

Bill Powers on Perceptual Control Theory

About Perceptual Control Theory (PCT), some history, status, and what you will experience when studying PCT.

Highlights from an introductory essay William T. (Bill) Powers wrote in May, 1980.

Edited/shortened by Dag Forssell, October 2016, with headings and notes added.

PCT—theory that works and makes sense

Control theory started its major growth in the 1930s, among engineers trying to design not *controllable* devices, but *controlling* devices.

Without being particularly interested in psychology or biology, these engineers succeeded in discovering a kind of organization which could have inner purposes and which, instead of reacting to external forces, could sense and act on the world around it and thus control aspects of that world. The result, the servomechanism, has caused a second Industrial Revolution already, but science is just starting to realize that the industrial side of the revolution may be far less important than the revolution in our understanding of living systems that grows from this new concept of organization.

Scientific theories of human nature have never made much sense to nonprofessionals. Scientific theories either have been so statistical that they don't say anything interesting about individuals, or have implied things about us that anyone with common sense can see aren't true. Psychology in particular has been a disappointment, promising much and producing essentially nothing with the power to change our lives that, say, the transistor has had. Unless we have to take a test to get a job or enter college, most of us aren't touched by psychological theories at all. When we do brush against them, the result is usually threatening or annoying.

Perceptual Control Theory, PCT, the theory of how living organisms control what happens to them, does make common sense. It makes so much common sense, in fact, that when studying PCT most of the time you're likely to think, "Great—but doesn't everyone know that?" The answer is *no*, not by a long shot. Common sense can be trusted only so far; it lets us down nearly as often as it works. Scientific theories, when they get on the right track, can bolster our common sense, but also refine it and

change it to fit more of the facts. One strong hint that PCT *is* on the right track is that you won't have to know any control theory in the mathematical or engineering sense in order to grasp its meaning correctly. There's nothing that can be said about perceptual control theory that can't be said another way in plain language, still correctly.

A little history

My path to understanding has been devious, and I've worked alone for the most part, so this is a personal story even though others have influenced and taught me in degrees from a little to a lot.

Warren McCulloch first influenced me when I was in high school. His daughter Taffy joined my class, and I became aware of her father, a tall figure with a long straggly beard and fiery eyes that scared the hell out of me. McCulloch lived in a house that Charles Addams could have drawn, and I was certain that I would never be like that mysterious and crazy-looking man. A neurosurgeon, I heard—brrr! A theoretician—yuck!

He was in fact a famous neurologist who was already a leading figure in cybernetics, of which I had never heard. Some of his friends and colleagues were named Pitts, Ashby, Von Foerster, and Wiener—Norbert Wiener, who while I was fresh out of high school and immersed in learning electronics for the sake of World War II, was starting cybernetics and launching this scientific revolution that is still developing. None of these people knew me, but five years later, in 1950, I came to know of them. I read most of what they wrote, and was hooked.

In 1953 I became convinced that the phenomenon of feedback, and especially automatic control based on feedback, held the key to a new understanding of human nature. With only a BS in

physics and no funds for graduate school, I resolved to work on this new theory in my spare time, earning a living in the fields of technology that I knew. That approach became a habit; I'm still working at honest labor and being a theoretician on the side, although my family might disagree with that order of priorities. In retrospect I can see that there was no other choice. My path diverged enough from the paths followed by others that there was no way to pursue my work in more conventional surroundings. Scientific revolutions are not popular among their victims. There are good reasons why theoreticians often work alone.

My first scientific paper on PCT was published in 1960 with Clark (who provided the means and the intellectual support needed for my first concentrated work on my version of control theory) and MacFarland (who provided some official blessing as a psychologist).

From 1960 to 1973 I worked on electronic systems at Northwestern University's department of astronomy, finally producing a book called *Behavior: The control of Perception*.¹

Reception of PCT as of 1980

You'll probably want to know how PCT stands today in the world of competing scientific theories. I'd say it's just getting to its feet. During the past seven years I've been invited to speak at universities all over the country, to linguists, philosophers, anthropologists, sociologists, and even psychologists. Scientific journals seem quite willing to publish what I write on the subject. Especially among the younger people, students and faculty, there is a positive enthusiasm for PCT once the basic ideas are

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understood. All told I'd guess that there are now two or three hundred full-fledged life scientists who have accepted my approach and are at least rolling up their sleeves getting ready to start trying it out seriously.²

In Philip Latham's wry words, the "grizzled veterans of a thousand seminars" still sit in the back rows and frown. I can't see any easy way to win them over. A lifetime of dedication to one point of view makes it hard to grasp a different one, much less accept it. I don't hold their reluctance or apprehension against them, because basically I agree that science shouldn't latch onto new ideas without a great deal of skepticism. Those of us who see the promise of PCT can be confident that its day is coming, but still a little more patience yet is needed.³

Learning PCT

One last word. I've found that most people take about two years to reach the point where they suddenly realize that they understand the basic concepts of PCT. It takes about a week for them to think they understand it. After the initial understanding, don't be dismayed if a host of questions and confusions arise; they always arise, because of beliefs that are in conflict with the principles of PCT, but which don't turn up until you encounter appropriate situations. Most of these confusions and questions will clear themselves up as you continue to think. The right answer always turns out to be the simplest one. Just keep returning to one basic principle: *we control what we perceive, not what actually exists, and not what we do*. The meaning of that principle will grow deeper the longer you think of it, and the more situations you encounter in which it clearly holds true.

1 As of 2016 there is an extensive literature supported by clear demonstrations, most of which available online, including an overview of Perceptual Control Theory, a free download at livingcontrolsystems.com. For more, please visit iapct.org and related websites linked at iapct.org/Links.html.

2 Unfortunately, many tried to merge PCT with their favorite theory, creating still more non-functional psychological theorizing.

3 A few academics supporting PCT now say they had to put PCT on the back burner for 30 years and more due to the requirement to fit in with existing faculty and teach the approved curriculum. You cannot have a career in academia and promote PCT unless you are independent. Very few have been.

Nevertheless, PCT is catching on. It is now taught at The University of Manchester in the UK by Reader Warren Mansell and his team of researchers, and in Australia by Professor Tim Carey, focusing on the Method of Levels, a very effective form of psychotherapy derived from PCT.