

PCT, behavioral theories, and ordinary experience

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Subject: PCT, behavioral theories, and ordinary experience

[From Bill Powers (940129.0940) MST] Clark McPhail (940128)

I have read a bit more of Mead, and have gone over your remarks in "Myth" on pages 192ff. I can see from your remarks why you saw a connection between control theory and Mead's ideas. But I also see that the idea of "talking to yourself" and of producing behavioral outputs are central in Mead's thinking, despite his recognition of the "reflex" nature of some perceptions. We can discuss those specific points, but there are some more general remarks that came out of my readings.

From your modern perspective, and knowing control theory, you can see in many of the situations Mead describes a clear description of a control process. Mead, you say, clearly spoke about visual perception requiring moving the head and eyes, focusing the lens, and adjusting for binocular focus. "Tactile perception involves contouring the hands and fingers to engage objects, moving the hands and fingers over the surface(s) of the object(s), and often varying the tactile pressure against the surface. Aural perception involves inclining and orienting the ear, and making minute muscular adjustments in the tension of the eardrum. Olfactory perception requires maneuvering the nose and regulating the inhalation of air over the nasal sensory receptors. Oral perception requires the deliberate maneuvering of the fluid in the mouth over the taste buds."

But we can see similar hints at control theory in Skinner's descriptions of operant conditioning, or Thorndyke's description of cats finding their way out of puzzle boxes (the law of effect), or (Hull's?) description of response chaining in which a response is a stimulus for the next response, or many other instances in which a person clearly describes a closed loop of cause and effect with actions affecting perceptions. We see strong precursor rumblings in the statements of James and Dewey about reflexes, in the purposive psychology of McDougall, even in the "purposive behaviorism" of Tolman.

All these people noticed and were looking straight at phenomena of control. They were describing in print and out loud details of relationships between organism and environment which we, today, immediately recognize as symptoms of a control process. But they did not understand what they were looking at, because they had no model of an underlying organization that is capable of creating such puzzling appearances. In most cases they did not realize that the models they did propose were inconsistent with the phenomena they were describing -- having no consistent model with which to compare. Mead no more understood what he was describing than did Skinner, Hull, Thorndyke, Tolman, or even McDougall (who thought purpose was everything). Here in 1994, most of us have been aware of "systems thinking" for all of our professional careers, whether through personal acquaintance or osmosis. We are used to mechanistic theories that actually propose real mechanisms like neural signal detection and transmission, neural computers, muscular motors. It is therefore difficult to put ourselves inside the minds of scientists who lived before this way of explaining behavior became commonplace, or those who even in 1994 have somehow missed out on this approach to explanation.

When we PCTers read McDougall (sp?) speaking about purpose, we tend to credit him with suspecting the existence of reference signals, comparators, and controlled perceptions. In fact, McDougall had no idea that purpose could be explained mechanistically, and if someone had suggested that it was anything but a nonphysical "mental" phenomenon, he would have objected. When Guthrie (I think) explained behavior in terms of "contiguity," to him contiguity was just as real as we consider a neural signal to be: it was a quite sufficient "mechanistic" explanation. When Skinner spoke of "reinforcement" or "contingencies" controlling behavior, to him that amounted to a mechanistic explanation, for reinforcement and contingency were as plausible examples of forces acting on an organism as gravity.

Even when we look at obvious progenitors like James and Dewey, we find no actual explanations. What we credit James and Dewey with more than others is acuity of observation. Dewey saw that in the reflex arc, both output and input were going on at the same time, and that there was no way to separate out a unique stimulus or response. That was indeed an acute observation, but it didn't explain what this loop did or how it worked. James came closer, in that he saw that actions were oriented toward making perceptions conform to inner pictures of what they should be -- but he had no concept of an actual neural mechanism that could create this subjectively-observed mental phenomenon. As we hear from Jim Dundon, George made a similar observation -- but he had no explanatory model, either.

Actually, one gets the wrong picture of what control theory contributes by looking at the writings of scientists. We tend to go all ga-ga when we come across a scientific paper in which human behavior is described in sufficient detail to see the phenomena of control plainly. If we consider not just the writings of behavioral scientists, but the whole of human literature, we will find far better examples in biographies, novels, diaries, poetry, songs, and histories. Pick up any nonscientific book about people, like a murder mystery, and start reading at random. What you will find is a detailed account, real or imaginary, of purposive beings creating perceptions by their actions, knowingly having intentions, knowingly acting to create results selected in advance, knowingly choosing subgoals as a means of achieving higher goals -- the whole thing. The phenomena of control are laid out in rich and vivid detail, with no embarrassment at talking about what people want, what they think, what they intend or hope or desire, or what their actions are supposed to accomplish.

Why do we not find such accounts in scientific writings? Primarily because scientists have adhered to theories that rule out ordinary examples of purposive behavior. They work within strict and narrow rules which are supposed to lead to clear scientific knowledge about behavior, but which actually make behavior almost impossible to understand. When they describe behavior, they do so not in ordinary terms, but in ways constrained to stick to the accepted explanations. Even when an animal just noses around in a cage, the behavior is described as an "exploratory response." If a person in a cage tries to get out, that is an "escape response."

So when we find in scientific writings some simple and recognizable truth about human experience, such as the fact that we act to make what we perceive be more like what we imagine, the example stands out as if under a spotlight -- precisely because it is so different from the normal fare.

PCT, as Ed Ford keeps illustrating for us, is easiest to teach to people who know nothing about scientific theories of behavior or have no investment in any existing theory. The reason is that the phenomena that PCT talks about are the ordinary phenomena of everyday experience, not the distorted, truncated, and theory-bound phenomena described in the scientific literature. Under PCT we do not have to translate from ordinary descriptive language into some smaller vocabulary; we can take behavior and experience just as they appear to be. PCT provides a direct link from a mechanistic theory of the brain to the world in which most people live, to the experiences that most people have all of the time. PCT simply bypasses all other theories of behavior and forms a link directly from theory to experience, without any prejudice as to what is a "real" experience and what is not.

The point of PCT is to explain actual experience, not to explain phenomena that have already been translated into the terms of some other theory. If people talk about their intentions, hopes, desires, and purposes, it is not the business of PCT to translate these terms into more acceptable causal language before trying to explain them. PCT accepts the report at face value and tries to adjust the theory to fit -- rather than accepting the theory as necessarily correct, and modifying observations to fit.

When laymen scoff at descriptions of behavior as seen under PCT, what they scoff at most is the allegation that these simple facts are not already perfectly familiar in the behavioral sciences.

The only other theories of behavior to which PCT owes a debt, as Rick Marken has been more or less saying, are those that propose a mechanism of negative feedback control as the basis of behavior. PCT owes nothing to other theories that simply note phenomena which we can see as examples of control. The reason is that those other theories contain no acceptable explanation of how such observed behaviors can possibly exist, and their descriptions of control phenomena are not even as complete and detailed as those we can find in the lay literature. To note that control behavior exists is merely to point out the phenomenon that requires explanation. Control theory is the explanation.

Best, Bill P.