Cognitive Adaptation: Insights from a Pragmatist Perspective

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Classical pragmatism construed mind as an adaptive organ rooted in biology; biology was not one side and culture on the other. The cognitive systems underlie adaptation in response to the precarious and in the search for the stable and more secure that result in diverse forms of inquiry. Cognitive systems are rooted in action, and classical pragmatism knotted our sense of ourselves in response to nature and our cultural evolution. Cognitive systems should be demythologized away from Cartesian detachment, and towards transactions with others and with nature.

1. Introduction

In this essay I reiterate some key insights from the classical pragmatists (namely the sense of inquiry and naturalism, the search for stability) and place them in a contemporary context of cognitive neuroscience. Cognitive systems, as classical pragmatists understood, in the sense in which I suggest, is nothing like the old Cartesian, divorced, distant arbiter. They are linked to engage self-corrective inquiry (e.g. Dewey 1925, 1989; Meltzoff 2004). An adaptive mind was the very life-blood for Charles Darwin (1859, 1958) and William James (1890, 1952), and in what would later be important for characterizing cognitive systems forging coherence for action and underlies human experience. We come prepared with an evolved brain and set of cognitive predilections that are situated towards context, flexibility, and perceptual embodiment about objects that are conceptually rich and vital to behavioral adaptation.

Pragmatism emphasizes adaptation to the precarious. Inquiry is an outgrowth of wanting to know. Self-corrective inquiry needs to be harnessed to the felt insecurity and uncertainty that are not just remnants of our biological past; they are endless lively events in our present context that are not likely to be eradicated. As John Dewey (1925, 1989) would put it: we hunt for the stable amid the precarious (see also Godfrey-Smith 2002). Yet lurking within the mind-brain is unease about predators and concern about acquisition of food and shelter, along with unchecked levels of aspiration mixed with human gluttony. New identities are formed that, fashioned by diversity, generate novel
expressions. Amusement and play are endemic to our condition in order to combat the insecurity and uncertainty of existence, but then so is our ability to eliminate thinking, to eschew it and to forge into endless authorities.

We do come into this world prepared to learn, inquire, and theorize. Whether this develops depends upon the culture to which one is exposed, as well as the temperamental properties and abilities one possesses. Self-corrective inquiry is the cornerstone of classical pragmatism (Smith 1985) and is reflected in some variants of modern cognitive science (Meltzoff 2004; Gopnik and Meltzoff 1999).

Common categories into which we can organize our responses are those that we inherit and those that we acquire (e.g. Carey and Smith 1993; Medin and Atran 1999; Gelman 2003). Evolution selected for a self-corrective capacity in our ability to get anchored to the world around us (Darwin 1859; Dewey 1910). Dewey, for example, understood that science, in part, is an extension of local adaptation, local problem solving.

The psychobiological propensities stem from the constraints of the human mind/brain and its computational abilities. Our hypothesis-generating abilities exist in the specific culture in which we are immersed and that shapes our thinking (Mill 1843, 1870; Peirce 1898, 1992). But some of the categories reflect the cognitive machinations of the mind/brain and how it innately operates in problem solving.

Abduction (hypothesis) is a term coined by Peirce (1878, 1899, 1992) for the genesis of a theory or idea that in turn guides the inference of conclusions, whether by induction or deduction (see also Dewey 1938; Hanson 1958; Heelan and Schulkin 1998). By providing the background against which observations are made (in addition to participating in a culture of inquiry), abduction (hypothesis formation) links ideas to reality, in addition to deduction and induction functions in human problem-solving. Peirce (1868, 1899, 1992) can be understood as generating cognitive models of human information processing and reasoning, representational models that underlie decision making and human action (Johnson-Laird 2001, 2002; Levi 2004; Weissman 2008).

The inductive mechanisms are not random, and the deductive mechanisms not so distant, because they are knotted to abduction. Our inferences are constrained by an orientation to events, the kinds of objects that are detected. Linking mammals and finding what seem like counter examples (such as the platypus, an egg laying mammal) first requires a broad way to link diverse kinds of events, which may (perceptual) or may not (conceptual) have clear common properties. The taxonomic and thematic conditions may be simple or complex, but there is always a background condition (e.g. Murphy 2002; Medlin and Atran 1999, 2004; Giere 2006). Moreover, the inductive devices are broadly conceived in a mind/brain ready to compute statistical probability, draw diverse inferences, and construct models (Johnson-Laird 2001) essential for information processing and coherent action.