Preface

MARTÍN ESCARDÓ, ACHIM JUNG and THOMAS STREICHER

In late August 2004, some 60 mathematicians and computer scientists gathered in Darmstadt for the seventh *Workshop Domains*, to mark the 65th birthday of Professor Klaus Keimel and his retirement from his position at the Technical University Darmstadt. The papers in this volume were selected from submissions that were received in response to a call issued to participants during the meeting, and to a wider community afterwards.

With this volume we are honouring a scientist who can truly be said to have built bridges between mathematics and theoretical computer science. Having started out as a pure mathematician with interests in ordered algebraic structures, Klaus Keimel in the early seventies enthusiastically joined the effort to explore the connections between his mathematical speciality and Dana Scott's newly discovered continuous lattices. This collaboration culminated in the 1980 publication of the *Compendium of Continuous Lattices* with Gerhard Gierz, Karl Hofmann, Jimmie Lawson, Michael Mislove and Dana Scott as coauthors. For many years this monograph was the only comprehensive and systematic presentation of the subject. Klaus Keimel lent his efforts again for the 2003 revised and expanded edition, now renamed *Continuous Lattices and Domains*.

In addition to his many publications in the representation theory of ordered algebraic structures, Klaus Keimel continued to be keenly interested in the ways Scott's domains manifest themselves within areas of mathematics. He uncovered links to universal algebra, game theory, set-valued functions, functional analysis and, especially, measure theory. Most recently he published (jointly with Jimmie Lawson) a systematic account of the relationship between measures and valuations, and (jointly with Gordon Plotkin and Regina Tix) a monograph that sets this theory within an elegant framework of ordered topological cones.

Beginning in the early 1980s, Klaus Keimel regularly taught graduate courses on the theory of continuous lattices and their relationship to lambda calculus, topology and order, and organised seminars on advanced aspects of the theory. Many of the participants of these events went on to do their Masters and indeed Ph.D. work in the mathematical foundations of computer science, making Darmstadt perhaps the most active centre for this type of research within a mathematics department anywhere in the world. And beyond Darmstadt too, there are many who have learned crucial bits of domain theory from Klaus Keimel and profited from his insight and generous advice; the editors of this volume count themselves among them.

In 1994 Klaus Keimel suggested that it could be beneficial to hold a workshop devoted to work in domain theory and semantics outside the main international conference series, and thus was born the *Workshop Domains* series of meetings. The first workshop took

place in the summer of that year in Darmstadt, and subsequent meetings were held in Braunschweig, München, Siegen and Birmingham.

The splendid response to our call for contributions to this special issue demonstrates Klaus Keimel's far-reaching influence as a researcher, teacher, and facilitator, and, furthermore, the esteem in which – like us – so many hold him as colleague and friend.

We thank *Deutsche Forschungsgemeinschaft* and the Darmstadt Mathematics Department for financial support at Domains VII, the authors of this volume for their contributions and for adhering to unusually strict deadlines, the referees for producing excellent and probing reports, and, finally, the Editor in Chief of *MSCS*, Giuseppe Longo, for the invitation to publish this *Festschrift* as a special issue.