

## **UC Merced**

# **Proceedings of the Annual Meeting of the Cognitive Science Society**

### **Title**

Communicative Intentions in the Mind/Brain

### **Permalink**

<https://escholarship.org/uc/item/80n3v1d0>

### **Journal**

Proceedings of the Annual Meeting of the Cognitive Science Society, 35(35)

### **ISSN**

1069-7977

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### **Publication Date**

2013

Peer reviewed

## Symposium Communicative Intentions in the Mind/Brain

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**Keywords:** communication; evolutionary psychology; neuropsychology; neuroscience.

The nature of intentions is a perpetual locus of interest for investigators of the human mind. Both occidental and oriental philosophical traditions treat intentions as the root of behavior; and many possible classifications have been offered in order to try to systematize the different types of intention. Moreover, recognition of intentions in others appears to be central to child development, and necessary for becoming a competent member of the society (Tomasello, 2008).

Recent work in the social neurosciences has focused, in particular, on social intentions, which may underpin the human predisposition toward joint, collaborative behavior. Communicative intentions are particularly central, yet have a puzzling recursive form (Bara, 2010). That is, given an actor's intention to convey a particular informational content, *C*, the actor must choose an act *A*, so that the partner will infer the actor's intention to communicate *C*. Yet the partner's inference itself depends on reconstructing that the actor would have chosen *A*, in order that the partner to infer the actor's intention to convey *C* (Grice, 1975).

The symposium on communicative intentions offers an analysis from a wide range of perspectives on these issues: evolution and development (Tomasello: Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany), psychology and game theory (Chater: Warwick Business School, United Kingdom), neuropsychology (Varley: Division of Psychology and Language Science, University College London, United Kingdom), cognitive neuroscience (Bara: Center for Cognitive Science, Turin, Italy).

### **Michael Tomasello: Communicating without Conventions**

The evolutionary and developmental approach will provide a comparison between the gestural communication of human children and their nearest primate relatives, the great apes. This comparison reveals some of the cognitive and social-cognitive skills necessary for the human way of communicating that are present developmentally, and were probably present evolutionarily, before the emergence of conventional linguistic communication.

### **Nick Chater: Virtual Bargaining as a Micro-Foundation for Communication and Joint Action**

The psychological and game-theoretic approach outlines how a new theory of strategic social interaction, which extends the standard game theory of economics, can provide a rational theory of joint action; and how communication can be viewed as a special case of joint action, where both actor and partner must jointly infer the same content, *C*, given a mutually observed communicative act, *A*.

## **Rosemary Varley: Communication without a Functioning Language System**

Insights from neuropsychology and in particular, the relationship between language and communicative intentions, will be explored by examining the impact of severe aphasic language impairment on signaling communicative intentions and decoding the intentions of others. The evidence from acquired aphasia indicates considerable autonomy between language and communicative intentions in the established cognitive system (Willems, Benn, Hagoort, Toni & Varley, 2011).

## **Bruno Bara: The Intentionality Neural Network**

The neuroscientific approach will describe a model of a dynamic intentionality network consisting of four brain regions, i.e. the right and left temporo-parietal junctions, the precuneus, and the anterior paracingulate cortex (Ciaramidaro et al., 2007). This model is based on a novel theoretical distinction among varieties of intention, which differ by the nature of an individual's pursued goal (private or social) and by the social interaction's temporal dimension (present or future). The intentionality network, which is independent from modality of expression, either linguistic or gestural (Enrici, Adenzato, Cappa, Bara & Tettamanti, 2011), shows different activation patterns in relation to the nature of the intentions. The theoretical model of intention proposed contributes to enlarge our knowledge on the neurobiological bases of intention processing, in both healthy people and in people with impairments to the neurocognitive system that underlies intention recognition (Bara, Ciaramidaro, Walter & Adenzato, 2011).

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The symposium is limited to 4 participants, in order to allow 20 minutes of final discussion among the participants and with the public.