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Although epistemology, the study of knowledge, has a long and honorable tradition in philosophy, starting with the Greeks, the idea of a formal logical analysis of reasoning about knowledge is somewhat more recent, going back to the early 1950's. The 1960's saw a flourishing of interest in this area in the philosophy community. Axioms for knowledge were suggested, attacked, and defended. Models for the various axiomatizations were proposed, mainly in terms of possible-worlds semantics, and then again attacked and defended.

More recently, reasoning about knowledge has found applications in such diverse fields as economics, linguistics, artificial intelligence, and computer science. While researchers in these areas have tended to look to philosophy for their initial inspiration, it has also been the case that their more pragmatic concerns, which often centered around more computational issues such as the difficulty of computing knowledge, have not been treated in the philosophical literature. The commonality of concerns of researchers in all these areas has been quite remarkable. Unfortunately, lack of communication between researchers in the various fields, while perhaps not as remarkable, has also been rather noticeable.

In 1984 a series of seminars on theoretical aspects of reasoning about knowledge was held at what was then the IBM San Jose Research Laboratory. Originally intended to be a small research seminar, the meetings had an average of forty attendees, and the mailing list contained over 250 names. The attendees included computer scientists, mathematicians, philosophers, and linguists. Given the evident interest in the area by such diverse groups, a conference seemed appropriate, particularly one that would increase the awareness of workers in one field of the work done in other fields.

The First Conference on Theoretical Aspects of Reasoning about Knowledge was held at the Asilomar Conference Center in Pacific Grove on March 19-22, 1986. What made the conference successful was not just its formal program. The restricted attendance and the pleasant environment stimulated continuous interaction between the attendees. Conversation continued non-stop over meals, along the beach, and late into the night, with considerable interaction between the various communities of researchers. The unscheduled time allowed everyone to discover many different ways in which their research overlapped with that of others. The general feeling at the end of the meeting
was that the interdisciplinary format of the conference had shown itself to be very successful.

In the two years since the conference, the area has witnessed many exciting developments in the theory of knowledge. In computer science, the paradigm of knowledge has been successfully applied to the analysis of problems in distributed systems, databases, and cryptography. In AI, knowledge was shown to be a unifying concept for the theory of commonsense reasoning, learning, and speech act theory. In economics, a deeper understanding has been gained into the role of common knowledge in economic interactions. In philosophy, there has been foundational progress in the semantics of propositional attitudes and circular propositions.

In view of the success of the 1986 conference and the flurry of recent developments, it was decided to hold another meeting at the Asilomar Conference Center on March 7-9, 1988. One hundred and eight papers were submitted in response to a call for papers. The program committee members - Jon Barwise (Stanford University), Peter van Emde Boas (University of Amsterdam), Hans Kamp (University of Texas), Kurt Konolige (SRI International), Yoram Moses (The Weizmann Institute of Science), Stan Rosenschein (SRI International), Tommy Tan (University of Chicago), and myself - considered all the papers carefully; at least three and usually four committee members read each paper. In the end twenty two papers were selected based on their contribution, novelty, interest to an interdisciplinary audience, and relevance to the scope of the conference. Thus, many good papers had to be turned down.

In addition to the contributed papers, the program committee decided to hold a panel session, a tutorial session, and two invited talks intended to provide an overview of neighboring areas. This volume consists of all the contributed and invited papers, tutorial papers, and panel position papers. None of the final submissions was formally refereed, and most of them represent preliminary report on continuing research. It is expected that most of these papers will appear, in a more polished and complete form, in scientific journals. Nevertheless, I believe that this collection of papers represents the state of the art of the field of reasoning about knowledge.

The conference was sponsored by IBM Research, Almaden Research Center, and was made possible by support from the American Association for Artificial Intelligence and the National Science Foundation (under grant IRI-8715814). The members of the program committee deserve special thanks for their efforts in helping to bring about a conference of high quality. I’d also like to thank Joe Halpern, who shared with me his experience of organizing the first conference.

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