Preface

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This special issue of the Journal of Functional Programming collects revised selected articles arising from the inaugural meeting of the Workshop on Mathematically Structured Functional Programming, MSFP 2006, held in Kuressaare, Estonia, on 2 July 2006, with support from the European Union's FP6 IST Coordination Action TYPES. This workshop raised the curtain for the Eighth International Conference on Mathematics of Program Construction, MPC 2006, but where MPC is concerned primarily with extrinsic mathematics supporting the programming process, MSFP has a complementary focus on the mathematics intrinsic to programs themselves. MSFP is about the extraction of functionality from structure.

Herein, we present articles in that spirit, concerning Lawvere theories, arrows, diverse variations on the monadic theme, traversable functors, structured recursion for nested data types, hereditary substitution, strong computability. This body of work shows just what a powerful practice theory can be. It says to programmers, 'Do your homework!', and to mathematicians, 'Make it go!'. Mathematics is more than a language for modelling phenomena: it is a language for expressing design. Functional programming systems are becoming increasingly articulate in this language and effective in its operational content. Thanks to languages such as Haskell, Epigram, Agda and Coq, much of the work here has already made the step – no longer a leap – from blackboard to motherboard.

We are grateful to the British Computer Society for making the workshop pre-proceedings available via their Electronic Workshops in Computing series. We are especially grateful to the MSFP 2006 Programme Committee – Yves Bertot, Marcelo Fiore, Masahito Hasegawa, Graham Hutton, Paul Levy, Andres Löh, Christoph Lüth, Marino Miculan, Randy Pollack and Amr Sabry – for all their work in ensuring the quality of the workshop, and for staying on to help in the preparation of this special issue. We should also like to thank Robin Adams, Ulrich Berger, Lars Birkedal, Venanzio Capretta, Catarina Coquand, Peter Hancock, Ralf Hinze, Adriaan Moors, Aleksandar Nanevski, Lutz Schröder and Wouter Swierstra for their help in the refereeing process of the journal versions.

Thirty researchers gathered on a beautiful summer day in July 2006 to hear 11 speakers, including invited talks from John Power and Andrzej Filinski. Since

then, a second MSFP has been held in Reykjavík in July 2008. This, too, was an enjoyable and enlightening event, and we look forward with confidence to many more. Looking back to 2006, it seems that our experiment has repaid us, and will continue to do so. We felt privileged then to have assembled such a delightful occasion, and we feel privileged now to offer you this collection. It is a promising start.