EDITORIAL

It is with great pleasure and pride that we present to you this first issue of *Knowledge, Rationality and Action*.

In 2002 I approached Floor Oosting of Kluwer Academic Publishers with the idea to start a journal in the area of reasoning about Knowledge, Rationality and Action. Although there are some prestigious conferences organized around such topics as epistemic logic, belief revision, game and decision theory, rational agency, planning and theories of action, there is – to the best of my knowledge – no single journal that covers this multidisciplinary area. In my opinion, a journal dedicated to this area will have added value: it will serve as a platform for discussion and as a carrier of articles that are the result of research conducted by those working in these topical and important fields.

Floor's first and spontaneous reaction "Doesn't this fall within the scope of philosophy?" was both clear and instrumental in focussing our further discussion on the aims and scope of the journal. Floor was wrong, of course: what I had in mind was the kind of problems addressed by researchers from the disciplines of Computer Science, Game Theory, Artificial Intelligence, Knowledge Representation, Logic and Agents. Problems that address artificial systems that have to gather information, reason about it and then make a sensible decision about what to do next.

On the other hand, Floor was absolutely right! Research in the disciplines mentioned has greatly benefited from and been inspired by Philosophers – not only with respect to the themes such research addresses, but also with respect to the tools used. To illustrate:

- Epistemic logicians in computer science acknowledge Hintikka as their origin;
- The primary question Artificial Intelligence aims to answer ("Can machines think?") is a philosophical one, and it is indeed hard to tell the pioneers in AI (Turing, Minsky, McCarthy) apart from philosophers;
- Knowledge Representation (KR) is a flourishing area since Gödel's incompleteness theorem, and one can even trace back a modern area in KR such as 'ontologies' to Aristotle's *Categories*.

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Therefore, *Knowledge*, *Rationality and Action*, is as relevant to philosophers as it is to researchers working in the fields of Computer Science, Game Theory and Artificial Intelligence. For this reason, I am more than happy that John Symons offered me the opportunity to have *Knowledge*, *Rationality and Action* appear under the umbrella of the journal *Synthese*. It will be published as a special section of this renowned journal. I am convinced that the joint venture between *Knowledge*, *Rationality and Action* and *Synthese* is a valuable one. *Knowledge*, *Rationality and Action* aims at an audience that is interested in topics that undoubtedly have their roots in epistemology and philosophy. Moreover, *Knowledge*, *Rationality and Action* will offer insights and applications that may be of great value to the readers of *Synthese*. The resulting synthesis of disciplines will allow all readers to meet on a joint platform without losing their 'identity'. Step one on this road to synthesis is that both communities will learn about each other's existence (many computer scientists were amazed to find out about *Synthese*, and they were shocked to find that their institution subscribes and the content is only a mouse-click away!). Step two is that they will read and learn from each other's work.

The dynamics of the '*Synthese* Project' are refreshing, with John Symons' inspirational support for several new initiatives, Vincent Hendricks' enthusiastic input for the *Synthese Library*, and Jaakko Hintikka's valuable advice. I could not have wished for a better incubation environment for *Knowledge*, *Rationality & Action* and I sincerely hope we will develop a natural habitat for each other!

The interdisciplinary and epistemological flavour of *Knowledge*, *Rationality & Action* cannot be better illustrated than with this first issue:

In *Logics for Epistemic Programs*, Alexandru Baltag and Larry Moss take a standard-like epistemic logic for several agents, and give a formal account to 'make it dynamic', using a notion of *epistemic program*. Their formal language provides for both sentences and actions, enabling one to compute updates of knowledge within one and the same object language. This is a generalization of standard approaches to belief revision and the way many epistemic puzzles are modelled: there, the changes are dealt with on a meta-level. Hans Rott addresses rational belief formation. In *A Counterexample to Six Fundamental Principles of Belief Formation* he argues that, for commonsense reasoning about belief changes, some of the most cherished principles in 'classical' belief revision should be given up.

Valentin Goranko and Wojciech Jamroga take as their starting point existing logics that combine elements of game theory, computation tree logics and epistemic logics for reasoning about agents' abilities. Their *Comparing Semantics of Logics for Multi-agent Systems* presents several

subsumption and equivalence results on the model theoretic level of these logics. Giacomo Bonanno's *A Characterization of Von Neumann Games in Terms of Memory* addresses the same area. He argues that it makes sense in extensive games to assign an epistemic attitude for every node rather than only specifying a player's information at the node in which he is to move. He then syntactically and semantically characterizes 'memory of past knowledge'.

In *An Evolutionary Game Theoretic Perspective on Learning in Multi-Agent Systems* Karl Tuyls, Ann Nowe, Tom Lenaerts and Bernard Manderick relate the fields of Multi-Agent Systems, Reinforcement Learning and Evolutionary Game Theory. These insights contribute to a better understanding of learning in Multi-Agent Systems. The paper can also be conceived of as a prelude to Robert van Rooy's *Evolution of Conventional Meaning and Conversational Principles*. In it, Van Rooy argues that evolutionary game theory provides a fruitful tool to motivate the emergence and self-sustaining force of conventional meaning and some conversational interpretation strategies.

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