

**Alistair Knott, University of Otago, New Zealand**

**Titel: *Sensorimotor cognition and Minimalist syntax***

In this talk I propose a hypothesis linking elements of a model of theoretical syntax with neural mechanisms in the domain of sensorimotor processing. The syntactic framework I adopt to express this linking hypothesis is Chomsky's Minimalism: I propose that the 'Logical Form' (LF) of a sentence reporting a concrete episode in the world can be interpreted as a description of the sensorimotor processes involved in apprehending that episode. This proposal uses Chomskyan syntax as a vehicle for expressing an embodied account of sentence meanings.

My argument for a sensorimotor interpretation of Minimalist LF involves a detailed case study of one particular concrete episode, in which a man grabs a cup. The processes involved in executing and perceiving reach-to-grasp actions have been intensively studied in neuroscience. Synthesising recent results, I argue that both processes involve a well-defined sequence of attentional and motor operations---a 'deictic routine', in the terminology of Ballard et al (1997)---featuring multiple representations of the agent, patient and action. There are strong similarities between the structure of this deictic routine and the LF structure of the transitive sentence 'The man grabbed a cup' and its equivalents in other languages. These suggest interesting sensorimotor interpretations of the different positions of subject, object and verb in the LF structure, and of the movement operations which link these positions.

Interpreting LF as encoding a sensorimotor routine also suggests how Minimalism might serve as a model of sentence processing and syntactic development. I conclude by introducing a neural network model of sentence generation which takes sensorimotor routines as input and learns to generate sentences as output. If LF structures are interpreted as describing sensorimotor routines, this model can be construed as an implementation of the parameter-setting mechanisms through which an infant learns to map LF structures onto surface sentence forms.

A Knott. *Sensorimotor Cognition and Natural Language Syntax*. MIT Press (2012)

M Takac, L Benuskova and A Knott. Mapping sensorimotor sequences to word sequences: A connectionist model of language acquisition and sentence generation. *Cognition* 125:288-308 (2012)