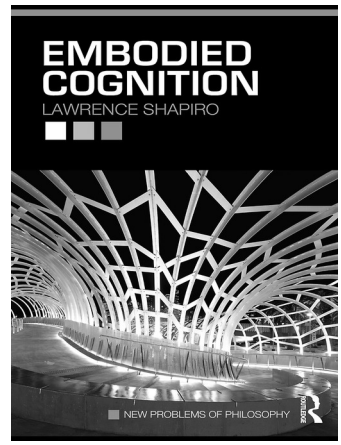
AVANT, Vol. III, No. 1/2012
ISSN: 2082-6710 avant.edu.pl/en

A Critical History of the Embodied Cognitive Research Paradigm

A review of Lawrence Shapiro's *Embodied Cognition*

Author: Lawrence Shapiro
Publisher: Routledge
Release date: 2011
Number of pages: 233



Kevin Ryan,
Department of Philosophy,
Villanova University, USA

Embodied Cognition by Lawrence Shapiro is a fine text that focuses on the issues of body, embodiment, and the environment in cognitive science, philosophy, and psychology. As the title suggests, Shapiro's book offers us a glimpse into the broadly defined, and still growing, research paradigm known as "embodied" cognition. Within this particular paradigm the body and environment are placed in the foreground when it comes to both theoretical and empirical work on cognition and the mind. In terms of the audience for this particular text, we suggest that with its combination of systematic rigor, lucid prose, and multiple well structured examples, it is a worthwhile read for scholars, casual readers, or as a useful addition to any course that contains elements of philosophy of mind or a focus on cognitive science.

One way of understanding Shapiro's project is by looking at the text in two sections. The first section, equivalent to the first three chapters, lays down the basic foundations in preparation for the heavy theoretical and conceptual work found in the second section. Indeed, a combination of several questions motivating this book – taken in conjunction to make up what Shapiro calls its "meta-theme" – are presented by Shapiro as the following: Does the subject material of embodied cog-

nition and standard cognitive science overlap? If so, how should we approach embodied cognition as a result; is it a harmonious extension of standard cognitive science or part of a crippling criticism that presents us with an alternative research paradigm?

In order to figure out the manner in which we should respond to this "meta-theme", the first section of *Embodied Cognition* presents us with an overview of standard cognitive science, explaining its theoretical and methodological grounding as well as offering specific examples of several standard cognitive science experiments (Dawson 1998). In addition, this section includes a discussion of some precursors to the embodied paradigm (such as a detailed and insightful review of Gibson's ecological psychology and connectionism) as well as several different ways the notion of "embodiment" has been interpreted in the embodied cognition literature (Rowlands 1995; Clark 1997). We suggest this section as most useful for people who lack any background in cognitive science or embodiment. However, we furthermore suggest that chapter three is a worthwhile read for even those with some previous knowledge in cognitive science, connectionism, or ecological psychology. Chapter three is not only a solid overview of differences in the embodied cognition literature but, moreover, it plays the most important role in grounding the second section of the book.

In the second section, Shapiro turns from this broad overview to a more rigorous process of taxonomy and comparison between embodied approaches and the standard cognitive science approach. This section is more substantial than the first in regards to both length and depth, containing approximately 2/3 of the book and a focus on adjudicating between several key issues in the field. Shapiro here fleshes out three thematic hypotheses that were first presented briefly in his introductory remarks. In addition, after taking the time to work through each of these themes in detail - highlighting their strengths and weaknesses and several related developments and research methodologies (such as dynamical systems theory) - Shapiro concludes *Embodied Cognition* with an assessment of the field as it stands in regards to both his meta-theme and the particular themes contained therein.

The three themes - Conceptualization, Replacement, and Constitution – correlate to three broad strands of research occurring within embodied cognition (as well as chapters four, five, and six, respectively). Some of the important debates and nuances within these themes are summed up below:

1) The Conceptualization hypothesis is centered on the relationship between an organism's body and the concepts that organism acquires over time (Lakoff and Johnson 1999; Glenberg and Robertson 2000). For example, a common problem faced by the standard cognitive science account is the symbol-grounding problem: how is it that this arbitrary symbol has come to have this meaning? Or, in broader terms, how does linguistic thought acquire meaning? On the Conceptualization account, even the most abstract of concepts are rooted in characteristics of our bodies and our embodied interactions with the surrounding environment. Several

other questions of note under debate in relation to the Conceptualization hypothesis include the relationship between spatiality and language, and the relationship between embodiment and metaphor.

2) The Replacement hypothesis asserts that there is a conflict between standard cognitive science and embodied cognition in which the embodied paradigm should replace standard cognitive science (Brooks 1991; Van Gelder 1998). In general those who assert the need for replacement hold there are deep and irreparable flaws with the standard cognitive science approach. These flaws are generally linked with the standard approach's assumption that cognition is representational and computational. At the same time, the depth and breadth of the Replacement critique stands open to interpretation. For example, is it the case that cognitive states *never* have representational content or *never* take place in a computational manner? The main point of contention in this research strand is figuring out the overall scope of the Replacement hypothesis. If we grant embodiment conflicts with the aforementioned assumptions of standard cognitive science, a way of phrasing the internal debate concerns whether or not an embodied approach should fundamentally replace the entirety of the standard approach, or if it possible to incorporate elements of the standard account into an embodied approach.

3) The Constitution hypothesis deals with an ontological question: what is a cognitive state and where are such states realized? A supporter of the Constitution hypothesis posits a unique role for the body in which the non-neural body literally plays a role in instantiating, or constituting, a putative part of certain cognitive process as opposed to playing a merely causal role in helping to bring about the cognitive states in question. There has been serious debate in terms of how to interpret this ontological claim (Wilson 1994; Clark and Chalmers 1998; Adams and Aizawa 2008). Should we assert, as Clark and Chalmers (1998) do, that the body and environment *constitute* a cognitive state or, on the other hand, should we follow Adams and Aizawa (2008) and argue that this strong claim goes too far in suggesting the mind may occasionally "leak" into the body and world? Another name for Adams and Aizawa's critique is the *coupling-constitution fallacy* and, in light of the Constitution hypothesis, where one falls in terms of supporting or rejecting Constitution can be gauged first and foremost by her intuitions regarding this fallacy.

If we expand our view from the state of embodied cognition to 4E cognition broadly speaking – i.e., the *embodied, extended, enactive,* and *embedded* paradigms – we find the issues Shapiro faces throughout his text are indicative of a deeper set of conceptual issues bursting forth from within 4E cognition as a whole. As others have noted, although the 4E paradigms were originally presented as a "package deal" of sorts, it does not follow that we should uncritically assume they must operate as a homogenous whole. We may even utilize Shapiro's meta-theme concerning embodiment and standard cognitive science as an analytical tool to help sort through the issues currently arising between the different 4E paradigms.

With the reflections from the last paragraph notwithstanding, there is an important cautionary note one must remember in applying a one-to-one mapping of Shapiro's taxonomy to a broader taxonomy of 4E cognition. Since all paradigms of 4E cognition are still growing and forming, it is difficult to get a grasp on what exactly falls within each domain; moreover, it may even be the case that these paradigms are more hostile to each other than standard cognitive science. As such, insofar as we utilize a taxonomy that is not inherently structured to be mutually exclusive - as is the case with Shapiro's taxonomy, where the three different paradigms do not, in themselves, cleanly demarcate all current or potential research questions into solely one of the three hypothesis presented - we run into a high degree of difficulty in reaching an ultimate conclusion about the status of the various paradigms in question. Nevertheless, and with this limitation in mind, Shapiro's work stands out as both an important step in gaining more clarity in the field of embodied cognition, as well as providing us with a solidly grounded taxonomy from which to begin. As Shapiro himself has noted, his taxonomy is one which we could update in the future based on new empirical findings and theoretical work.

In short, anyone who is interested in gaining a grasp on the evolving field of embodied cognition, or anyone who is looking to further enrich her or his knowledge of cognitive science, psychology, or philosophy, should make sure to pick up a copy of *Embodied Cognition.*

Bibliography

Adams, F. and Aizawa, K. 2008. *The Bounds of Cognition.* Malden: Blackwell Publishing.

Brooks, R. 1991. Intelligence Without Representation. *Artificial Intelligence,* 47: 139-59.

Clark, A. 1997. *Being There: Putting Brain, Body, and World Together Again.* Cambridge: MIT Press.

Clark, A. and Chalmers, D. 1998. The Extended Mind. *Analysis,* 58: 7-19.

Dawson, M. 1998. *Understanding Cognitive Science.* Malden: Blackwell Publishers, Inc.

Glenberg, A. and Robertson, D. 2000. Symbol Grounding and Meaning: A Comparison of High-Dimensional and Embodied Theories of Meaning. *Journal of Memory and Language* 43: 379-401.

Lakoff, G. and Johnson, M. 1999. *Philosophy in the Flesh: The Embodied Mind and Its Challenges to Western Thought*. New York: Basic Books.

Rowlands, M. 1995. Against Methodological Solipsism: The Ecological Approach. *Philosophical Psychology* 8: 5-24.

Van Gelder, T. 1998. The Dynamical Hypothesis in Cognitive Science. *Behavioral and Brain Sciences* 21: 615-65.