

## **Embodied Communication with a Virtual Human**

**Ipke Wachsmuth**

Faculty of Technology & Center for Interdisciplinary Research (ZiF)  
University of Bielefeld  
ipke@techfak.uni-bielefeld.de

The aim of the ZiF research year on Embodied Communication (2005/2006) has been to launch and explore a new integrated and interdisciplinary perspective that accounts for the crucial role of the body in communication. The core claim of the Embodied Communication Perspective is that human communication involves parallel and highly interactive couplings between communication partners. These couplings range from low-level systems for performing and understanding instrumental actions, like the mirror system, to higher systems that interpret symbols in a cultural context. Going beyond the traditional engineering model of signal transmission, the Embodied Communication Perspective envisions a multi-modal, multi-level, dynamic model of communication. Rather than "exchanging meaning" in back-and-forth messaging, contributors co-construct meaning interactively, using all information available about the other's body and its relation to the environment. This perspective hence provides a novel framework for the study of gesture and forms of nonlinguistic interaction in multimodal dialogue and face-to-face conversation.

A particular goal of the research year on Embodied Communication has been to explore how the modeling of communication with artificial agents can advance our understanding of key aspects of cognition, embodiment, and cognitive processes in communication. Creating an artificial system that reproduces certain aspects of a natural system can help us understand the internal mechanisms that have led to particular effects. Virtual humans, i.e. computer-generated entities that look and act like people and engage in conversation and collaborative tasks in simulated environments, have become prominent in the study of communication. The idea of virtual humans acknowledges that natural communication is largely social and envisions future computer systems that are social actors rather than tools. Taking the virtual human "Max" as an example, the talk will outline some ideas how virtual humans can provide explanatory models in the form of behavior and process simulations and how they can help identify primitives and central mechanisms of embodied communication from a machine modeling perspective.