Preface to special issue:
EXPRESS, ICE and SOS 2009

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This special issue of *Mathematical Structures in Computer Science* contains a selection of papers presented at three satellite events of CONCUR'09, which was held between 31 August and 5 September 2009 in Bologna (Italy). Specifically, it contains three papers from the 16th International Workshop on *Expressiveness in Concurrency* (EXPRESS'09), one paper from the 2nd *Interaction and Concurrency Experience* (ICE'09) and two papers from the 6th Workshop on *Structural Operational Semantics* (SOS'09).

The aim of the EXPRESS workshops is to bring together researchers interested in the relations between various formal systems, particularly in the field of concurrency. More specifically, they focus on the comparison between programming concepts (such as concurrent, functional, imperative, logic and object-oriented programming) and between mathematical models of computation (such as process algebras, Petri nets, event structures, modal logics and rewrite systems) on the basis of their relative expressive power. The EXPRESS workshops were originally held as meetings of the HCM project EXPRESS, which had the same focus and was active between January 1994 and December 1997. The first three workshops were project meetings and took place in 1994, 1995 and 1996. In 1997, the workshop was organised as an event with a call for papers and a significant attendance from outside the project, and since 1998 it has been held as a satellite event of the CONCUR conference.

The ICE events provide an international context for the scientific community working on concurrent or distributed systems and, specifically, for researchers interested in interactions and synchronisation mechanisms as well as in models, verification techniques, tools and programming primitives concerning such complex interactions. ICE differs from traditional scientific meetings in a number of interesting ways, two of which are particularly worthy of mention here. First, ICE features novel review and selection procedures; in fact, submitted papers are associated with on-line forums that enable interactive discussions among authors and reviewers. Second, each year the workshop focuses on a

specific topic related to interactive systems. The theme of ICE'09, the second edition of ICE, was *structured interactions*, meaning the class of synchronisations that go beyond 'simple' point-to-point synchronisations. A few examples of such structured interactions are: multicast or broadcast synchronisations; event-notification based interactions; time-dependent interactions; distributed transactions; and stateless/statefull interactions.

Structural operational semantics is a technique for defining an operational semantics for programming and specification languages. Because of its intuitive appeal and flexibility, SOS has found considerable application in the study of the semantics of concurrent processes. It is also a viable alternative to denotational semantics in the static analysis of programs and in proving compiler correctness. The SOS workshop is a forum for researchers, students and practitioners interested in new developments and directions for future investigations. One of the specific goals of the workshop was to provide a meeting point for the concurrency and programming language communities. Another goal is the dissemination of the theory and practice of SOS amongst postgraduate students and young researchers worldwide.

This special issue of the journal contains the full versions of selected papers presented at the three events. The papers have been extended and revised for journal publication, and have undergone a reviewing process in accordance with the standards set for *Mathematical Structures in Computer Science*.

We would like to thank the authors for their efforts in producing the extended versions contained in this journal issue. We are very grateful to the expert reviewers for their very careful reading; their help has been crucial in producing this issue. We would also like to thank the program committees of EXPRESS, ICE and SOS 2009, for the evaluation of the proceeding versions of these papers, and Catuscia Palamidessi, who has supported this special issue since its origins. Last, but not least, we are very grateful to the Editor-in-Chief of *Mathematical Structures in Computer Science* for the opportunity to publish in this special issue of the journal.

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