

## Preface

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The International Workshop on Hybrid Logic (HyLo 2007) was held 6–10 August in Dublin, Ireland as part of the European Summer School in Logic, Language, and Information (ESSLLI 2007), and sponsored by the HyLoMOL project which is funded by the Danish Natural Science Research Council. The HyLo 2007 workshop continued a series of previous workshops on hybrid logic, including HyLo 2006 and HyLo 2002, both affiliated with Logic in Computer Science (LICS) conferences.

Hybrid logic is a branch of modal logic in which it is possible to directly refer to worlds/times/states or whatever the elements of the (Kripke) model are meant to represent. Although they date back to the late 1960s, and have been sporadically investigated ever since, it is only in the 1990s that work on them really got into its stride.

It is easy to justify interest in hybrid logic on applied grounds, because of the usefulness of the additional expressive power. For example, when reasoning about time one often wants to build up a series of assertions about what happens at a particular instant, and standard modal formalisms do not allow this. What is less obvious is that the route hybrid logic takes to overcome this problem often actually improves the behaviour of the underlying modal formalism. For example, it becomes significantly simpler to formulate modal tableau, resolution, and natural deduction in hybrid logic, and completeness and interpolation results can be proved of a generality that is not available in orthodox modal logic.

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The topics of interest to the HyLo 2007 workshop did not only include standard hybrid-logical machinery like nominals, satisfaction operators, and the downarrow binder, but generally extensions of modal logic that increase its expressive power.

This special issue of *Journal of Logic, Language and Information* has its origin in HyLo 2007. Following the workshop, an open call for papers was announced, to which all HyLo 2007 authors were invited to contribute, but which also allowed contributions by other authors. The editorial responsibilities were taken by Torben Braüner and Thomas Bolander. All submissions were carefully reviewed and the result is the following selection of seven papers.

Mark Kaminski and Gert Smolka

Terminating tableau systems for hybrid logic with difference and converse

Martin Lange

Model checking for hybrid logic

Martin Mundhenk and Thomas Schneider

The complexity of hybrid logics over equivalence relations

Katsuhiko Sano

Hybrid counterfactual logics: David Lewis meets Arthur Prior again

Dmitry Sustretov

Hybrid logics of separation axioms

Tero Tulenheimo

Hybrid logic meets IF modal logic

Volker Weber

Branching-time logics repeatedly referring to states

The papers of this special issue all address important aspects of the topics of HyLo 2007 mentioned above. We close this short editorial with our thanks to all the reviewers who helped us screen and select the papers for this special issue, and to the authors of the selected papers doing their best at incorporation the many detailed comments from the reviewers in their final versions.