Preface

The term "social" has become fashionable recently, describing various kinds of interactions between "agents", comprising artificial hardware and software agents as well as animals and humans. Moreover, work on "social dynamics" often combines approaches on different levels of abstraction and involves different degrees of behavioural or cognitive complexity of the agents which are studied. In robotics and multi-agent-systems the term "social" is often used in a sociobiological interpretation, based on game-theoretical concepts. Research on intelligent software agents and artificial characters focuses more on aspects of intelligence like personality, believability or emotions, which some people regard as non-rational. In all these different fields and applications the term "social" is most often used with a very general, common sense meaning, without providing a basis for the evaluation of "social expertise".

The symposium will analyse various forms of social interaction, their functions and the preconditions that make them possible, in both natural and synthetic agents, and in physical and software environments. In particular, we wish to address the origins and development of social expertise with respect to the concrete realisation of an artificial system. This includes both the external behaviour and the internal cognitive and motivational abilities of an agent. This means that the discussions should focus on cross-technological concepts (excluding those restricted to a specific hardware or software technology). This general focus is necessary in order to find a common language between participants from different fields.

We propose the following assumptions concerning social expertise:

a) Social expertise in natural systems is normally linked to an embodied agent situated in a concrete dynamic environment. The complexity of human social behaviour in such contexts is correlated to the complexity of a human body and our ability to perceive and produce subtle bodily changes, including facial expression, posture and tone of voice.

Recently the development of electronic communication has shown that rich social interaction is possible without direct physical contact or mutual physical perception. The speed of electronic communication enables a type of immediacy not previously achievable by paper-based correspondence, and enables new forms of interaction in which physical appearance and even gender of participants have no role since they are not known to others. In future, virtual reality environments may, like masked balls, enrich the forms of social interactions in which people adopt temporary personas linked to temporary physical characteristics.

Despite these variations in context there are common themes:

- Social expertise is learnt and shaped by a social environment during the ontogeny and life-time of an agent
- Genetic determinants can also play a role (e.g. in sexual interactions, and parental protectiveness)
- Social expertise includes intellectual, motivational, emotional and behavioural dimensions

b) Although artificial agents are still far from the complexity of natural systems, future robots and software agents will need to interact with each other, and with humans, using types of social expertise that may begin to match human social competence. For some purposes, e.g. in disembodied or distributed agents, new forms of social interaction may be developed.

Several questions for the design of socially intelligent agents arise from these assumptions:

- To what degree do artificial agents which communicate with humans have to be human-like (e.g. possess a human-face, mimic human speech or gestures and so on) in order to make them socially acceptable to human societies?
- What if anything will be lost by excluding such human physical characteristics?
- What is the role of social, rational, and emotional intelligence in social interactions? How much can, or should, social interactions be based on "reactive" as opposed to "deliberative" processes?
- What forms of communication are adequate for specific social interaction situations, comprising language (written or spoken) or non-verbal communication (e.g. facial expressions, body movements)?
  What kind of sensory and motor competence (e.g. visual inputs, sound inputs, tactile information, odor) is necessary for successful social interactions of different kinds (e.g. playing a ball game vs collaborating on a philosophical or mathematical problem)?
- How do social relationships develop? How are individuals recognised? What degree of sympathy or empathy of humans with artificial devices is required? How many significantly different forms of relationship are there? Are there some which are essentially geared to fulfilment of functions (X and Y collaborate on a common task, X and Y exchange goods or services, X works for Y, etc.)? How many are judged worthwhile in themselves (e.g. friendship, play)?
- Is a common social interface possible which could be applied to heterogeneous groups involving humans and artefacts?

The symposium will focus on studies in human-like social behavior and expertise and on approaches to designing and evaluating artificial systems which interact socially with humans in an acceptable way.