

PHILOSOPHY MEETS COGNITIVE SCIENCE



Stiftung
Mercator



Mercator
Research Group

Organization and contact: Prof. Dr. Markus Werning.

Website: www.rub.de/phil-lang.

Venue: Thu., 20 May 2010, 16-18h, in room HMA 40.

All interested students, scientists, and scholars are cordially invited to the following talk of the research colloquium:

Dr. Jurjen van der Helden

(University of Groningen)

Learning in action. Three EEG methods to predict sequential action learning

Skills are structured typically in a sequential way. The acquisition of new skills thus relies on how sequential relations are developed. One way to develop a sequential representation is to learn it first-hand through trial-and-error learning. The result of an action reinforces that particular action within the sequence. Negative feedback signaling erroneous actions typically result in a negative deflection on frontocentral sites in the ERP, known as the Feedback Related Negativity (FRN). It has been established that reinforcement learning is reflected in this FRN and thus reflects the learning process. Theoretically, it would be predicted that the FRN magnitude is also indicative for future learning, but this aspect was not yet established. In the first experiment I would like to present data that support the view that the FRN is predictive for future learning in sequential learning. Another way to acquire new skills is through observation of others' actions. Mankind appears to be unique in her ability for observational learning and the transmission of acquired knowledge and behavioral repertoire through observation of others' actions. In the second EEG study I would like to present, the electrophysiological mechanisms were investigated supporting action observation and motor imagery for observational learning by focusing on (coherent) visual and motor activity in alpha/mu frequency range. In these two experiments three different EEG methods are used to investigate sequential learning mechanisms. In the last part of my talk, I would like to discuss how such methods may be of high value in the research on semantics and episodic memory.

Dr. van der Helden, a psychologist by education, did his PhD with Berry Wijers in Groningen on visuospatial attention mechanisms and how they are influenced by illusory Kanizsa figures. In Enschede he worked with Willem Verwey on representations of serial action. He has published a.o. in *Cerebral Cortex* and *Advances in Cognitive Psychology*.