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Editor's introduction

Carlotta Pavese and Felipe De Brigard

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Editor's introduction

There is a small sushi place called Vine near Duke's East Campus where we like to go for lunch. Four years ago, shortly after we became colleagues, we went to Vine to get some food, and, little did we expect, we ended up with the outline of a grant proposal. Talking about our research interests – skill and memory – quickly revealed many commonalities and avenues for joint inquiry. As such, we set our minds to running an interdisciplinary workshop featuring talks by philosophers, cognitive psychologists, and neuroscientists working at the intersection of memory and skill. Graciously, Duke University awarded us an *Arts and Science Council Faculty Research Grant* to fund the event, which took place in the Philosophy Department on April 22–24, 2016. Many of the papers included in the current volume were initially presented there, so we would like to thank not only the A&S Council for their support but also the workshop attendants for their participation.

The eight articles that compose the current issue cover a wide range of topics at the interface between memory and skill.

In "A competence framework for artificial intelligence research," Lisa Miracchi offers an ambitious proposal to reconceive how to answer what she calls "the key question for Artificial Minded Intelligences," namely "how might artificial processes give rise to minded intelligences." The first step in Miracchi's proposal consists in recognizing that intelligence is a higher-level property of artificial systems, and, thus, it is a mistake to think that it can be specifiable at the computational or algorithmic levels. This, in turn, calls into question the very possibility that traditional symbolic as well as connectionists approaches to AI can truly answer the key question. Instead, Miracchi argues for a different approach, which she calls a "competence framework," that begins with a non-reductive notion of agent and provides a rich set of conceptual tools for fostering research in artificial intelligence.

In *Methods, Minds, Memory, and Kinds*, Alison Springle discusses a recent paper by Stanley and Krakauer (2013) in which it is argued that motor skill requires knowledge of facts. Springle reconstructs their paper as offering two related arguments: the "no skills without propositional knowledge" and the "it is all propositional knowledge" arguments. According to her, if these arguments succeed, they would pose a serious threat to certain variants of anti-intellectualism about knowledge-how. However, Springle argues that, contra Stanley and Krakauer (2013), neither of these two arguments succeed.

In "Intellectualism and the argument from cognitive science," Arihe Schwarts and Zoe Drayson survey different forms of intellectualism about know-how and raise a methodological challenge against them. The argument from cognitive science challenges intellectualism to take into account the empirical findings about skillful behavior coming from the cognitive sciences. This argument is based on a naturalistic approach to metaphysics, according to which findings from cognitive science can inform our metaphysics of mental states. Schwarts and Drayson consider some recent intellectualist responses to the argument from cognitive science and claim that the way intellectualists purport to defend themselves against the argument from cognitive science might reveal an inconsistent attitude toward the evidential relationship between science and metaphysics.

A different perspective on the relations between the concept of skilled action and findings from cognitive science is offered in "Memory systems and the control of skilled action" by Wayne Christensen, John Sutton, and Kath Bicknell. A traditionally attractive view is one which conceives of skilled action as automatic. As such, it is commonly thought that, once a skill is acquired, propositional, declarative knowledge has little to do with the exercise of the skill. This paper argues otherwise, as a careful review of the empirical evidence strongly suggests that declarative knowledge plays a critical role in skilled action.

In "Know-how, intellectualism, and memory systems," Felipe De Brigard discusses what he calls "the empirical argument" against intellectualism, an argumentative strategy employed by many philosophers to attack intellectualism regarding know-how on the basis that the evidence for a double dissociation between declarative and procedural memory is unequivocal. De Brigard critically revisits both new and old evidence that has been put forth in support of this alleged dissociation, and he argues that this evidence is far from clear. As such, De Brigard argues that the empirical argument has no clear scientific ground. This does not mean, however, that the scientific evidence clearly supports intellectualism, for it is suggested that if the objective is to settle the intellectualism versus anti-intellectualism debate empirically (which it may *not* be), then its vocabulary needs to be re-interpreted and rendered empirically tractable.

In "Longer, smaller, faster, stronger: On skill and complexity," Ellen Fridland argues that we can learn about cognitive skills by studying some key characteristics of motor skills. Just like motor skills, cognitive skills develop through practice, where practice refines the internal procedures by which a task is achieved. In motor skills, this kind of technique-oriented practice works in two ways: By fusing together sequences of action elements and by breaking down those sequences into smaller or more manipulatable parts. Fridland argues that this dual-aspect process of motor-skill learning has implications for how we should understand cognitive skills.

In "The psychological reality of practical representation," Carlotta Pavese explores the way in which procedural representation – the sort of representation posited by current psychological and neuroscientific theories of skillful motor behavior – represents. It is argued that, in some important respects, procedural representations represent differently than both purely conceptual representations and purely perceptual representations do. Although procedural representations, like conceptual and perceptual representations, involve modes of presentation, their modes of presentation are, in a sense, clear and distinctively practical. In particular, procedural representations represent tasks from the perspective of the most basic practical abilities of the procedural system. In this sense, they are distinctively *practical* representations. Pavese argues that this notion of practical representation can be generalized from motor tasks to extend to non-motor cognitive tasks and explores the possibility of hybrid representations, representations that are both practical and conceptual (practical concepts) or both practical and perceptual (practical percepts). Pavese maintains that, correctly understood, the notion of practical representation helps defuse a very common but wrongheaded objection against intellectualist theories of know-how – the objection that these theories cannot account for the role of motor and procedural representation in skillful behavior.

Philosophers and psychologists have long been conflicted over whether to consider the acquisition and performance of motor skills comparable to cognitive skills. In the final article, "The intelligent reflex," John Krakauer argues that the seeming distinction between motor and cognitive skills has hinged on the fact that the former are automatic and non-propositional, whereas the latter are slow and deliberative. The physiological and behavioral phenomenon of long-latency stretch reflexes is used to show that "knowing that" can become second nature, so to say, or "knowing how," either immediately or through learning. The picture that emerges is one in which all complex human tasks, at any level of expertise, are a combination of intelligent reflexes and deliberative decisions.

We are firm believers that there is much to be learned from exploring the connections between philosophy of mind, epistemology, and the sciences of the mind. The current special issue seeks to contribute to this fruitful exploration, as we hope that the articles herein will motivate the readership to continue investigating the relationship between memory and skill. Many thanks to the editorial team of Philosophical Psychology and to all the contributors.

Carlotta Pavese and Felipe De Brigard
Duke University, Durham, USA
Q2 carlotta.pavese@duke.edu http://orcid.org/0000-0003-0169-1360