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The Postmodern Brain. Gordon Globus. Amsterdam/Philadelphia: John Benjamins, 1995, 188 pages, \$29.95 paper.

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The Postmodern Brain is Volume I of an edited series, *Advances in Consciousness Research*. At first glance the title *Postmodern Brain* may seem like a contradiction in terms. But it isn't. What it is, is a new look at cognition and brain functioning from a postmodern brain science perspective. It is a "must read" for (a) cognitive scientists, (b) humanistic psychologists, and (c) anyone interested in philosophy and theory, though unfortunately I fear only the latter individuals may venture very far past the book's initial chapters. The book is definitely not bedtime reading; it is however a book on the edge of a new frontier.

Essentially what the book attempts — and I would not venture to pronounce on whether it accomplishes its goal but say that its attempt is most certainly intriguing — is the Promethean task of merging the philosophico-mathematical new neuroscience conceptions of the mind/brain, via (among others) the physics/philosophy of David Bohm's implicate order, the neuroscientist Karl Pribram's holonomic universe, the neuro-quantum mechanical brain dynamics of Kunio Yasue, with the existential, humanistic, phenomenological view of the human world, via the phenomenology of Martin Heidegger, the postmodern critical theory of Jacques Derrida, with an implied "string physics," ending in a kind of impacted postmodern Heraclitean flux of nonlinear quantum brain dynamics. Accompanying this task is a devastating critique of computational cognitive science which maintains that brains perform computer-like computations. Globus uses a modified version of the newest in brain modeling, a connectionist neural net model that serves as an access point into his theory.

From a nonpostmodern perspective, attempting to merge a humanistic psychology, *Existenz*, with brain science, is considered contradictory (almost) by definition. Indeed it raises the defensive shackles of humanistic psychologists who will likely be among those who will not read past the first chapters. For such readers, the very possibility of *Dasein* being explainable, especially in brain science terms, is unthinkable. Unfortunate. As Globus notes, "The mutual antipathy here is not a dry intellectual thing, but is laden with strongly felt emotions that impede attempts at rapprochement" (p. 49) between humanistic psychology and brain science. This may never change. To mix a Kuhnian metaphor, old paradigms never die, they just fade away.

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To get a feel for the breadth and depth of this highly theoretical/philosophical book (yet one firmly based in concrete data) a glance at its contents page is instructive. Chapter One: "The Unexpurgated Self-Organizing Dream"; Chapter Two: "Deconstructing the Chinese Room," with two appendices: Appendix A: "Dennett, the Illusionist," Appendix B: "Network and Background in Searle's Theory of Intentionality"; Chapter Three: "The Continental Tradition and Cognitive Science; I: Heidegger and Connectionism: Systems that Can Do What Dasein Does; II: Derrida and Connectionism: *Diffe'rance* in Neural Nets"; Chapter Four: "Toward a Noncomputational Cognitive Science: The Self-Tuning Brain"; Chapter Five: "Psychiatry and the New Dynamics"; Chapter Six: "The Eruption of Other and Self; I: A Deconstruction of Classical Dynamic Psychotherapy; II: Dreaming of *Autre*"; Chapter Seven: "Postmodernism and the Dream"; Chapter Eight: "Take-Off to Quantum Brain Dynamics: The Excision From Discourse." If all of this sounds like a New Age rap, it is not.

The "author" — if there is such an entity in postmodern terms — has written the book in an interesting postmodern style and format. In part, what this means is that one can ostensibly start reading anywhere in the text since "the book keeps folding back into itself, rather than progressing in serial fashion" (p. xii). The postmodern style also means the text is "written" with a purposeful (and helpful) repetition and redundancy. In addition, though nonpostmodernist concepts are used in Derridean style the author says "I at times speak of 'producing' and 'creating' but these terms are used *sous rature*" (p. 129), that is, under erasure, meaning that they have no real meaning and are used only for expository convenience in a nonpostmodern discourse. However, while Derrida uses ~~strikeovers~~ to denote *sous rature*, Globus does not, apparently because his approach is a modified postmodernism.

A postmodern book is also self-reflexive, meaning it is open to its own critique. Accordingly, the text includes the critique of a journal editor and a reviewer. This is in keeping with the postmodern view that there are no privileged vantage points and no timeless, decontextualized truths, including its own. But as the author notes, "My endeavor is not typical of postmodernism in an important sense Mine is a justified postmodernism, rather than the relativistic postmodernism typical of critical theory where seemingly 'anything goes' I am something of an old dog, trained as a scientist, and I cheerfully concede that there is more than a trace of modernism that taints this text" (p. x). This reader was grateful for the *diffe'rance*. It may unfortunately be the case, however, as Globus notes, that "breaching as I do the great and hostile gulf between postmodernism and cutting edge science, I tend to get it good from both sides . . ." (p. x). I would encourage readers to authentically jump into this breach.

The bedrock problem of the mind/brain — and one that cognitive science completely misses — is the problem of creativity; not the creativity of combining mental products together in new ways, but original creativity, of generating new knowledge. This is the problem that *The Postmodern Brain* ponders; it is a problem that nearly all the great thinkers of western philosophy have grappled with. It is what Globus calls *formative creativity*. Herein lies the modernist truth of *The Postmodern Brain*. And it is a radical truth, maintaining that all possible worlds reside in the brain in a kind of *enfolded* manner.

The relation between transformative and formative creativity can be illustrated by an analogy of throwing dice. As Globus puts it, "As we continuously shake the dice, various outcomes are possible, but when we finally roll them and particular die settle out, one of the possible states becomes actual. This example captures the

idea of possibility and actuality, but the creativity here is transformative. For the example to be formative, the dice would have to erupt into being in the very act of throwing" (p. 8).

Cognitive computational science at best, notes Globus, deals with transformative creativity, not formative creativity. And computer programs that appear to do so are engaged in a programmatic prestidigitation. In fact there is a ghost in the machine. It is the programmer. As Globus puts it in an earlier publication,

The graphics problem, then, is how to get from a numeric code to a pictorial representation. The neural encodings constitute an uninterpreted purely syntactic calculus. To say that the neural encoding is "of" two lines intersecting at a 45° angle connected by a crossbar is already to interpret the code pictorially. The problem — for the computational theory of mind in general — is where the pictorial representations comes from (without involving a *deus ex machina*) In the case of computer graphics, the programmer plays the role of semantic interpreter and provides the mapping. (1987, p. 124)

This is the Achilles heel of the computational theories. According to *The Postmodern Brain*, formative creativity is brought into being as if out of the thigh of Zeus. So where does formative creativity come from? All possible worlds, says Globus,

that we might ever perceive . . . are already available within the brain as possibilities. The form of these worlds, however, is not the ordinary form of explicate reality, not in the form of the world unfolded before our very eyes, not this world here now. (p. 127)

Further, he says that we do not need to have a world "out there" to perceive

all that is needed for a world to settle out is the dynamically evolving, self-organizing brain system, and this does not require input There is no little world synthesized inside the brain, which some little homunculus perceives. There is no re-presentation of the world. There is only one world, the one we perceive, the world our brains achieve *What it is to BE the brain achieving those settlements is to find oneself situated and thrown in a world.* (p. 129)

The merger is completed: Heidegger meets brain science.

The Postmodern Brain is heady stuff. As Alice lamented to the Cheshire Cat, "I wish you wouldn't keep appearing and vanishing so suddenly: you make one quite giddy." But lest it be thought that Globus is out on a limb, that his theory is a radically idiosyncratic epistemology and ontology, standing *sui generis*, it should be stated that others (some of whom he cites) have suggested his view in different ways. On a formative level, *The Postmodern Brain* obliterates the traditional distinction between the dreaming and waking cognitive process. On a logical level, I have suggested elsewhere (Haskell, 1986) that relative to the mind/brain "It is doubtful . . . if neurocognitive processes, or brain tissue, make this rather fine distinction" (p. 21) between dreaming and waking cognition. In the physical sciences, this line of thinking that addresses the perennial mind/body problem would be Nobel material. Indeed, in *Dream Life, Wake Life* (1987), Globus cites the works of two Nobel Laureates in immunology, Niels Jerne and Gerald Edelman (Edelman, 1978; Jerne, 1967, 1985). Jerne and Edelman believe that the immune system is a (formative) system that contains all of the possible responses to the external antigen world; that

the immune system does not directly learn from the external world but instead "recognizes" the vast array of possible antigens, and — that the brain may also be such a system. More recently Edelman (1992) has elaborated on this hypothesis.

For readers like myself who need to be helped along with such mathematico-neurophilosophy, I suggest reading Globus' *Dream Life, Wake Life* before reading *The Postmodern Brain*. While I am ~~not~~ a postmodernist — whatever this may ~~mean~~ — the ~~author~~ has done an exquisite job of weaving and unfolding a postmodern scientific story of the mind/brain world that incorporates and transcends western modernist dualities. To anyone interested in being on the ~~cutting edge~~, *The Postmodern Brain* is required reading. Refreshingly, in *The Postmodern Brain*, Globus thinks rather than calculates.

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