trails of associated ideas from different domains. This is not a scholarly treatise or a book with in-depth case studies, but if you are intrigued by inter-disciplinary patterns and sparkling little insights, you'll find Johnson delightful.

A basic thesis of his book is that "openness and connectivity may, in the end, be more valuable to innovation than purely competitive mechanisms" (21). The paradigmatic images Johnson offers in support of his insistence on the significance of openness and connectivity are the reef, the city, and the World Wide Web. These are featured in an introductory chapter.

Next Johnson outlines his seven patterns in a chapter each. The chapter titles—some discussed below—indicate the nature of each pattern: the adjacent possible, liquid networks, the slow hunch, serendipity, error, exaptation, and platforms. In a concluding chapter entitled "The Fourth Quadrant," he argues that increasingly in history the most fertile ideas arise in cooperative networks situated outside the marketplace. Businesses use patents and intellectual property rights to protect their innovative ideas from being used by others. A 43 page Appendix listing key innovations from 1400 to 2000 and Endnotes discussing useful sources provide background for further investigating his theses.

"The adjacent possible," Johnson's first pattern, is a term coined by Stuart Kauffman to emphasize the crucial role that context plays in creativity. The process of evolution is a good model here. All the elements that make up a sunflower were available prior to the emergence of life. But a soup of elements, obviously, is the wrong context out of which to assemble a sunflower because a sunflower "relies on a whole series of subsequent innovations" like "chloroplasts to capture the sun's energy, vascular tissues to circulate resources through the plant, DNA molecules to pass on sunflower-building instructions to the next generation" (30). Innovation is incremental. The available resources in an environment (things, ideas, processes) are cobbled together to create something new, which may in turn be recombined with contextual elements in further steps of innovation.

The brain is a good example of a liquid network, the second pattern. Creative networks need to be thickly populated and plastic, "capable of adopting new configurations" (46). The billions of neurons in a brain and the many possible linkages between them make them liquid networks. The development of life on earth can be seen as arising on the earth's environment insofar as it has functioned as a liquid network. The chemical capacity of carbon to make linkages is basic to life, but life would not have arisen without there being a medium to allow carbon to collide randomly with other elements. Water has properties at earth's prevalent temperature to dissolve all sorts of elements and bring them together in a primordial soup. Order can emerge from chaos because carbon bonds have the capacity to store creative new linkages. Similarly, cities provide liquid environments in which persons with ideas can come together in coffee shops and organizations and create new ideas. Language, writing, books, libraries, and now the Web provide increasingly complex mechanisms for storing creative ideas and having them ready for new integrations along multiple unpredictable paths.

In his chapter on the slow hunch, Johnson sounds themes that resonate with Polanyi's heuristic vision, although Johnson never mentions Polanyi by name. Gladwell in *Blink* focuses on the instant hunch, but Johnson sees these as "rarities in the history of world-changing ideas" (77). Most significant discoveries and inventions "start with a vague, hard-to-describe sense that there's an interesting solution to a problem that hasn't yet been proposed, and they linger in the shadows of the mind, sometimes for decades, assembling new connections and gaining strength" (77). Typically, the subject of the hunch gathers strength through metaphoric suggestiveness as the person is involved in a variety of different domains of interest. Just as in liquid networks, useful linkages need to be preserved, so too slow hunches need to be cultivated. The best way to do this, Johnson suggests, is "write everything down" (83).

Some explicit use of Polanyi's epistemology would have further bolstered Johnson's study of the maturing of ideas. In his chapter on serendipity, he speaks of dreamwork (and certain reflective states) as a type of exploration, "trying to find new truths by experimenting with novel combinations of neurons" (102). While he makes some references to brain processes, epistemology per se is outside his zone of interest. Polanyi's notions of frameworks, dwelling in and breaking out, imagination and intuition, and tacit knowing in general are consistent with Johnson's broad vision and would give greater depth and precision to his insights.

Johnson lists error as an aid to creativity. Initially this seems counterintuitive. "The problem with error is that we have a natural tendency to dismiss it" (138). But, Johnson insists, error helps us eliminate problematic assumptions. Moreover, research has indicated that "good ideas are more likely to emerge in environments that contain a certain amount of noise and error" (142). Biological processes provide an example. "Without noise, evolution would stagnate, an endless series of perfect copies, incapable of change. But because DNA is susceptible to error—whether mutations in the code itself or transcription mistakes during replication—natural selection has a constant source of new possibilities to test" (142).

When an organism has developed a trait for a specific use, but then its properties are hijacked for a different function, then exaptation occurs. Johnson claims that many innovators are not only bright and curious, they also have many hobbies, and they use solutions in one domain to suggest solutions in another.

The seventh pattern Johnson develops has strong Polanyian overtones. Platforms are emergent systems that unlock new sets of the adjacent possible, allowing for serendipity and exaptation to occur. The coral reef in nutrient-poor oceans allows for a higher-level environment to flourish. The biological platform of the reef builds on the waste products produced within the system (202). "What makes the reef so inventive is not the struggle between the organisms," which occurs just as much in the Sahara or Antarctica, "but the way they have learned to collaborate" (245). To revert to the opening chapter, cities and the Web also operate as unprecedented platforms that allow for rich new connections to occur.

In his explorations of how creative change occurs in our hierarchically organized universe, Steven Johnson himself operates creatively within a worldview compatible with Polanyian thought. The patterns and processes he describes further illuminate the dynamics of discovery, evolution and emergence, concepts central to Polanyi's philosophical vision.

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Lydia Jaeger. *Einstein, Polanyi and the Laws of Nature.* West Conshohocken, PA: Templeton Press, 2010. Pp. 319. ISBN 978-1-59947-247-8. $47.96 pb.

This book, whose title caught my eye, is a conservative Christian apologetic discussion of the topics identified in the title; it is a translation of a 1999 French book, produced by the Templeton Publishing Subsidy Program. The author, a conservative Christian who has studied not only Christian theology but also physics, mathematics and philosophy, suggests the three parts of the book can be read in any order. The first component very briefly treats Polanyi's thought (the component emphasized in this review); the title page of this section, "Michael Polanyi, Personal Knowledge Without Relativism," succinctly identifies why Jaeger takes an interest in Polanyi. The second part moves on to Einstein's religious ideas, which she examines to ask "whether pantheism is a religious approach that can really account for the presuppositions necessary for science" (xii). The third component is an attempt to establish a link between the biblical and the scientific notions about "laws of nature" and this exploration Jaeger suggests opens possibilities for interdisciplinary dialog.

After a biographical note on Polanyi, Jaeger lays out basic elements of Polanyi's account of knowing and science, breaking discussion into brief topical summaries (e.g., scientific research, skill, the tacit dimension, etc.). She is familiar with most major Polanyi texts and makes use of several standard secondary sources on Polanyi (e.g., Sanders, Gelwick, and Prosch). Jaeger does grasp the general shape of Polanyi's philosophical perspective but her very abbreviated discussion—the whole is just over forty pages—sidesteps most interesting (and debated) questions about how to interpret Polanyi. There are hints she sees interesting potential in Polanyi's antireductionism and his ideas about knowing persons but Jaeger is careful to keep her distance from Polanyi since "his thought does not give pride of place to a personal God as we encounter him in biblical revelation." The author's overriding Christian apologetic agenda at times rather shockingly intervenes in her discussion. In the brief comment on Polanyi's realism, Jaeger concludes, "in the final analysis, realism presupposes that the world is conceived of as a creation" (32). She reads Polanyi's invocation of the Pauline scheme to make an epistemological point in an explicitly Christian manner: "He [Polanyi] recognizes that human knowledge ultimately depends on divine action; only a reference that lies beyond the world and human capacities can guarantee the contact that human understanding hopes to establish with reality" (36).

In the final analysis, the author's early comments in her Polanyi discussion forthrightly proclaim what she takes from Polanyi: Polanyi's philosophical "project is all the more interesting for the Christian apologist because Polanyi states that he is introducing a personal dimension into epistemology without renouncing the objectivity of knowledge thus avoiding the trap of relativism." (4). Jaeger contends that Polanyi "maintains the objectivity of human knowledge" by referring to reality as external and that "in the end, he is led to hope for divine intervention to ensure a correspondence between human knowledge and the structure of reality" (5). Polanyi's philosophical perspective thus largely serves as ammunition with which to preserve a particular Christian account. Indeed, Jaeger's boiled down formulation of Polanyi's rich corpus, is, to this reader, just the sort of simplism that it is important to avoid in interpreting Polanyi or any other complex philosophical thinker. Although "relativism" is demonized here, there is no effort to specify with any nuance what sort of social/cultural phenomenon she is pointing to. This is an author who seems to have missed the emphasis upon discovery in Polanyi's thought; she does not take very seriously Polanyi's idea that we dwell in in order to break out. Jaeger's Polanyi is not a figure whose epistemic account of the person challenges us to explore the unknown, inviting us to aspire to achievements that may transform both ourselves and social companions engaged in ongoing inquiry.

The second component of this book turns from Polanyi's philosophical ideas to Einstein, a cultural hero whose life and ideas Jaeger suggests deserve more serious study. This discussion, which is about twice as long as the opening section on Polanyi, clearly shows the author is deeply interested in Einstein as a person, scientist and religious thinker. Jaeger has a short biographical chapter, which also notes Einstein's scientific achievements and this is followed by an expanded chapter that lays out in more detail Einstein's scientific program and its reception. At least to this non-scientist, all of this was interesting and accessible. The final component turns to Einstein's religious beliefs which Jaeger tags a "cosmic" religion that she believes Einstein took to be "an authentic religious experience and the only one that was, for him, compatible with the scientific spirit" (102). His concept of religion he defended against both traditional religion and atheism. The "mysterious intelligibility of the world" (104) grounds Einstein's cosmic religion and his insistence on pursuing scientific research "is like the fervor of the believer who wants to love God for what He is, not for what He gives" (110). But Einstein's cosmic religion, a Spinoza-influenced brand of pantheism, rejects a personal God. Jaeger argues that there is tension between Einstein's "pantheist sentiment of belonging to the great All" (11) and his appreciation of individuality, although he works to try to reconcile these elements. He has a strong intuition about "the profound unity of the real" (117). Ultimately, Jaeger argues Einstein's pantheism does not allow for sufficient detachment of human intelligence from the ground of reality: "Without some separation between knowing subject and known object, the act of knowing evaporates" (119). Further, "since Einstein rejected the idea of a transcendent God, ethics cannot be founded on supernatural revelation" (121). Einstein was not successful in his attempt to work out a "purely human morality" (122). Further his determinism "leaves no space for God's action" (127). Despite her orthodox Christian conclusions, I found Jaeger's careful review of Einstein's religious and ethical ideas which are rooted in his scientific conviction to be sympathetic. In the final analysis, however, she claims Einstein's "attempt to incorporate science into a pantheistic system" is no more than a "stock response," one which sharpens "our critical powers" allowing us to "grasp the level at which faith in the Creator God intervenes in our understanding of scientific activity" (216).

Part Three in Jaeger's book turns to the concept of the "law of nature" in the Bible, in Western history and philosophy, and in science itself. The concept of "law of nature" comes into widespread use with the birth of early modern science; what Jaeger wants to do is illuminate this concept by looking first at biblical notions (primarily the Hebrew Bible's ideas)

of the law of nature, then at some historically and philosophically linked ideas and, finally, at the way ideas about the law of nature have evolved in the modern era. This sort of inquiry, the author suggests, is a kind of cross-disciplinary endeavor that should be part of the science and religion discussion. There is a chapter that provides exegesis of central passages in the Hebrew Bible that link ideas about law and nature. Of the several conclusions about biblical theology that Jaeger draws, the one emphasized is that creator and creation are sharply distinguished and the created order is dependent upon the creator. She argues that biblical notions are clearly pre-scientific but that "the biblical and scientific usages converge for several respects: regularity, causality, universality, intelligibility, and contingency"(214). Thus biblical texts and "more generally the idea of Creation, have been an important source of inspiration for the development of the modern concept of law of nature"(214), although biblical law is "prescriptive" and scientific law is "descriptive"(209). The chapters on historical and philosophical material suggest that many things are unclear (and debated by scholars) about whether there are historical and philosophical precedents for ideas about the law of nature concept that becomes prominent in early modern science. Jaeger thinks, generally speaking, that there must be some link between ideas of a legislator God and the concept of the law of nature; also, among the philosophers, Descartes' ideas present "a theology of the Augustinian type, with its considerable emphasis on divine sovereignty [that] was likely an important influence"(214). Perhaps the most interesting discussion is Jaeger's attempt to explain how ideas about the concept of law of nature evolved in the modern period as scientific ideas grew.

Contrary to the author's finding that "the concept of the law of nature has proved to be a fruitful topic for the dialog between science and faith"(213), many will likely be disappointed with this third component of the book (which is a discussion that, nevertheless, does turn up some interesting things) as a contribution to the science and religion dialog. To this reader (and I suspect many others), it is a non-starter to begin with so many conservative Christian affirmations such as ideas about special revelation and the inerrancy of scripture(206-207).

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Laura E. Weed. *The Structure of Thinking: A Process-oriented Account of Mind*. Exeter, UK and Charlottesville, VA: Imprint Academic, 2003. Pp. 248. ISBN: 0907845274. $49.90 hb.

According to Weed, the human mind is not a computational device, and so efforts by those working in artificial intelligence to model the mind in this way are wrong from the fundamentals. In its stead, Weed proposes a model of human thinking as an essentially human product due to its interactive structure and unique relation to experience (see 6, 167). On this model, there are two different kinds of processes by which experience is organized and knowledge is generated. The first kind, Weed calls object-positing processes (or x-processes). Object-positing processes deal with a knower's ability to recognize and identify particulars, with the ability to select temporally-bound singulars, with singular reference in language, and with other perception-based processes. The second kind of process, called property-attributing processes (or y-processes), deals with a knower's ability to sort, qualify, and quantify particulars. In particular, it concerns the ability to formulate conditions for the conception of a stable object, the computational structuring of raw data obtained from perception, supplying the truth-conditions for sentences, and carrying out a variety of other computational procedures.

Weed insists that both of these processes are needed to give a comprehensive model of human cognition, and so Weed's *The Structure of Thinking* aims at showing that (1) x-processes cannot be reduced to y-processes, (2) y-processes cannot be reduced to x-processes, and (3) the human mind consists of both of these processes interacting with each other and the environment.

While Weed does not take her claims to be decisive (216), she presents a variety of arguments, each aiming at shoring up the conceptual independence of object-positing and property-attributing processes. The primary opposition to her position is the attempt to reduce experiential, object-positing processes to conceptual, property-attributing processes (what she and others have called "Platonism in 20th century analytic philosophy"). According to Weed, the latter reduction serves to undergird the view that the human mind is a computational device. Her major critique of 20th century Platonists is that they "chase a third man" (see 8, 10, 18, 20). Weed writes,

> If… one starts one's inquiry with questions about knowledge, such as 'What do we know?' or 'What can be known?', the natural answers to these questions seem to be 'properties' or 'universals'. Plato and Berkeley both start their investigations with epistemological questions, and both ultimately have trouble with particular, material objects. For, once the properties and universals have been established as prior, objects become reducible to sets of properties. The third man argument exhibits the chief weakness of a property-oriented account of the nature of the world. Properties and relations are too variable to rate as the basic content of a recalcitrantly solid reality (8).

What Weed means by "chasing a third man" is not clearly explained, but the gist seems to be the following: the reduction of an object of thought to a set of properties leads to an infinite regress since the set of properties is also an object of thought, requiring an explanation in terms of another set of properties, and so on, ad infinitum.

According to Weed, this sort of Platonism has its claws in a variety of different philosophical concepts (causation, stable objects, and existence), and a large part of *The Structure of Thinking* aims at replacing these concepts with ones that are sensitive to the need for both object-positing and property-attributing processes. After critiquing 20th century Platonists for their faulty accounts of causation, stable objects, and existence, Weed proceeds to give her own accounts of these notions. In chapters 2–5, Weed articulates and defends her account of intentional causation called 'kausation', which she characterizes as an object-positing process whereby an attentive individual reaches out to her experience, with the intent of understanding it, and recognizes some object (see 90-91, 36-37). According to Weed, kausation is a dynamic, two-way relationship that is marked by intentionality. It is a relation, occurring from a specific point of view, that directly relates observer (call this the 'mind' or 'x' side) to observed object (call this the 'reality' or 'r' side). One of Weed's central claims in this set of chapters is x = r, i.e. the two relata of kausation are semantically identical. In other words, the relationship between the observation of an object (e.g. an experience of an elephant in the zoo) and the existing object (e.g. the existing elephant in the zoo) is a semantic relationship where the observation of an object is just the object (e.g. the experience of the elephant is just the elephant). This is somewhat of a strange claim since there is an obvious difference between our idea *of* some object (the x) and the *existent* object in the world (the r). Weed writes:

> My claim as a direct realist is that an x in thought and an r, taken to be an aspect of reality encountered in experience, are different ways of marking one thing, which typically will be an object. Direct perception is grounded in immediate experience, and is an identity relationship in a very redundant sense. A person who identifies a grayish, fuzzy, scampering form as a mouse is not naming her experience 'mouse', she is naming a mouse 'mouse'. Unless they are doing sense datum philosophy, most people don't bother naming the experience, at all. All that the 'x' in the formula really marks is the point of view of the namer (43).

So, in claiming that x = r, Weed claims that there is not a perceptual awareness of an object *x* and a free-floating, unperceived object *r*. Instead, she adopts the idealist position that an object is an object if and only if it is something which we identify from our particular point of view. Much of chapters 2–5 are spent elaborating, defending, and contrasting this claim with other theories of intentional causation (e.g. Dretske's, Searle's, Hume's, Kant's, et alia).

Chapters 6–8 offer an account of the notion of objects, the types of objects that humans are directly aware of, how this account has implications for various linguistic, logical, and ontological notions, and why Husserl and Stalnaker proposed equally reductivist conceptions of objects, i.e. Husserl's attempts to phenomenalize logic (see 159-163) and Stalnaker's attempt to logicize phenomenology. Wrapping up the book, chapter 9 details how x and y processes interact, while chapters 10 and 11 deal with Plato's Third Man argument in the *Parmenides* and a point-by-point criticism of Quine's philosophy. Finally, chapter 12 offers a helpful summary of the preceding.

Readers should be aware that Weed's book is written for a professional audience working primarily in analytic philosophy. Technical language, themes, and arguments are presumed with very little explanation and so potential readers should come equipped with knowledge of a variety of topics in the philosophy of language, the history of philosophy, and logic (e.g. the de re/de dicto distinction, slingshot arguments, Gödel's incompleteness theorem, the third-man objection from the *Parmenides*, and what Almog means by Kripke's "pre-semantic" causal-historical chains). This is problematic for two reasons. First, the book is very ambitious, tackling a number of difficult philosophical problems, but there are places where Weed's arguments are either not clearly presented or are simply inattentive to the complexity of the problem (most notably her dealing with Kripke's theory of names). Second, while writing for a professional audience is acceptable, it can slow down reading time and can cause problems when there is not a scholarly consensus about certain distinctions and arguments. The literature clarifying and taking sides on Plato's Third Man Argument, Davidson's slingshot argument, and the role contextual factors play in naming is extensive, but reference to it is very much missing in Weed's book. Greater clarification by way of exegesis or engagement with the scholarly literature would have produced a better work and a smoother read.

Another problem with Weed's book is that her imputed villains (Quine, Kripke, Dretske, Mackie, Stalnaker, et alia) are not nearly as bad as she makes them out to be. Here is an example. On p.19 (see also 48-49 and 126-127), Weed interprets Kripke as saying that things get their names at an initial baptism and this baptism establishes that the name is connected to the thing by *de re* necessity. Weed claims that this indexing occurs under the point of view of molecular biology and chemistry (a science-relative view of natural kinds), and that Kripke thinks that this is the only point of view we can imagine. With this interpretation in hand, Weed blasts Kripke and adherents of this view for its scientific chauvinism. Weed argues that although the scientific viewpoint is the dominant point of view it is not the only point of view available to language users (see 19-20). In place of the scientific point of view, Weed claims that an object is capable of being named under myriad points of views. Weed writes that the "point of view adopted can be God's eye, fish eye, microscopic, macroscopic, social, political, or any other kind conceivable, as long as the two way relationship between x and r can be maintained from that point of view" (38). Weed has constructed a straw man here. Among many problems with her description, Kripke does not claim that natural kinds are indexed from a scientific-relative point of view. Indeed, Weed misses the chance to incorporate an ally into her cause by criticizing Kripke's choice of examples, and this criticism is built on a misinterpretation.

Weed's work makes no reference to Polanyi, but there are a number of points where Polanyi might have been useful and also places where Polanyians might find Weed's book useful. In chapter 3, Weed uses Gestalt psychology to argue that many basic mental operations involve *interest*, *intentionality*, and

judgment. Operations involving these features are, so Weed argues, not capable of being simulated into the design of purely computational machines, which supports Weed's main claim that human thinking is essentially a human product (58-59). Weed writes,

> What gestalten have in common is the fact that the whole structural or configurational organization of the gestalten is not a function of, and is not reducible to, the sum of atomistic subunits of the whole, no matter how they might be construed. Thus, the criteria of compositionality, presumed by both Russell and (early) Fodor to apply to all mental operations, is violated by gestalten (61).

Polanyians will, of course, take notice of Polanyi's own variation on Gestalt psychology to support the claim that knowing is an active skill, to articulate subsidiary and focal awareness and to develop his various accounts of perception (PK vii, 55-58, 97-98).

Another point of connection has to do with the fact that for Weed—as for Polanyi—all knowledge is of a personal and fallible variety. For both, the idea of a detached, impersonal notion of objectivity is a false ideal, but this does not lead to rampant disconnection with reality. In *Personal Knowledge*, and elsewhere, Polanyi lambasted critical philosophy and logical positivism for espousing such an ideal yet Polanyi's thought does not collapse into a pessimistic post-modernism that gives up on the scientific pursuit (see Cannon 2008; Gill 2000:71-72, 83-88; 2010:126-128). Polanyi's post-critical philosophy aims instead at preserving the contribution human agents make to inquiry while avoiding a collapse into mere dogmatism (see Sanders 1999; Cannon 1999). Weed's agenda is somewhat similar. Analytic philosophers, modernists, and sense-data theorists are all characterized as reducing the human contribution to experience and knowledge to purely formal and mechanical property-attributing processes (see 88). An analysis of knowledge involving a total abstraction from the tacit contribution of human agents will simply not do for either philosopher.

In the end, Weed's book is overly ambitious, somewhat inattentive to the nuances of its philosophical opponents, but nevertheless is admirably bold in her attempt to distill a number of complex problems across the philosophical landscape to a problem concerning x-processes and y-processes. Readers of Polanyi are likely to find a philosophical ally in Weed and a valuable resource in *The Structure of Thinking*.[1]

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David J. Chalmers. *The Character of Consciousness*. New York: Oxford University Press, 2010. Pp. 624. ISBN 978-0-19-531110-5 $99.00 (hb), ISBN 978-0-19-531111-2 $29.99 (pb).

This book on the philosophy of mind is a sequel to Chalmers' widely praised *The Conscious Mind: In*

Search of a Fundamental Theory (Oxford University Press, 1996, hereafter TCM) by one of the important figures in the debates on the topic. Both of these books grew out of Chalmers' keynote paper, "Facing Up to the Problem of Consciousness" (1995), where he first used the labels "easy problems" and "hard problem" of consciousness, which since then have become common currency. The picture of consciousness in the recent book is largely consistent with his earlier work. This sequel is still a work-in-progress on the "hard problem," but because of its topic and goal it may be of interest to Polanyians.

The book consists of 6 parts in 14 chapters plus an Appendix. In the Introduction, Chalmers gives a users' guide. He suggests groupings of chapters to accommodate the following various interests: the mind-body problem, metaphysics of consciousness, epistemology of consciousness, unity of consciousness and phenomenology. He explains that physical realization of information is not the only way information can be expressed—it is also found in phenomenology, our states of consciousness. *The link between the physical and the phenomenal is the "hard problem."* He calls linking the two levels the "double-aspect principle" that he considers a template for psychophysical theory. He draws on and synthesizes much current research to formulate his epistemology of consciousness and his speculative conception of a metaphysics of consciousness. His aim is to develop a thesis about the unity of consciousness that could have applications. For a satisfactory theory of consciousness, we not only need to know which processes give rise to which experience, we also need an account of why and how (13). He surveys and comments on the reductionistic "extra ingredients" proposed in the past to explain how consciousness arises: theories developed in cognitive science, those making use of quantum mechanics, and the idea of Wigner, et. al., that consciousness plays an active role (but how?) in "collapsing" the quantum wave function. He finds none of these to be adequate.

In the section entitled "The Problem of Consciousness," Chalmers explores further the relation between the physical and phenomenal aspects of consciousness, probing for the regularities that connect them. Neurophysiology and cognitive science deal with the "easy problem." The "hard question" is *why* is the performance of these functions accompanied by experience? There is an explanatory gap between the "easy" and the "hard" problems. *Coherence and invariance are non-basic (high-level) concepts* of awareness and organization, and they act as constraints. The *double-aspect thesis of information is a basic (speculative) principle.*

The rest of the book involves the search for an organizational property linking experience to information. In "The Science of Consciousness," Chalmers synthesizes material from published research as a step toward constructing this science. There is a basic problem: we cannot measure consciousness because it is not directly observable. Since Chalmers considers first-person data about subjective experience to be irreducible to third-person data about behavior, yet each is real, he seeks to find neural correlates of consciousness, systematized by use of *pre-experimental bridging principles (principles of interpretation)*. In contrast to the current form of neurophenomenological research which he calls "investigations on the grand scale," he proposes his own "modest investigation with *refinement of methods for reliability*" (51). He notes that there needs to be a formalism of first-person data-gathering and formulating of principles. The shape of this formalism is not clear, but a science of consciousness needs to be able to replicate first-person data by direct observation since that is "the way science is done" (53, 57).

The sections entitled "The Metaphysics of Consciousness" and "Concepts of Consciousness" get to the core of the philosophical discussions in the book. Three lengthy arguments against materialism are presented in the form of syllogisms with examples: 1) physical accounts explain only the structure and function of consciousness along with their causal roles, 2) it is unclear whether isomorphic physical and conscious systems can not be distinguished, and 3) facts about consciousness are not deducible from physical facts. Chalmers claims that one can legitimately infer ontological conclusions from epistemic premises. The link can be the framework of the "Two-dimensional

Semantics" he used in TCM. He considers the following statement one of his important contributions toward making ontological claims: A given concept is associated with two intensions: referent to the actual world as well as the counterfactual world (which depend on each other), to which correspond primary and secondary intensions; the latter are the "meaning." There are two sets of truth conditions with a statement: primary, for context in the actual world, and secondary, for the counterfactual world (TCM 57, 63).

"Conceptual Analysis and Reductive Explanation" rounds out the core philosophical part of the book. Chalmers asks, "If there is not *a priori* entailment from metaphysical truths to phenomenal truths, does a reductive explanation of the phenomenal fail? We say yes" (207). In this section, he discusses his new sympathies: experiences are phenomenal and beliefs are intentional. They intersect because beliefs are about experiences, the most important of which are first-person phenomenal beliefs about the character of a particular current experience. These point to three issues that may be of interest to Polanyians: the theory of content (for sense-giving and sense-reading), epistemic status of the link between cognition and the external world ("can machines think?"), and the epistemic gap between physical processes and consciousness (the theory of personal knowledge).

He remarks that in recent philosophy intentionality has been sundered from consciousness. This statement ignores the thought of Polanyi and Merleau-Ponty who, as Marjorie Grene points out, connect these realms. In chapter 12, "Perception and the Fall from Eden," he introduces "Edenic content" as unmediated contact with the world, i.e., objects presented to us without causal mediation. He compares this to Fregean content that captures our judgment about veridicality (402), so he opts for an Edenic-Fregean content in the treatment of objects (not of properties). To answer questions about Edenic content requires a *theory of the roots of intentionality.* He speculates that Edenic content is "in the heart of phenomenology, and is a sort of phenomenal intentionality" (418). His foray into speculative metaphysics is his version of the "brain in the vat" problem, but I doubt it clarifies and advances Putnam's hypothesis.

Finally, "The Unity of Consciousness" is reformulated as a thesis and applications are offered for higher-order thought theory and for representationalism. The appendix, "Two-Dimensional Semantics," is an abridged form of Chalmers' 2006 article in the *Oxford Handbook of the Philosophy of Language*, and is based on his discussion in TCM. Here he emphasizes the epistemic features and roots of consciousness plus ties to semantic pluralism; as well, he counters the objections to two-dimensionalism and the role of opinion.

On review, this book disappoints. Its promises have not been delivered. His "modest investigations with refinement of methods" do not seem to have advanced his search for a fundamental theory much since TCM. His refinement of methods is a formalization of his previous and others' ideas. In Chalmers' defense, let it be said that reformulating and formalizing old theories may lead to new insights. However, the "investigations on the grand scale," first-person accounts in neurophenomenology and psychology reported in the *Journal of Consciousness Studies* and in *Behavioral and Brain Sciences*, have contributed more to understanding the conscious mind.

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