



ELSEVIER

Contents lists available at ScienceDirect

Journal of Applied Logic

www.elsevier.com/locate/jal



Editorial

Special Issue on Formal Models of Belief Change in Rational Agents

The area of belief change studies how a rational agent may maintain its beliefs about a possibly changing environment after obtaining or perceiving new information about this environment. This new information could include properties of the actual world, occurrences of events, and, in the case of multiple agents, actions performed by other agents, as well as the beliefs, preferences or actions (including communication acts) of other agents. Such agents could be acting and sensing in a dynamic world, coalescing information obtained from various sources, negotiating with other agents, or otherwise augmenting and revising their knowledge. Not surprisingly, this area has been of interest to researchers in many different, disparate communities.

The initial research in belief change came from the philosophical community, wherein belief change was generally studied from a normative point of view, providing axiomatic foundations about how rational agents should behave with respect to the information flux. Subsequently, computer scientists, especially in the artificial intelligence and the database communities, have been building on these results and relating them to computational systems. Belief change, as studied by computer scientists, not only pays attention to behavioural properties characterising evolving databases or knowledge bases, but must also address computational issues such as how to represent beliefs states in a concise way and how to efficiently compute the revision of a belief state. More recently, the economics and game theory community, in particular the emerging field of cognitive economics, has become active in belief change research, adopting a normative point of view, like philosophers, but paying more attention to the “cognitive plausibility” or “fitness” of the belief change operators.

In August 2007, a Dagstuhl Seminar titled “Formal Models of Belief Change in Rational Agents” was held, bringing together researchers from these various communities to share results in this area. This special issue of the *Journal of Applied Logic* is composed of three invited talks that were presented at the Dagstuhl Seminar. These talks were rewritten by the authors, after which the papers went through the usual reviewing process in which three anonymous reviews were solicited for each article.

This selection of articles is representative of the different areas of philosophical logic involved in the research on belief change. The article by Isaac Levi is a discussion on indeterminate probability, involving issues concerning using probability distributions as representations of subjective belief as opposed to using them as statistical probabilities. The article by David Makinson deals with an important issue in belief change, that of employing notion of relevance to restrict the scope of belief revision. Last, the article by Krister Segerberg outlines a theory of belief change, specifically changing norms, in terms of a dynamic deontic logic.

Giacomo Bonanno
University of Davis, USA

James Delgrande*
Simon Fraser University, Canada

Jérôme Lang
Université Paris-Dauphine, France

Hans Rott
Universität Regensburg, Germany
The editors

* Corresponding guest editor: jim@cs.sfu.ca (J. Delgrande).