Review Of *Creativity And Consciousness: Philosophical And Psychological Dimensions* edited by Jerzy Brzezinski, Santo Di Nuovo, Tadeusz Marek, and Tomasz Maruszewski

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REVIEW OF: *Creativity and Consciousness: Philosophical and Psychological Dimensions* edited by Jerzy Brzezinski, Santo Di Nuovo, Tadeusz Marek, and Tomasz Maruszewski. Poznan Studies in the Philosophy of the Sciences and the Humanities. (Amsterdam-Atlanta, Ga 1993: Rodopi) 412pp. $US140 hbk. ISBN: 90-5183-509-4.

1.1 This volume is somewhat unbalanced, containing materials that are very different in approach and goals. Or, perhaps this impression is the consequence of my being unfamiliar with the program of "idealization" of science and the prior volumes in the same series. In any case, more care should be taken in having titles that reflect content: many of the papers do not address creativity at all. Here I shall follow a mixed strategy: I shall describe some of the papers' contents and for others I shall point out some of their aspects I found particularly interesting.

1.2 The book is divided in six parts. Some are largely of historical interest--which doesn't mean uninteresting--including the first. One paper which I found illuminating was that of Krystina Zamiara. Her remarks on Jean Piaget (pp. 101-116) point out very clearly how Piaget was a dualist (in particular, an epiphenomenalist: conscious mental states are causally inert in this view). At the same time, there may be much to be learned from the notion that in Piagetian terms the acquisition of "theorems" needs consciousness. Another paper I found strangely at odds the topic of consciousness, was on Nietsche. It is not at all clear what Nietzsche had to say about consciousness (cf. Zdzislawa Piateq on pp. 59-74). In the very same section however one finds some interesting remarks by Rick L. Franklin

on what philosophers call understanding, with shadows of the distinction between reason and understanding. Finally, we get some idea of what kind of creativity the editors have in mind: the gaining of new insights and new understanding requires a creative leap of sorts.

1.3 The second part of the book contains much of what, in my humble opinion, is a very bizarre view of the development of science (as opposed to the internal coherence of its foundations or of its applications). An orgy of formalization, in particular between pp. 131-182, appears to me to be one of the many misguided attempts to see scientific activity, as opposed to scientific theories, as something amenable to a mathematical treatment. This will be possible to the same extent that the formalization (axiomatization) of any human activity is possible. Scientific activity has all the traits of any other human endeavor: in particular, it has no more and no less rationality. At any rate, what is not made clear anywhere is why there should be some special interest in scientific creativity, as opposed to, say, the artistic creativity of Picasso (was Picasso *less* creative than Poussin?).

1.4 The third section contains much of interest. I note in particular Kathleen Wilkes's article. Her attack on introspective reports ends up pretty much where one would want it to come down: use it with the same caution, and no more skepticism that any other source of data for psychological theorizing. In the process, though, she manages to squeeze a compact version of the story of the debates on introspection, providing a salutary therapy for some current hyperskepticisms. Introspective reports are far from infallible and all the same far from meaningless (to keep myself honest, I had better put my cards on the table: Ericsson & Simon's position seems to me the most productive).

1.5 In the next, historical, section one finds a couple of papers on the history of the notion of unconscious, mostly taken from the perspective of psychoanalysis. I found peculiar the idea of devoting three pages (pp. 239-242) to Julian Jaynes' historical account of the existence of consciousness (roughly: he thinks there is a specific time at which humans began to have consciousness, and this is very recent, as recent as 2280 B.C.) and none to Chomsky's notion of UG as not accessible to consciousness.

1.6 Part V exhibits some good negative results--it is a good exercise in debunking pop science. The answer to Piotr Wolski's question "Hemispheric asymmetry and consciousness: is there any relationship?" is: "Not much." The final part returns to debate further some issues raised earlier in the volume. One article contains some sort of rebuke to Wilkes, and others go back to the relationship between psychological development and creativity.

1.7 Enough about the contents of the volume. My overall opinion about the volume is that it needs more focus: the editors do not explain what they take to be the link between consciousness and creativity. In a very weak sense there is a connection between consciousness and nearly anything. If we want to make some progress, though, we had better decide what we should take to be the relevant phenomena for our investigations. I think much good would be done by heeding Ned Block's call [in BBS, 1995 (June) target

article] for more distinctions and less confusion (even if one ends up rejecting his specific endorsement of the different status of access-consciousness and phenomenal consciousness.) I would think that most of what passes for creativity is in fact largely inaccessible to consciousness. The products of creativity are accessible, of course--but then so are the mountains, which, if they were created, were created either by agents way beyond what we can glimpse with psychological or philosophical analysis or else by brute geological forces that have all sorts of interesting properties save consciousness. To be sure, it may very well be that this kind of confusion (between product and process) is one price to be paid for the production of a volume including researchers that are after radically different forms of explanation.

1.8 I shall venture to close this review with a tentative analysis of what is going on. We have a very dim notion of what counts as creative and the attempts to deepen our understanding of what is a creation are very welcome. I would mention Margaret Boden in this respect. In the book under review the only person who tackles the question head on is Mario Bunge (pp. 299-304). Bunge argues that the computational paradigm is modelled after mathematical reasoning, in the sense of theorem proving. It is. however, a gross error (p. 303) to believe that everything mathematical is computational: "... suffice it to recall such mathematical processes as discovering, guessing theorems, finding the premises that entail a given proposition.... The claim that it is possible to design creative computers amounts to the thesis that it is possible to formulate precise rules for inventing ideas. But the very idea of an *ars inveniendi* is wrong because, by definition, an invention is something not to be had by just applying a set of known rules." Here, I think, real questions about creativity start (and I am not convinced they have a lot to do with consciousness). The point is: Whereas the product of a creative act will look as if it breaks all known rules for the domain relative to which it is creative, the productive processes underlying it are vastly unknown. Schoenberg's music is creative relative to that of Beethoven, and Galois' theory of groups is very creative mathematics by the standards of his day. The computational gambit need not take the view that we need the axioms of an *ars inveniendi* to get a computer to be creative. If one key element of the product of a creative act is the capacity to surprise (it has to break with the domain's known rules) while remaining understandable as part of that domain, then computers may very well surprise us. John Cage's silences are somehow recognizable as music and still they break with the known minimal rule that music is some production of noise. A new opening in chess found by a computer may have the very same characteristic. Again, what I find missing in Bunge is the awareness of the difference between what counts as surprising and creative and the underlying pattern of activity producing it. It certainly is true that even in mathematics much that passes for creative is in fact a form of understanding based upon pattern recognition. Computers are pretty dumb, so far, at recognizing patterns, but nothing shows that there aren't computationally definable pattern recognition systems that may indeed surprise us, noticing connections we don't "see." All the same it may very well be that the connectionist new wave will be proven to be right, in which case only machines as complicated as our neuronal systems will be as creative as brains.

1.9 The volume raises, but does not answer, such interesting questions. One unfortunate

fact: the volume is marred by countless typos. I would suggest a more careful editing, as the typos are a completely uncalled for bother for the reader.