

## BOOK REVIEW

Alač, Morana (2011). *Handling Digital Brains: A Laboratory Study of Multimodal Semiotic Interaction in the Age of Computers*. Cambridge, MA, USA: MIT press; 199 pages.

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One of the fundamental themes in human–technology studies relates to grasping better the processes of interaction and the ways they are meaningful to us. Related to this, one can currently witness a shift from traditional cognitive science to a position where the focus is on the constitutional role of human body as a basis of cognition and experience. This new philosophical position of *embodiment* conceptualizes the human mind essentially in terms of the living body being involved actively within its environment. The book by Morana Alač quite tangibly illustrates the issues of embodiment being pervasively present in human meaning making and social interaction. Through an ethnomethodological account, Alač’s book specifically reveals the view of the bodily engagement involved in interactions and social cognizing held by neuroscientists in an fMRI (functional magnetic resonance imaging) laboratory environment while working with brain imaging data.

The theoretical stance of the author is a mixture of various disciplines, including the phenomenology of Merleau-Ponty and Heidegger, distributed and situated cognition, social sciences, and the Peircean paradigm of semiotics. However, the emphasis of the study is on its ethnographical endeavor for the “inside look,” that is, from within the cultural framework of a given community of practice. In Alač’s study, the focus is on how science is being conducted practically in a sociotechnological domain of an fMRI laboratory. The method utilized by the author is based on conversation analysis, while importantly extending its scope of examination beyond verbal interaction. With videotaped documentation of the interactions as a starting point, the method taps into the embodied dynamicity of the setting in which the scientists’ verbal and nonverbal communication with each other and their engagement with technological tools, computer screens, or ad hoc drawings takes place.

Although the study deals with the scientists interacting with technology, its goals differ from typical studies of human–computer interaction (HCI). Rather than trying to, for example, optimize the interaction process or to offer design solutions, the author’s goal has been to bring

forward the gestural acting (or enacting) engaged within communication and thinking processes, as well as the metaphorical ways in which scientists handle brain scans as if they were material objects. These bodily events may at first appear as mere trivial routines of interaction but, through the author's analysis, they lead to some significant implications.

One of the consequential arguments of the author is that brain-imaging data should not be seen merely as visuals, but rather as something that scientists engage with in a multimodal manner. Moreover, these brain visuals should not be simply taken as representations with some self-standing meanings, even though they have undeniable indexical relations to the brain's structures and functions. Rather, the author suggests, these visuals should be conceived as diagrammatic *fields of interaction*. Thus, what is seen in the image is grasped by enactive inspection of visuospatial features that are actively engaged in a manner similar to how we treat the objects and processes of the everyday world. In practice, such engagement often comprises physical gesturing over the image that highlights the tangible and dynamic nature of the comprehension. The shift from a representational object to a process of its enactment puts the focus on the active agent trying to understand what he or she sees (or what remains hidden), but it also brings forward the process of distribution, in other words, how knowledge and meaning-making are distributed in practices of a research community that bring together social agents and technology.

Although not the main topic of the book, a convenient added benefit of taking an ethnographical peek into the practices of neuroscience is that the reader has a chance to learn a thing or two about fMRI research itself with respect to both its strengths and restrictions. The very choice of studying the work of neuroscientists is interesting and relevant, keeping in mind the rather high expectations laid out on brain imaging methods for revealing the underpinnings of the human mind. However, this choice is not coincidental: Alač explicitly acknowledges that the social sciences need to develop their position in relation to neurostudies. For example, she points out the narrowness in cognitive neuroscientists' interpretation on the embodiment of the human mind. In particular, her critique is addressed to the supposition that the mind resides only in the brain.

Alač's book is well written and thought provoking, and it should make good reading for people interested in issues of, for instance, ethnographic research, science studies, interaction analysis, or cognitive science. By emphasizing the social dimension of cognition, Alač makes a worthy contribution to the still rather scattered and disconnected theoretical field that deals with the embodiment of the human mind. Nevertheless, in my opinion, this theoretical development falls a little short in its integration with comparable trends of embodied cognition. For example, leaving out the theories of Francisco Varela and Alva Noë is a bit of a missed opportunity because these notable philosophers of embodied cognitive science also have defined cognition and perception fundamentally in terms of enaction. They too have emphasized the interaction-oriented aspects of cognition that go beyond the human brain, and it would have been interesting to read a discussion about the similarities and differences between their theories and the book's approach.