A. U. Frank I. Campari U. Formentini (Eds.)

Theories and Methods of Spatio-Temporal Reasoning in Geographic Space

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Theories and Methods of Spatio-Temporal Reasoning
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Foreword

This volume collects the papers presented at the conference "GIS: From Space to Territory — Theories and Methods of Spatio-Temporal Reasoning." It is – to the best of our knowledge – the first international conference dedicated to spatial and temporal reasoning in geographic space.

Temporal, but also spatial, reasoning has attracted interest in the artificial intelligence community. Spatial and temporal reasoning is found to be a very common form of reasoning, so prevalent that one often does not identify it as a particular kind of reasoning. Within the National Center for Geographic Information and Analysis (NCGIA) the importance of spatial and temporal reasoning in Geographic Information Systems was recognized several years ago, and is now being pursued as a topic in its own right under Research Initiative 10 "Spatio-Temporal Reasoning in Geographic Information Systems."

Initial research found that spatial reasoning in geographic or large scale space is different from spatial reasoning in small scale space, as usually dealt with in robotics and expert systems, which reason about simple mechanical devices. David Mark and Andrew Frank organized a workshop on "Cognitive and Linguistic Aspects of Geographic Space" in Las Navas (Spain) in 1990 to explore the specific methods and the relevant approaches for spatial reasoning in geographic space. This international conference continues with this topic and integrates it with temporal reasoning in geographic space.

We hoped to bring together experts from different disciplines, most notably computer science, geography, economy, cognitive science but also linguistics. The goal of the Conference is to open an interdisciplinary dialog. An international call for papers, mostly distributed by electronic mail, with a short deadline for submission of full papers resulted in over 70 papers submitted. They were of high quality and covered a very broad field of different disciplines. Each paper was distributed for assessment to three members of the program committee or other experts in the field. The program committee met in Pisa on May 5 and had the difficult task to select the 23 best papers to be presented at the meeting and to be included in the proceedings. Comments from the reviewers were then sent back to the authors to help them to produce the final copy. We are very thankful for the quick responses of the authors and reviewers that allowed us to progress rapidly and have this volume ready for the conference.

The conference also includes a number of distinguished scientists as invited speakers, each opening the topic from the perspective of a particular science. Two of them were able to provided us with manuscripts to be included in this volume, namely Reginald Golledge's paper on "Do People Understand Spatial Concepts: The Case of First-Order Primitives" and Richard Snodgrass' paper on "Temporal Databases".

We are grateful to all the people who have helped shape the topic and organize the conference. The contributions from our colleagues from the NCGIA, in particular from Max Egenhofer (University of Maine), Reginald Golledge (University of California at Santa Barbara) and David Mark (State University of New York at Buffalo) have influenced over the years our conceptualization of space and time. The members of the program committee and the additional reviewers must be thanked for their generous help.

One must also not forget the local organizers and the administrative support from Leonardo Leonardini (ETS, Pisa), which made the conference possible. The support from CNUCE and from NCGIA is gratefully acknowledged. Finally, it is a pleasure to thank Roberto Scopigno (CNR-CNUCE, Pisa), Benedetto Biagi (IEI-CNR, Pisa), Silvano Bonotto (Università di Torino) and Paolo Ghelardoni (Università di Parma) for particular contributions to bring together the conference.

Pisa, July 1992

Andrew Frank
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