Philosophical Relevance of Cognitive Psychology

Authored by

mohammad looti

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Some philosophy, in particular naturalistic philosophy of mind, is part of Cognitive Psychology. But the interdisciplinary field of Cognitive Psychology is relevant to philosophy in several ways. First, the psychological, computational, and other results of Cognitive Psychology investigations have important potential applications to traditional philosophical problems in epistemology, metaphysics, and ethics. Second, Cognitive Psychology can serve as an object of philosophical critique, particularly concerning the central assumption that thinking is representational and computational. Third and more constructively, Cognitive Psychology can be taken as an object of investigation in the philosophy of science, generating reflections on the methodology and presuppositions of the enterprise.

Philosophical Applications

Much philosophical research today is naturalistic, treating philosophical investigations as continuous with empirical work in fields such as psychology. From a naturalistic perspective, philosophy of mind is closely allied with theoretical and experimental work in Cognitive Psychology. Metaphysical conclusions about the nature of mind are to be reached, not by a priori speculation, but by informed reflection on scientific developments in fields such as computer science and neuroscience (Thagard, 2009). Similarly, epistemology is not a stand-alone conceptual exercise, but depends on and benefits from scientific findings concerning mental structures and learning procedures. Even ethics can benefit by using greater understanding of the psychology of moral thinking to bear on ethical questions such as the nature of deliberations concerning right and wrong. Goldman (1993) provides a concise review of applications of Cognitive Psychology to epistemology, philosophy of science, philosophy of mind, metaphysics, and ethics. Here are some philosophical problems to which ongoing developments in Cognitive Psychology are highly relevant.

Innateness. To what extent is knowledge innate or acquired by experience? Is human behavior shaped primarily by nature or nurture?
Language of thought. Does the human brain operate with a language-like code or with a more general connectionist architecture? What is the relation between symbolic cognitive models using rules and concepts and sub-symbolic models using neural networks?
Mental imagery. Do human minds think with visual and other kinds of imagery, or only with language-like representations?
Folk psychology. Does a person's everyday understanding of other people consist of having a theory of mind, or of merely being able to simulate them?
Meaning. How do mental representations acquire meaning or mental content? To what extent does the meaning of a representation depend on its relation to other representations, its relation to the world, and its relation to a community of thinkers?
Mind-brain identity. Are mental states brain states? Or can they be multiply realized by other

material states? What is the relation between psychology and neuroscience? Is materialism true?
Free will. Is human action free or merely caused by brain events?
Moral psychology. How do minds/brains make ethical judgments?
The meaning of life. How can minds construed naturalistically as brains find value and meaning?
Emotions. What are emotions, and what role do they play in thinking?
Mental illness. What are mental illnesses, and how are psychological and neural processes relevant to their explanation and treatment?
Appearance and reality. How do minds/brains form and evaluate representations of the external world?
Social science. How do explanations of the operations of minds interact with explanations of the operations of groups and societies?

Additional philosophical problems arise from examining the presuppositions of current approaches to Cognitive Psychology.

Critique of Cognitive Psychology

The claim that human minds work by representation and computation is an empirical conjecture and might be wrong. Although the computational-representationalapproach to Cognitive Psychology has been successful in explaining many aspects of human problem solving, learning, and language use, some philosophical critics such as Hubert Dreyfus (1992) and John Searle (1992) have claimed that this approach is fundamentally mistaken. Critics of Cognitive Psychology have offered such challenges as:

The emotion challenge: Cognitive Psychology neglects the important role of emotions in human thinking.
The consciousness challenge: Cognitive Psychology ignores the importance of consciousness in human thinking.
The world challenge: Cognitive Psychology disregards the significant role of physical environments in human thinking.
The body challenge: Cognitive Psychology neglects the contribution of embodiment to human thought and action.
The social challenge: Human thought is inherently social in ways that Cognitive Psychology ignores.
The dynamical systems challenge: The mind is a dynamical system, not a computational system.
The mathematics challenge: Mathematical results show that human thinking cannot be computational in the standard sense, so the brain must operate differently, perhaps as a quantum computer.

Thagard (2005) argues that all these challenges can best be met by expanding and supplementing

the computational-representational approach, not by abandoning it.

Philosophy of Cognitive Psychology

Cognitive Psychology raises many interesting methodological questions that are worthy of investigation by philosophers of science. What is the nature of representation? What role do computational models play in the development of cognitive theories? What is the relation among apparently competing accounts of mind involving symbolic processing, neural networks, and dynamical systems? What is the relation among the various fields of Cognitive Psychology such as psychology, linguistics, and neuroscience? Are psychological phenomena subject to reductionist explanations via neuroscience? Von Eckardt (1993) and Clark (2001) provide discussions of some of the philosophical issues that arise in Cognitive Psychology. Bechtel et al. (2001) collect useful articles on the philosophy of neuroscience.

The increasing prominence of neural explanations in cognitive, social, developmental, and clinical psychology raises important philosophical questions about explanation and reduction. Anti-reductionism, according to which psychological explanations are completely independent of neurological ones, is becoming increasingly implausible, but it remains controversial to what extent psychology can be reduced to neuroscience and molecular biology (see McCauley, 2007, for a comprehensive survey). Essential to answering questions about the nature of reduction are answers to questions about the nature of explanation. Explanations in psychology, neuroscience, and biology in general are plausibly viewed as descriptions of mechanisms, which are systems of parts that interact to produce regular changes (Bechtel and Abrahamsen, 2005; Bechtel, 2008). In psychological explanations, the parts are mental representations that interact by computational procedures to produce new representations. In neuroscientific explanations, the parts are neural populations that interact by electrochemical processes to produce new activity in neural populations. If progress in theoretical neuroscience continues, it should become possible to tie psychological to neurological explanations by showing how mental representations such as concepts are constituted by activities in neural populations, and how computational procedures such as spreading activation among concepts are carried out by neural processes.

Cognitive Psychology is increasingly becoming integrated with neuroscience (e.g. Smith and Kosslyn, 2007; Anderson, 2010). Thagard (2010) sees this development as evidence for the mind-brain identity theory according to which mental processes are neural, representational, and computational. Other philosophers dispute such identification on the grounds that minds are embodied in biological systems and extended into the world (e.g. Thompson, 2007; Clark, 2008). However, moderate claims about embodiment are consistent with the identity theory because brain representations operate in several modalities (e.g. visual and motor) that enable minds to deal with the world.