

Descartes' Error, An Anthropologist on Mars

Unedited posts from archives of CSG-L (see INTROCSG.NET):

Date: Mon Feb 20, 1995 10:50 am PST
Subject: Re: Damasio and PCT (From Mary)

[from Mary Powers 9502.20]

Bruce B: (asking if anyone has read Damasio's Descartes' Error)

I have - and am about to again. From what I remember from my first pass, I don't think it necessarily gives you ammunition for the point you are making, which I understand to be that PCT is logical and cold and unemotional and is therefore incapable of addressing the humanities and the arts.

I think a lot of people who live along an aesthetic dimension are very resistant to the idea of having their experiences explained - that they will lose their magic if we know too much about them. So I ask you - does PCT fail to be "the whole story" because to some extent you really would rather not know PCT's version of the story?

But PCT is not about what people experience and feel. It's about the kind of organization needed in order to have experiences and feelings. Of course there is much more to being a person than understanding the organization or mechanism involved. As Bill said in BCP, the point is to explain as much as we can - and the rest will be the interesting part. But there is no point drawing a line in advance between what PCT can explain and what it can't.

The role of emotions in living systems is certainly something PCT can address (there was a chapter on it in BCP that was cut out by the editor for some reason - it is reprinted in Living Control Systems II). Disturbances and errors drive outputs that affect the body - glands as well as muscles - and those effects are perceived - that is how we know something is not right and how we judge that what we are doing is effective. More control loops.

What I found interesting in Damasio was the problem of Phineas Gage and others with damage to very high levels. Of course these were accidents, no two alike, with different degrees of damage to various sites. But what they seemed to have in common (to me) were pretty intact control systems up to and including the principle level - no problem understanding and discussing ethical principles, for instance. What seemed to be missing was the ability to designate a consistent set of reference values for the principle level - in other words, the system concept level was damaged or its connections to lower levels lost. Which would mean that any random setting of the principle level was as good as any other. And emotionally meant that there was no particular criterion for feeling good or bad about anything.

I read the whole book feeling that it could be recast in PCT terms without difficulty, and that doing so would make consistent sense of it. And at the end, in the postscriptum, I came across this paragraph:

Some have asked why neuroscience has not yet achieved results as spectacular as those seen in molecular biology over the past four decades. Some have even asked what is the neuroscientific equivalent of the discovery of DNA structure, and whether or not a corresponding neuroscientific fact has been established. There is no such single correspondence, although some facts, at several levels of the nervous system, might be construed as comparable in practical value to knowing the structure of DNA - for instance, understanding what an action potential is all about. But the equivalent, at the level of mind-producing brain, has to be a large-scale outline of circuit and system designs, involving descriptions at both microstructural and macrostructural levels [emphasis in text].

Dr. Damasio, meet Bill Powers.

Date: Sun Feb 26, 1995 3:20 pm PST
Subject: An Anthropologist on Mars

(From Bruce Abbott [950226.1745 EST])

Yesterday I went to the bookstore looking for a copy of Descartes' Error and, although that title was not in stock, I did find something interesting on the shelf. An Anthropologist on Mars (1995) is by Oliver Sacks, the neurologist author of Awakenings and The Man Who Mistook His Wife for a Hat, and as with these other books, engagingly presents the case histories of a few of Sacks' patients who were or are afflicted with various types of brain disease or injury. Thus far I have read only two of the seven cases presented, but judging from these the book should be of interest to many CSG-L subscribers.

The Case of the ColorBlind Painter, the first chapter, recounts the case of "Mr. I," an artist who awoke the morning following an auto accident to find himself able neither to read nor to perceive color. Although his reading ability returned, his color vision did not. Sacks describes the change:

"It was not just that colors were missing, but that what he did see had a distasteful, "dirty" look, the whites glaring, yet discolored and off-white, the blacks cavernous--everything wrong, unnatural, stained, and impure."

And it was not just Mr. I's PERCEPTION of color that was missing; he could no longer IMAGINE in color, could no longer DREAM in color. Yet, as Sacks carefully describes, the colors were not simply lacking, as in a black-and-white photo; the shades were distorted, so that Mr. I could not bear to look at his color TV, preferring instead to use an old black and white set. In fact, the color receptors in his eyes were still functioning normally; the problem was cortical:

"Mr. I. was seeing with his cones, seeing with the wavelength-sensitive cells of V1 [visual area 1], but unable to use the higher-order, color-generating mechanism of V4. For us, the output of V1 is unimaginable, because it is never experienced as such and is immediately shunted on to a higher level, where it is further processed to yield the perception of color. Thus the raw output of V1 never appears in awareness for us. But for Mr. I. it did--his brain damage had made him privy to, indeed trapped him within, a strange inbetween state--the uncanny world of V1--a world of anomalous and, so to speak, prechromatic sensation, which could not be categorized as either colored or colorless."

This account appears entirely compatible with the view that perception at each stage is represented by a scalar neural current, and that various stages in the visual processing system each extract or create their own representations by operating on the scalar values of prior-stage outputs. It also supports the view that the imagination mode depends on the functioning of the same neural structures that perform these transformations on sense-data.

Fascinating, huh? Other stories (there are seven case histories presented) will be of interest to PCTers as well, such as the Last Hippie, whose forebrain was disrupted by a tumor and refused to believe that he was totally blind ("Wouldn't I be the first to know?"), although he was (his optic nerves were destroyed), and A Surgeon's Life, which describes a Surgeon with Tourette's syndrome, which produces among other symptoms controlled, coordinated movements which nevertheless are involuntary (an uncontrolled raising of references to lower systems at the program level or below?).

Regards, Bruce

Date: Mon Feb 27, 1995 9:41 am PST
Subject: Re: An Anthropologist on Mars

From Clark McPhail

>(Bruce Abbott [950226.1745 EST])

> Yesterday I went to the bookstore looking for a copy of Descartes' Error and, although that title was not in stock, I did find something interesting on the shelf. An Anthropologist on Mars (1995) is by Oliver Sacks, the neurologist author of . . .

Thanks for calling Sack's new book to the attention of CSG-L. I do not yet have the book and have not read his account of the colorblind painter or the other two cases you mention. I have read one of the chapters in this book which is Sack's account of Virgil ("To see and not see") which appeared in The New Yorker (May 10, 1993). I think this too will be of interest to CSG-L. This illustrates the interplay of multiple perceptual dimensions in the neural net as well as dramatically underscoring the point that intensity perceptions must be compiled in the central nervous system before they are meaningful to the individual. I have been assigning this article to my students every semester since I read it in 1993. Virgil began losing his eyesight through the development of cataracts at the age of 4 or 5 years; he was functionally blind until about the age of 50. For most of his adult life he worked as a professional masseuse at the local YMCA. Around the age of 50 his cataracts were surgically removed. His retinas could register intensities and variations in sensations of light but the configurations were (with one interesting exception) all a blur. While visiting a zoo where his companions called to his attention a large sculpture of a gorilla, Virgil could not "see" what it was until he ran his hands over the blurred configuration and, drawing upon his extensive tactile memory immediately said "Oh, its a great ape." The tragedy of Virgil's story is that while he gradually gained some capacity to organize visual sensations, he was constantly confused and very distressed. While he loved baseball, was a knowledgeable student of the game and had listened to radio broadcasts of games for years, he could not make sense of the confusing configurations flickering on the screen during telecasts of games played by his favorite team. He did learn to read simple phrases and those with enormous difficulty. Tragically, Virgil succumbed to some vision-unrelated disease and died within five years of regaining sight. Throughout most of those years he was sighted but unseeing. I hope others on CSG-L will find Virgil's case as instructive as I did. I look forward to obtaining Sack's book and reading the other cases he reports there.

Bruce (and others): Keep look for a copy of Demasio's book. It will be worth the search. I agree with Mary's assessment. Demasio concludes by saying that what is needed is a hierarchical formulation which (to me and not surprisingly to Mary) looks very much like William T. Powers' perception control theory. I had the same reaction to Francis Crick's book, The Astonishing Hypothesis: the Scientific Search for the Soul. His hypothesis? All we can know about the world is what we experience through our sensory receptors and they can only tell us about intensities. Everything else is in the neurons! He concludes that those intensity perceptions must be compiled and compounded through some hierarchical arrangement of perceptions. Francis Crick? Meet William T. Powers. He's already arrived at the destination you propose for current and future neuroscientific research.

Clark McPhail
Professor of Sociology