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Distributed Agency in Avatar-based Learning

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Distributed agency between humans and nonhumans is a concept that has been around for some time and has been approached from different perspectives, including artificial intelligence (Rammert, 2008), business administration (Whittle, Suhomlinova, & Mueller, 2010), literary criticism (Taylor, 2009), education (Facer & Sandford, 2010), and sociology (Taylor, 2001). One of its assumptions, of special interest in this chapter, is that human autonomy is a myth (Rammert, 2012), meaning, in this case, that we, as human beings, cannot act without assistance from the artificial artifacts around us. The idea that we depend on what is available in our environment to achieve our goals is certainly not new and can be traced back to Aristotle's *Nicomachean Ethics*, as well as being an important concept in more recent theories of moral and intellectual development, including, for example, the influential ideas of Piaget (Kohlberg, 1981) and Vygotsky (Cole & Engeström, 1993). There is no disagreement between these more traditional theories and distributed agency concepts, as long as the artifacts are treated as tools, in what may be described as agent-artifact interaction (Harris, 2012). The issue arises when these artifacts are treated as agents in their own right, from a functional parity perspective (Harris, 2012), producing what could then be described as agent-agent interaction, as implied in a stronger version of the distributed agency perspective. This is the

point where dissenting voices are heard, mainly from researchers in the Human-Computer-Interaction (HCI) area (Rogers, 2004; Kaptelinin & Nardi, 2006; Nardi & Kallinikos, 2010), leading to the question addressed in this chapter: are the artifacts we use daily in our work, education, and leisure to be seen as agents, with independent identities, or are they just mediators that we use to achieve our purposes when we interact with other people?

This is the question I will try to answer in this chapter, divided into three parts. In the first, I argue that human action is goal oriented, which entails the need to emphasize the role of mediational means. The basic assumption in this goal-oriented perspective is that there is no way for human beings to achieve their goals if the tools are not there to help them through.

In the second part, I propose a difference between agency and mediation, emphasizing that, from a distributed perspective, the difference cannot be made in terms of hierarchy between them, since both agents and mediators have to be necessarily present for goal-oriented action to occur, but in terms of what could be referred to as symmetric distribution. The issue addressed at this point is whether agents and mediators can trade places, so that an agent sometimes acts as a mediator, and vice versa.

Finally, in the last part, I show some examples of symmetric distribution, considering computer avatars as used in games and education. Avatars will be seen as typically inhabiting the borderline between agency and mediation, sometimes replacing humans as agents, and sometimes acting as tools. They empower us most when we manage to make them act as tools.

The chapter is admittedly speculative, but it is intended to be more refraction than reflection. In physics, as we all know, there is reflection when light bounces back to its source, practically unaffected by the mirror. In refraction, however, light does not bounce back but passes through a new medium, and is affected by it, sometimes to the point of producing fire, as in the example of the magnifying lens. Speculation is used in this sense here, hopefully refracting dispersed ideas on distributed agency into one point, with a focus on how the affordance provided by distributed agency can be used to empower people.

Goals and Tools

For human action to occur two assumptions have to be made. The first is that people are goal oriented, meaning that when they do something they do it motivated by a desire to reach a specific goal. If we type a string of letters in the Google search box, for example, we do it for a purpose, be it something as gen-