

Implied Epistemology, Epistemology of the Implicit

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I am pleased that in its short history, "Ayn Rand and the Cognitive Revolution in Psychology" has already elicited responses of such variety and quality.

In tracing the story about crows and their ability to keep track of different numbers of people back to the 18th century naturalist Charles-Georges Leroy, Richard Shedenhelm ("Where Were the Counting Crows?") has pulled off some marvelous historical detective work. Particularly interesting is the way that a good solid piece of naturalistic observation had to get dressed up as an experiment for 20th century audiences. To dispel any possible misapprehensions, though, I was aware, when I wrote "Ayn Rand and the Cognitive Revolution," that George Miller did not mention *animal* subitizing studies in his famous 1956 article. The connection between the crow enumeration stories and Miller's review of limited information processing capacity in human beings was not hard to draw in the mid-1950's.

I have two minor points to add to Shedenhelm's excellent commentary. First, among those who study the psychology of mathematics, counting and subitizing are terms for different mental processes. Crows obviously cannot count as human beings learn to do, by drawing a one-to-one correspondence between an ordered series of number words and a sequence of items that are being counted (see Gelman and Gallistel 1978, for a detailed analysis of what happens when children learn to count). But some investigators think that there is wordless enumeration that proceeds in sequence—some kind of "nonverbal counting." Others deny this and

regard what the crows do as a type of pattern recognition not reliant on an underlying sequential process. The controversy between advocates of nonverbal counting and advocates of subitizing (to complicate things, there is more than one theory of subitizing) has not been resolved to everyone's satisfaction.

Second, if I had to guess which of the 20th century sources reviewed by Shedenhelm was used by Nathaniel Branden's professor for the crow story, I would pick Dantzig's book, *Number: The Language of Science*. Dantzig was routinely cited by psychologists who studied mathematical development from the 1960's through the 1980's.

Barry Vacker's "Strange Attractor in Randian Aesthetics" covers a great deal more territory. I will try to keep my response to points directly raised by my original article on Rand and the Cognitive Revolution.

Here is what strikes me as the central issue. Vacker quotes me to the effect that, where chaos theory or nonlinear dynamics is involved, it would be "incorrect to extend this analysis into [Randian] epistemology" (Campbell 1999, 130). Taken in isolation, my admonition is ambiguous. It could mean that chaos theory and nonlinear dynamics should not be used in epistemology at all. Or it could mean that chaos theory and nonlinear dynamics do not fit Rand's approach to epistemology, whatever support could be found for them in her aesthetics. I hope that the remainder of the paragraph that I wrote makes it clear that I meant the second interpretation and not the first.

After all, nonlinear dynamics might be among the resources that epistemology needs to draw on, even though Rand's stated conception of epistemology would not leave any room for it. In fact, this is my view. Vacker appears to agree: "Campbell's conclusion that it is incorrect to extend 'dynamic systems' or chaos theory into Randian epistemology may appear true, if we only consider the terminology presented in the *Introduction to Objectivist Epistemology*." I also agree with Vacker that Rand had epistemological ideas or inklings inconsistent with her stated position. But I'll return to that issue below.

One impediment to recognizing that we are largely in agreement is a picayune difference between disciplines over the meaning of "dynamic systems." Vacker considers my references to "dynamic

systems" inadequate because "whereas dynamic systems could be simple and linear, chaotic systems are distinctly complex and nonlinear." In psychology and Artificial Intelligence, a "dynamic systems" approach is one in which *the dynamics are understood to be nonlinear*. Psychologists are inclined to take linear models for granted, because they have been working with them over most of the history of their discipline. All advocates of "dynamic systems" realize that a restriction to linear systems would be inadequate to account for the way that a simple robot functions, let alone the way that a human being operates (e.g., Thelen and Smith 1994; Port and van Gelder 1995; Goldfield 1995; Bickhard and Terveen 1995; Campbell 1996).

Another impediment is that good old epithet, "reductionist." Since I recently spent a good deal of time trying to explain to my graduate students what various kinds of reductionism in psychology amount to, then arguing against all of these in favor of genuine emergence with downward causation, let me suggest that it is not a good idea to assume that a psychologist must be a reductionist. To know where a psychologist stands on reductionism, you need to check the psychologist's ontology first. I am on record as a strong advocate of emergent mental representation; I recommend Bickhard (in press) as a first-rate treatment of emergence. For most of the 20th century, psychologists were not encouraged to articulate their views on the nature of conscious experience, or on the relationship between the laws of psychology and the laws of neurophysiology; even so, there is a wide range of stated views within the field, and reasonable prospects for better quality discussion of such matters in the future.

I am neither seeking to reduce psychology to physiology, nor attempting to reduce philosophy to psychology. "Campbell's mistake lies in his reductionist approach, seeing psychology as the only source of Randian epistemology," Vacker states. I was not trying to argue that psychology was the *only* source of Rand's epistemology. I was arguing that it was *a* source—and a significant one at that. Rand's own presentation of her philosophy, we should recall, denies *any* traffic from psychology to epistemology. Consequently, she never extended her injunction to avoid cosmology—do not substitute metaphysics for physics—into epistemology, where it would have

meant not substituting armchair epistemology for psychology (Campbell 2000).

Vacker may be worried that undue attention to psychology will crowd out aesthetics. Since there are also powerful ties between the two fields, I doubt there is much impingement on the interests of aesthetics here. I also suspect that a closer examination of Rand's aesthetics will reveal conflicts between her powerful literary appeal to nonlinear dynamics, which Vacker (1999, 2000) has so ably demonstrated, and an "official" philosophical presentation that leaves little room for such insights. Still, I see a lot of promise in Vacker's project of tightening the connections between aesthetics and epistemology, and I look forward to his chapter on integrating chaos and concepts.

Clearly, though, such a project will take us even farther from Rand's own presentation of her philosophy. One of my teachers was fond of citing Charles S. Peirce to the effect that aesthetics is more fundamental, philosophically speaking, than ethics or epistemology. Vacker's insistence on "how aesthetics is at the core of Randian theory" is quite reminiscent of the Peircean view. But that sets it completely at loggerheads with Rand's own metaconception of the way her philosophy is put together, according to which aesthetics is derived from metaphysics and epistemology.

What Vacker is appealing to is an *implied* epistemology—the kind of epistemology that would be needed to do justice to everything that Rand says about Howard Roark's buildings, about "sense of life," and about the workings of the subconscious mind. What's more, this implied epistemology would be, in large part, an epistemology of the *implicit*. Rand is frequently concerned, in her epistemological writings as well as her aesthetic writings, with the implicit. But as Bryan Register (2000) has pointed out recently in the pages of this journal, it is hard to get explicit about the implicit. Rand (1990) referred on multiple occasions to "implicit concepts." But given her insistence on a tight pegging of concepts to words, Register asks what an implicit (i.e., wordless) concept could be, within her stated framework.

Rand herself (1990, 178) declared: "Logically implicit in a

concept is a proposition, only the child couldn't think of it." Such a statement invites us to take the proposition as implied by the concept, even though it may not be currently known by the child in any form (not even subconsciously). However, when asked to comment on the distinction between what is known or believed, but not consciously, and what is *merely implied* by what we know or believe, Rand overtly rejected any reference to what is "presupposed" by what we know or believe. She insisted that the "implicit" is a knowledge that is available to you but which you have not grasped consciously" (160); elsewhere she seemed to equate what is available with what could be retrieved from memory (182). So she had no way to distinguish between two grades of implicitness: the subconsciously believed and the merely implied.

The trouble is not merely Rand's. Implicitness remains a major sore point for today's psychologists. While standard treatments of knowledge in psychology take frequent recourse to subconscious mental processes to explain how we think and feel, they normally present subconscious mental representations as fully explicit, encoded structures (such as mental propositions or mental "image files"). Such knowledge structures are subconscious merely because they are not being currently "activated" or "accessed" by our conscious minds. Theories of this type are not going to be able to handle either grades of implicitness or levels of knowing (Campbell and Bickhard 1986; Bickhard and Campbell 1989; Bickhard 1998).

Vacker takes some umbrage at Gregory Johnson's (1999) charges of "intellectualism" in Rand's thought. I'm not entirely in agreement with Johnson's views on these matters—but he does have a point. While Rand inordinately admired skill or know-how, and could write lyrically about it, her explicit epistemology of percepts and concepts (Rand 1990) fails to address it at all. What we know when we know how to catch a baseball is not one of the capabilities to be explained in her epistemological theory. Neither is how we see that we could sit on that rock over there, nor how some of us notice that this computer program is truly elegant, nor how most of us recognize that the person who just telephoned us is trying to sell us something that we don't want.

The failure to get explicit about skill is also apparent in Rand's presentation of her ethics. Prudence is a key virtue in the Aristotelian tradition to which her moral philosophy largely belongs (Den Uyl 1991)—but it is never mentioned in Rand's ethical writings. To acknowledge a role for prudence in our decision-making is to concede a place for skill or expertise acquired through personal experience—skill that will often prove hard to articulate. Rand seems to have been uncomfortable with such concessions. But how can we actually go about being productive or being independent without making use of practical wisdom?

There is a good deal in Rand the writer that overflows the intellectualistic molds of her philosophical exposition. Her demonstrated architectural aesthetics, her conception of "sense of life," her understanding of the subconscious processes involved in writing all clash sharply with her metaphilosophy—her stated view of what her philosophy is about and the manner in which information is allowed to flow from one part of it to another. Vacker has emphasized a number of themes that imply a nonlinear, dynamic epistemology brimming with implicitness. Along with Register and Johnson, I have stressed the usually non-dynamic stated conceptions that leave little room for implicitness. I believe that both sides are right.

I would also like to respond to some comments made by Will Thomas of The Objectivist Center, in his admirably thorough review of the first issue of our journal. Thomas gives a basically accurate rendition of my arguments. However, I think he is moving too fast when he blames the Cognitive Revolution in psychology for "reviving the idea of innate knowledge" (Thomas 1999, 11). Yes, there are connections between the root ideas of the Cognitive Revolution and the epistemological nativism of Noam Chomsky and his followers, but they are complex and subtle (many working cognitive psychologists still do not recognize them). I did not attempt to examine these connections in my article (see, however, Campbell and Bickhard 1986, 1987; 1992; Campbell 1998). While Rand sharply rejected any appeal to innate concepts, I do not believe that she was in a position to make a full case against Chomskyan nativism; at least, that is what I will argue in Campbell (in preparation).

Another passage in Thomas's review comes across as ambiguous. He interprets my reference to Rand's dictum that psychological measurement "requires an appropriate standard" (1990, 38) to mean "a standard based on introspective evidence" (Thomas 1999, 12). Maybe Rand really did think that *all* standards of psychological measurement had to be based on introspective evidence. No psychologist, however, could find this view tenable. Besides, it is inconsistent with Rand's own appeal to crow psychology. (How do we know how many units a crow can handle in working memory? We cannot perform this measurement on the basis of crow introspection; we have to infer it from evidence about crow behavior.) A proper treatment of measurement in psychology is one that acknowledges the contributions of introspective *and* behavioral evidence. If Thomas meant to argue the contrary, I'll have to take exception.

In one of his side comments, Thomas seems to be working directly against Vacker's project of linking Rand's aesthetics more tightly to her epistemology. Thomas asks why I took Rand (1966) up on her assertion that Americans in the 1960's were suffering from moral and aesthetic value-deprivation (unlike Thomas, I don't regard this as a metaphor; I think she meant the analogy to sensory deprivation literally). While Rand's profound cultural pessimism was not the theme of my essay, I did consider it germane to point out how her psychological analogy failed. *Any* significant positive artistic values (beyond the Randian corpus) in 1960's America constitute a sufficient counterexample to her claim that Americans were experiencing a degree of value deprivation comparable to the sensory deprivation imposed in the experiments she mentioned. So I pointed to some artistic achievements from the period that, as a jazz historian, I happen to know about (and I might add that by this point in the evolution of the music, many jazz musicians did not consider their work to be part of "pop culture" any more). Those who know the relevant period in literature, or the other arts, would surely be allowed to point to other counterexamples. Where Ayn Rand crossed disciplinary boundaries, presumably those who have some idea of what is on the other side are permitted to follow.

Thomas's conclusion seems entirely congenial to the central

argument of "Ayn Rand and the Cognitive Revolution":

Perhaps the resolution of this debate [about psychology and epistemology] lies in recognizing that when philosophy addresses the widest context, as it does in identifying axioms of knowledge or the fact of free will, then it does and must precede science in a logical sense. But developmentally, science and philosophy grow together. To the extent that philosophy addresses the particulars of human nature, it stands to be enriched and refined by advances in the human sciences. (1999, 12)

The implication is clear: Since a theory of concepts is evidently not formulated in the widest possible context of knowledge, it will have to draw on the findings of the "human sciences," including psychology. So will theories of skills, and of implicit knowledge.

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