P. Robbins and M. Aydede (ed.), *The Cambridge Handbook of Situated Cognition*, Cambridge, UK: Cambridge University Press, 2009. 532pp. ISBN: 9780521848329

THIS VOLIME is the most recent work that creatively articulates the idea of situated cognition and systematically presents a wide range of research projects guided by that idea. It begins with three essays that introduce the basic concept of situated cognition, its scientific backgrounds, and its philosophical roots, attempting to show that cognition explicated in terms of situatedness or situativity is well grounded in science and philosophy and that it takes lead in the new trend associated with embodiment, embedment, enaction, and extendedness in cognitive science. These introductory essays are followed by twenty three articles that cover almost all the important topics in the studies of cognition, attempting to make it the case that situated cognition constitutes a genuine alternative to the traditional or mainstream cognitive science whose defining characteristics are solipsism and formalism. These features make this volume an introduction to frontier issues in cognitive science and philosophy of mind, a resource for understanding updated research on situated cognition, and a thought provoking text for a graduate seminar in philosophy and cognitive science.

Historically, the study of situated cognition was situated in a larger intellectual context. No sooner than cognitive science established its identity as computational modeling of cognitive processes in 1980s did the demand for its revision begin. This demand quickly grew into an intellectual movement consisting of three currents: *returning to the brain*—the ideas of neural architecture and network processing, *returning to the body*—the ideas of embodied cognition embracing the idea of enacted cognition, and *returning to the environment*—the ideas of environmentalized cognition embracing the ideas of embedded and extended cognition. *The Cambridge Handbook of Situated Cognition* is edited with the intent to aggregate these trends into a unified intellectual movement. As the editors of this volume claim in their introductory essay, at the heart of research projects focused on situated cognition is the picture of the mind that a cognitive activity or process depends on the situation or context in which it occurs, whether that situation or context is the brain, the body, or the environment. In this sense this volume provides an indispensible guide to the available theories and controversial issues concerning the new trends in cognitive science.

This volume attempts to present situated cognition as a holistic conception of cognition, which focuses on the contextual, dynamic, systemic, open, nonlinear, and nonlocalized aspects of the mind. Contributing articles are arranged in two parts, “Conceptual Foundations” and “Empirical Developments.” Philosophical readers will enjoy interesting and inspiring discussions on the debate about

extending traditionally dominated intracranial model of studying cognition and mind to transcranial levels, on the issues about transcending the traditional notion of human knowledge as merely an internal property of individuals, and on the topic that cognitive processes in particular and mental processes in general may be dynamically expandable. The readers may also be provoked to entertain the idea that cognitive systems in particular and mental systems in general may be decentralized, the thought experiment on reforming the notion of cognizer that blurs the subject-object distinction and detaches from the idea of the self, and the hypothesis that unifies cognition with action in the way that cognition would no longer be viewed as something that goes on in the mind and then directs behavior that goes in the world. Cognitive scientists will enjoy a variety of overviews written by foremost scientists on sensation, perception, spatial cognition, concept, memory, representation, rationality, learning, language processing, semantics, problem solving, rational decision, consciousness, emotion, and social and cultural cognition.

The reader will find multiple notions of and approaches to situated cognition in this volume, almost a different one in each of the articles. The multiplicity of notions and approaches signifies that the theory of situated cognition is far from mature or unified. At the current state of the relevant researches, a theory of situated cognition is at the best a significant extension of, rather than a radical *alternative* to, traditional computational model of cognitive science that construes cognition as starting with sensory inputs at skin and culminating in representations. Let's call the proponents of situated cognition the situationist, whether they are scientists or philosophers. Situationist claims about the extension take two forms: the weak or scientific form and the strong or philosophical form. The researches in the weak form are attempts to extend the traditional parameters of cognition to incorporate what are traditionally considered as contextual variables that link intracranial processes and states with aspects of the physical and social environment, for examples, bodily states of sensorimotor, adaptive drives of action, functional properties of tools and equipments that are indispensible for accomplishing a cognitive task. The scientific researches exhibited in this volume seem to have followed this line of thinking. For their claims don't go beyond the conviction that cognition is context-dependent and in this sense, situated.

Philosophical studies of situated cognition, on the other hand, tend to take stronger a stance in extending the traditional computational model of cognitive science, viewing situated cognition as a cognitive extension of the mind into brain, body, and the world. Here by cognitive extension they mean that both cognitive *processes* and cognitive *systems* are extended. It has been argued that a computational theory of the mind be expanded to accommodate the idea that cognitive processes can be extended beyond the skull in the sense that intracranial computational processes can be extended to include the processes of sensorimotors, embodied actions, and physical devices. Carrying this argument

one step further, a system whose operations play part in the function of computing is an integral part of the whole system that accomplishes the relevant cognitive task and in that senses it is an integral part of the cognitive system. The situationist argument may also go in the reverse way. For example, it has been argued that if the intracranial system is compelled to be coupled with bodily and environmental systems in order to accomplish a cognitive task and if such a coupling is harnessed, then the cognitive processes are extended.

Is the mind thereby extended when both cognitive process and cognitive system are extended? The philosophical situationist seems to suggest that a system that possesses both intracranial properties and transcranial properties would mean an expanded mind. On this reformed notion, the mind is so dynamic that it is expansible and contractible, that is to say, the mind may expand to aggregate transcranial systems that are indispensible for accomplishing a cognitive task as in the case of perceptual cognition and it may contract back into intracranial systems as in the case of self-reflection. This is a radical move. However, the situationist has not gone far enough to address the issue about what is traditionally assumed the center of consciousness or the cognitive self or simply the cognizer. Here the computation analogy lost much of its thrust. An extended computational process does not necessarily entail an enlarged central processor. Does the cognitive system consisting of both intracranial and transcranial systems have a center that operates cognitive processes? What is it that observes, inspects, determines, and exploits transcranial resources and that recognizes and utilizes the computing results? These seem to be hard questions for the situationist who attempts to embrace the notion of extended cognition. *The Cambridge Handbook of Situated Cognition* does sharpen the issue though it does not offer a focused discussion on this issue.

As it is quite obvious that the notion of situated cognition presented in this volume relies heavily on the ideas of cognition as embodied, enacted, embedded, distributed, and extended operations, those readers interested in the philosophy of cognitive science may be intrigued to see how these new trends in cognitive science are related. It should be noted that the situated cognition movement initially emerged as a cognitive science variant of contextualism, a response to traditional theories of cognition which tend to ignore the context of fulfilling cognitive tasks. The concept of situatedness and that of the embeddedness used to be so much alike that they were once treated the same in literature, for example, in *The MIT Encyclopedia of the Cognitive Sciences*. However, *The Cambridge Handbook of Situated Cognition* goes much further than demanding contextual validity of cognitive studies. Its main concern is not merely whether contextual parameters should be appreciated by cognitive sciences; but rather whether the dualism of being and the world, organism and the environment, cognition and action, etc. as a scientific paradigm, and the solipsism as a research strategy, should be abandoned. Consider that some cognitive tasks (calculation, memory, etc.) can be off-loaded onto the environment. The cognitive process seems to be

distributed among intracranial and transcranial systems. Here sensorimotor activities and processes play a pivotal role. Thus, the brain, the body, and the environment are not merely situations or contexts. This scenario shows that the notion of situatedness must work with those of embodiment, enactedness and extendedness in order to overcome dualism and solipsism. But it does not mean that situatedness generalizes the other concepts.

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