

Preface

This book is the result of the research carried on by the author and some of his colleagues from 1995. Fork algebras, the subject of this book, had their origin in the early 90s as part of a formalism capable of dealing with the process of program specification and development. The contents of the book fall in with what are called Relational Methods in Computer Science.

As usually happens, applied research led to problems of a theoretical nature which were undertaken by the author and are the core of this book. Problems such as *finite axiomatizability* or *axioms independence* (Sections 4.1 and 4.2) naturally arose when investigating the relational semantics of the fork calculus.

Relational proof systems for various logics (classical, modal and multi-modal) (Sections 5.2, 6.5, 6.7) besides providing relational deductive calculi for these logics, allow us to assess the expressive power of the fork calculus and establish the foundations for a relational formalism for system specification.

Finally, in Section 7.5 we present the foundations for a relational calculus for program specification and derivation that allow us to specify and calculate program design strategies.

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