AI & Soc
DOI 10.1007/s00146-013-0495-6

OPEN FORUM

Kant and the simulation hypothesis

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Received: 1 November 2012 / Accepted: 20 May 2013

Abstract Computational imagination (CI) conceives imagination as an agent's simulated sensorimotor interaction with the environment in the absence of sensory feedback, predicting consequences based on this interaction (Marques and Holland in Neurocomputing 72:743–759, 2009). Its bedrock is the simulation hypothesis whereby imagination resembles seeing or doing something in reality as both involve similar neural structures in the brain (Hesslow in Trends Cogn Sci 6(6):242–247, 2002). This paper raises two-forked doubts: (1) neural-level equivalence is escalated to make phenomenological equivalence. Even at an abstract level, many imagined and real actions turn out to be dissimilar. More so, some imagined actions have no corresponding real actions and vice versa, even though neural regions involved in imaginings and real action-perception are the same (Sect. 1). (2) At the implementation level, the hypothesis presents a mutually exclusive view of imagination and perception whereby imagination functions in the absence of the sensory feedback and is action based. Both these issues are contested here: Neither imagination functions in the absence of perception nor all forms of imaginings are action based; it is, rather, about conceiving possibilities which emerge during the perceptual stage itself (Sect. 2). For the modal aspect to arise, it is submitted that an integrative framework is required which Kant can provide for whom imagination is an indispensable part of perception. Kant's views on concept-formation are presented here to illustrate this aspect (Sect. 3). The Paper is concluded with emphasizing the relevance of Kant's views to the problems identified in the two sections.

Keywords Computational imagination · Simulation hypothesis · Modal imagination · Kant

1 Introduction

Recent years, post-1990s, have witnessed a flurry of interest in implementing imagination in artificial systems. Rather, imagination is increasingly being seen as a route to machine consciousness. Alexander and Dunmall (2003) list it as one of the prerequisites for a conscious machine. Clowes et al. (2007, 10) believe that it is the building of the inner world and capacity to imagine in a robot that makes machine consciousness research different from typical artificial intelligence research. The term computational imagination (CI) comes from Setchi et al. (2007) who call for a whole new field of research especially dedicated to implementing imagination in the artificial systems. Following Searle (1980), it is proposed to make here a distinction between weak and strong approaches to computational imagination: Weak that merely attempt to simulate human imagination in an artificial system and strong that make an additional claim by such simulation systems actually 'imagine'. Whereas strong CI approaches are manifested in the works of Stein (1991), Thaler (1996), Chella et al. (2005) and Setchi et al. (2007); weak CI approaches are exemplified in Marques and Holland (2009), Shanahan (2006) and Gigliotta et al. (2010). They limit themselves to designing programs which enable them *mimic* certain functions commonly associated with imagination in humans and do not put forward any phenomenological claim. Both, save Thaler (1996), however, share

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Published online: 09 July 2013