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### The social cognitive actor

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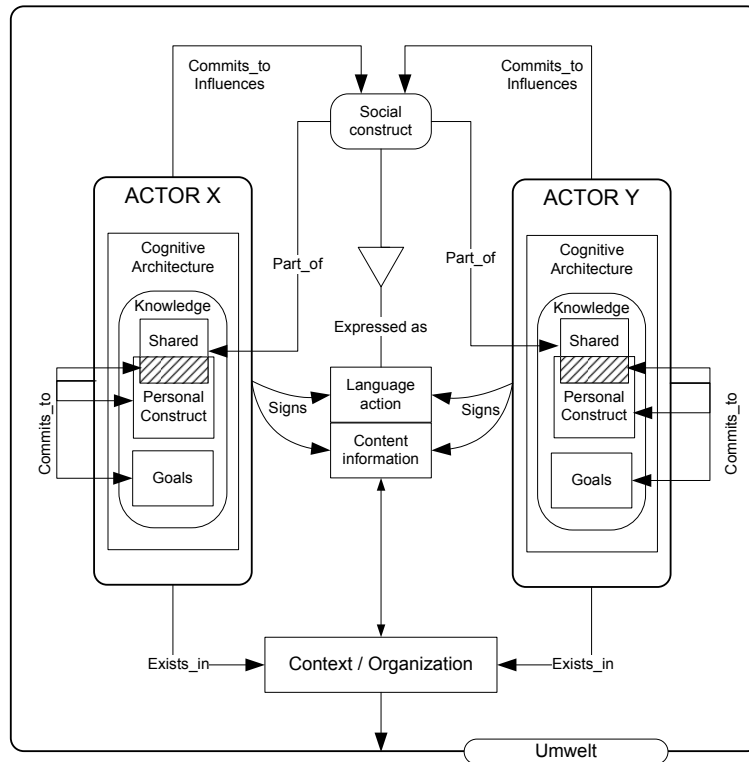
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# The Social Cognitive Actor

## A multi-actor simulation of organisations

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**Rijks*Universiteit* Groningen**

**The Social Cognitive Actor**  
**A multi-actor simulation of organisations**

**Proefschrift**

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door

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geboren op 31 januari 1974  
te Assen

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Prof. dr. R. J. Jorna

Beoordelingscommissie: Prof. dr. K. Liu  
Prof. dr. A. M. Sorge  
Prof. dr. R. Sun

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## Preface

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The dissertation that is in your hands is the fruit of the last four years of research done in the field of Multi-Agent Systems, Artificial Intelligence, Informatics, Cognitive Science, Social Science and Organisation Studies. Bringing together different disciplines has been a challenging and a complex task. The outcome, put together in a simulation model, will hopefully help others discover new ways of practising the art of cognitive and social modelling.

My background as a mechanical engineer may not seem to be in line with the research that I am currently involved in. Indeed, constructs of the philosophy of the mind, social construction, multi-actor software programs, and social behaviour seem to differ, in essence, from mechanical engineering.

However, this dissertation focuses on the process of construction as in mechanics. Only this time, the focus is on social construction. It is probably the topic of social construction that (re-)constructed my thoughts about the (social) world we live in.

I want to thank my promoters Prof. Henk Gazendam and Prof. René Jorna for this change in looking at the world around me. Although the many discussions I had about the functional structure of the mind and how social constructs, shared by people, influence behaviour even at the lower level of thinking that complicated my vision of the world, they also challenged me to the extent of developing a workable model.

The role of a PhD candidate is a social construction in its own right, created by a mutual agreement between the University of Groningen, the SOM research school, my promoters and I. I want to thank the University of Groningen, SOM and my promoters for giving me the opportunity to engage in this social construction.

Many people played an important role in contributing to the work delivered in this dissertation. In the early phase of my PhD, I worked together with Diederik Kraaikamp, Luit Gazendam, René Jorna, Tomas Klos, Jos Schreinemakers and Bart Nootboom on Agent-Based Computational Transaction Cost Economics. I thank all of them for the fruitful discussions I had with them that delivered new ideas and experience of how a cognitive (social) actor should be modelled (see Kraaikamp, 2003).

Next, a period of programming started that resulted in a software package which can be downloaded from <http://sourceforge.net/projects/act-rbot>. The software programming consumed many hours of dedication not only by me but also Gijs Roest. Our joined efforts resulted in the RBot-Project (see Roest, 2004) in which Gijs concentrated at creating a new memory model that incorporated the ACT-R model successfully. Gijs, thank you for being such a critical and inventive colleague.

The people who probably understand my work the best are Henk Gazendam and René Jorna. Henk Gazendam is to be admired, because he not only reviewed my theoretical work, but also my software by transforming his SmallTalk skills into JAVA. He is to be complimented on assimilating many classes and lines of software code. Henk was a constructive reviewer. He not only provided comments like 'onzin' (nonsense) on my work, but also shared ideas and gave detailed arguments that helped improve my work tremendously. Henk, thank you very much for your detailed feedback.

My second supervisor René is an intelligent and very active researcher who is interested in the cognitive actor; according to René, an actor is *not* an (economic) agent. As a researcher and a cognitive psychologist, he managed to open up the world of cognition to me. As a managerial actor, René always tried to find a way to make things possible, be it for research purposes or others, and I have to admit, he always found a way. René, thank you for sharing your cognitive skills and your passion for research with me.

I also want to thank my promotion committee: Prof. Kecheng Liu as an organisational semiotician and applied informatics expert, Prof. Arndt Sorge as an organisational sociologist and Prof. Ron Sun as a cognitive scientist and cognitive multi-agent modeller. I am grateful to them for their suggestions, time and the careful reading of my manuscript. I also would like to thank Prof. John Michon who as a cognitive scientist and Prof. Ron Stamper who as an expert in organisational semiotics provided valuable insights.

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A special thank you goes out to Niels, one of my paranimfen, who always was in for discussions, solved programme puzzles and was a great support throughout my PhD years.

Next, I want to thank my friends in Utrecht and Heerenveen, as well as my family. In particular, I want to dedicate this work to my uncle, a pure scientist (a physicist), who loved academic work as much as I do. I would also like to thank my mother Jannie, Jans, Hanita, Rolf, Mark and Frank who had to bear the burden of listening to many stories about the challenges of doing a PhD. Besides that I want to thank my family in law Polat, Gülten, Banu, Alper, Ilay, Çigdem and Ali.

And finally, I want to thank my wife Ayşe. Ayşe gave me so much, not only her love and care, but also academic support and the consistency of her bright mind.

Groningen, 24 October 2006

Martin Helmhout





*To the past and the future,  
to my father and son, Anne.*



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