BOOK REVIEW

A Review of the Second Edition of *Embodied Cognition* by Lawrence Shapiro (New York, NY: Routledge/Taylor & Francis Group; 2019. xvi, 288 pp, ISBN: 978-1-138-74698-5, 978-1-138-74699-2, 978-1-315-18038-0)

The study of embodied cognition is one of the main streams in cognitive science's relatively new intellectual movement. The other streams are distributed cognition, enacted cognition, embedded cognition, extended cognition, and situated cognition. This movement, Mind Beyond Brain, challenges and is often claimed by its proponents to supersede standard (orthodox, traditional, established, or first paradigm of) cognitive science. Shapiro's Embodied Cognition is an outstanding introduction for those unfamiliar with but would like to explore this movement. It clarifies the very idea of embodiment, elaborates the central themes of embodied cognition, and evaluates theories of embodied cognition against standard cognitive science. Those who have read the first edition of *Embodied Cognition* will enjoy reading the updates, additions, and revisions in the second edition, reflecting recent development in embodied cognition studies.

The goal of Shapiro's project remains the same in the 2nd edition. It is to evaluate various embodied cognition theories to see which constitutes a genuine competitor to standard cognitive science. Shapiro classifies theories of embodied cognition into three kinds. They are the conceptualization thesis, replacement thesis, and constitution thesis. These are possible candidates for a challenge against standard cognitive science, which assumes that cognitive activities, including cognitive perception, occur exclusively within the brain's border. According to the conceptualization thesis, cognition is embodied in the sense that different organisms are equipped with radically different sensorimotor systems, which create a different phenomenal experience of the same environmental object and thereby conceptualize it differently. The Replacement thesis is based on a different conception of embodiment that cognition is embodied because it is a transactional, rather than representational, process in which an organism's body engages through interactions with its environment. The constitution thesis is grounded in more radical a conception of embodiment than the conceptualization and the replacement theses to the effect that the sensorimotor transactions are genuine constituents of cognitive processes.

Shapiro's evaluations of these theories of embodied cognition concerning their competitiveness against standard cognitive science also remain the same in the second edition of *Embodied Cognition*. He thinks that the Conceptualization model loses the game because it has not established strong enough a conceptual system against the paradigm of symbolic representation; the Replacement model wins in some areas because it can at best claim rights to only a portion of standard cognitive science's domain, and the Constitution model is not competitive at all because it may well be part or extension of the standard cognitive science. A careful reader can observe that Shapiro tries to stand from a neutral/objective point of view, skillfully avoiding his own ideological preferences.

Changes are conspicuous throughout the second edition of *Embodied Cognition*. Since the first edition's publication, Shapiro's major efforts have been made to update new research involved in and/or associated with the three embodied cognition models. Three new chapters are added to accommodate the recent development of the embodied cognition movement in cognitive science and philosophy, resulting in a 10-chapter book. In comparison, the first edition consists of seven chapters—the updates on the discussions around the Conceptualization hypothesis focus on two main issues. One of them is about the very idea of embodied concepts. The updates in the second edition include both experiments that support and those that oppose the theory that concepts are embodied rather transcendent and purely abstract. The other issue is how the Conceptualization hypothesis challenges the symbolic processing view and updates in the second edition include new discussions on what role embodied concepts play in determining such mental states as preferences and emotions that others exhibit. The texts about the Replacement and Constitution hypotheses are updated to make the book more accessible to learning-teaching processes.

Shapiro's *Embodied Cognition* has been widely used as a textbook or essential reading for upper-level undergraduate classes and graduate seminars. This feature is enhanced and improved in the second edition with chapter summaries and annotated further reading at the end of each chapter. We can make it a more suitable text for cognitive philosophy, philosophy of cognitive science, philosophy of mind, and any philosophical and psychological studies involved in issues concerning general theoretical framework and/or paradigm of cognitive science.

The chapter summaries below may help the reader appreciate the scientific and educational values of Shapiro's *Embodied Cognition* (the second edition).

Chapter 1. Standard cognitive science. This chapter defines the general characteristics of standard cognitive science as a computational and brain-bound theory of mind.

Chapter 2. Challenging standard cognitive science. This chapter summarizes various ideas that challenge the orthodox conception of cognitive science, including Gibson's ecological psychology, Hatfield's noncognitive computationalism, and connectionism. It analyzes the assumptions of standard cognitive science that are most vulnerable to the challenges.

Chapter 3. Conceptions of embodiment. This chapter describes available conceptions or embodied cognition—what it means for cognition to be embodied. Clark and Thelen offer defining characteristics of embodiment. However, they are not all consistent, and they are actually inconsistent in their attitude toward the prevailing representational accounts of the mind.

Chapter 4. Embodied Concepts. This chapter explains in what sense concepts may be embodied and examines empirical evidence both in favor and against the idea of embodied concepts.

Chapter 5. Symbol grounding and the conceptualization hypothesis. This chapter continues the discussion in chapter 4. It focuses on some consequences of the research projects that follow from the design idea of embodied concepts.

Chapter 6. The replacement hypothesis and dynamical systems approach to cognition. This chapter reviews the studies on the idea that the embodiment approach

may be adopted to replace the computational approach and how the advocates of the replacement hypothesis develop this idea within the investigative framework of dynamical systems theory.

Chapter 7. The replacement hypothesis, robotics, and representation. This chapter continues the discussion in chapter 6. It focuses on the issues concerning whether the embodiment theory can be adopted to replace the representational theory and whether robotic studies provide genuine support for the embodiment theory.

Chapter 8. The constitution hypothesis. This chapter surveys the pro and con argument about the Constitution hypothesis. The emphasis is placed on discussing sensorimotor theories of perception and Andy Clark's "loopiness" argument.

Chapter 9. The constitution hypothesis and extended cognition. This chapter continues the discussion in chapter 8. It focuses on the Extended Mind Hypothesis—whether the constituents of cognitive processes can extend beyond the brain—, which was originally proposed and continuously defended by Andy Clark and David Chalmers.

Chapter 10. Concluding thoughts. This chapter evaluates the three hypotheses of embodied cognition concerning their competitiveness against standard cognitive science.

Zhaolu Lu, Ph.D., Professor of Philosophy, Emeritus