

When a robot is social. Author's introduction²¹⁴

This article stems from an ethnographic study of a research laboratory that designs social robots. It describes how humans look at, gesture, move toward, spatially position and talk to a robot and each other. The robot that this paper describes is geared toward educational settings. As suggested by mass media outlets, we often fear that an introduction of social robots in classrooms would put teachers out of work and generate alienation. This paper implies a somewhat different take: it suggests that before worrying about possible futures, we need to take into account how robots are designed and engaged with at present. The description of everyday activities in the design of a social robot brings forth the *interactional relationality* between humans and the robot. This relational view of robots and their designers suggests that a presence of the robotic technology in a classroom may generate restructuring but does not simply imply an erasure of the human participation in teaching and learning.

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Morana Alač is the Associate Professor at the Department of Communication at the University of California, San Diego, since 2012. Education: Ph.D. in Semiotics, University of Bologna (2002); Ph.D. in Cognitive Science, University of California, San Diego (2006). She is trained in semiotics (with Umberto Eco) and cognitive science (with Ed Hutchins). Her research deals with ordinary, interactional and practical aspects of science. In particular, she is interested in the ways in which scientists study cognition in environments heavily sustained by advanced techno-

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logies - brain imaging and machine learning laboratories. By looking at live activities in the laboratories, Alac pays particular attention to the interface between the body and technology. She thinks about that interface in terms of dynamic, embodied, semiotic enactments constitutive of scientists' action and interaction.²¹⁵

Selected Publications:

Morana Alac. 2011. *Handling Digital Brains: A Laboratory Study of Multimodal Semiotic Interaction in the Age of Computers*. MIT Press.

Morana Alac. 2009. Moving Android: On Social Robots and Body-in-Interaction. *Social Studies of Science*, 39/4: 491-528.

Morana Alac. 2008. Working with Brain Scans: Digital Images and Gestural Interaction in fMRI Laboratory. *Social Studies of Science*, 38/4: 483-508.

Morana Alac. 2005. From Trash to Treasure: Learning about the Brain Images through Multimodality. *Semiotica*, 156-1/4: 177-202.

Morana Alac. 2004. Negotiating Pictures of Numbers. *Journal of Social Epistemology*, 18:2: 199-214.

Morana Alac & Edwin Hutchins. 2004. I See What You are Saying: Action as Cognition in fMRI Brain Mapping Practice. *Journal of Cognition and Culture*, 4:3: 629-661.

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²¹⁵ Sources: http://sciencestudies.ucsd.edu/people/_faculty-staff/faculty/dept-of-communication/morana-ac.html

When a robot is social: Spatial arrangements and multimodal semiotic engagement in the practice of social robotics

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Abstract

Social roboticists design their robots to function as social agents in interaction with humans and other robots. Although we do not deny that the robot's design features are crucial for attaining this aim, we point to the relevance of spatial organization and coordination between the robot and the humans who interact with it. We recover these interactions through an observational study of a social robotics laboratory and examine them by applying a multimodal interactional analysis to two moments of robotics practice. We describe the vital role of roboticists and of the group of preverbal infants, who are involved in a robot's design activity, and we argue that the robot's social character is intrinsically related to the subtleties of human interactional moves in laboratories of social robotics. This human involvement in the robot's social agency is not simply controlled by individual will. Instead, the human-machine couplings are demanded by the situational dynamics in which the robot is lodged.

Keywords: body; design; gesture; human-robot interaction; laboratory; social agency; social robotics; spatial organization.

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