

D. Pearce G. Wagner (Eds.)

Logics in AI

European Workshop JELIA '92

Berlin, Germany, September 7-10, 1992

Proceedings

Springer-Verlag

Berlin Heidelberg New York

London Paris Tokyo

Hong Kong Barcelona

Budapest

Series Editor

Jörg Siekmann
University of Saarland
German Research Center for Artificial Intelligence (DFKI)
Stuhlsatzenhausweg 3, W-6600 Saarbrücken 11, FRG

Volume Editors

David Pearce
Gerd Wagner
Free University Berlin, Department of Philosophy
Group of Logic, Epistemics and Information
Habelschwerdter Allee 30, W-1000 Berlin 33, FRG

CR Subject Classification (1991): I.2, F.3-4

ISBN 3-540-55887-X Springer-Verlag Berlin Heidelberg New York
ISBN 0-387-55887-X Springer-Verlag New York Berlin Heidelberg

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

© Springer-Verlag Berlin Heidelberg 1992
Printed in Germany

Typesetting: Camera ready by author/editor
Printing and binding: Druckhaus Beltz, Hemsbach/Bergstr.
45/3140-543210 - Printed on acid-free paper

Preface

The present volume contains the proceedings of JELIA '92, les Journées Européennes sur la Logique en Intelligence Artificielle, or the Third European Workshop on Logics in AI.

Earlier meetings were held in France (1988) and the Netherlands (1990). JELIA '92 is taking place in Berlin (Gosen) from 7-10 September, 1992, organised by the Group *Logik, Wissenstheorie und Information* (LWI) of the Free University Berlin in co-operation with the German Informatics Society (GI - Fachausschuß 1.2 - Inferenzsysteme). As in previous workshops, the aim was to bring together researchers involved in all aspects of logic in artificial intelligence.

The volume contains 2 invited addresses and 21 selected papers covering such topics as

- Logical Foundations of Logic Programming and Knowledge-Based Systems
- Automated Theorem Proving
- Partial and Dynamic Logics
- Systems of Nonmonotonic Reasoning
- Temporal and Epistemic Logics
- Belief Revision

The papers appear here in their planned order of presentation at the conference. No fixed sections are employed, but thematically related contributions have, where possible, been grouped together.

The organising committee of J. van Eijck, L. Fariñas del Cerro, E. Orłowska, and D. Pearce was assisted by a programme committee comprising additionally

J. van Benthem, C. Cellucci, P. Enjalbert, M. Eytan, A. Fuhrmann, U. Furbach, D. Gabbay, P. Gärdenfors, H. Herre, M. Kanovich, M. Kracht, B. Nebel, P. Schroeder-Heister and F. Veltman.

Further help in the refereeing of submitted papers was provided by M. Kalsweek, F. Klusniak, G. Miskowska, D. Roorda, H. Rott, U. Scheffler, A. Skowron, F. Voorbraak, G. Wagner and H. Wansing.

We should like to thank all the referees for their prompt and valuable responses.

We are also grateful to the GI for their partial sponsorship of the meeting, to the Free University Berlin for further support, as well as to Jörg Siekmann for

recommending these proceedings for the Lecture Notes series and to Springer-Verlag for agreeing to publish them in the shortest possible time.

Berlin, June 1992

David Pearce and Gerd Wagner

Contents

A Modal Theory of Arrows. Arrow Logics I. (Invited Paper) <i>D. Vakarelov</i>	1
Knowledge Without Modality: A Simplified Framework for Chronological Ignorance <i>C. MacNish</i>	25
Design Complete Sequential Calculus for Continuous Fixpoint Temporal Logic <i>R. Pluskevicius</i>	36
Logical Omniscience and Classical Logic <i>R. Muskens</i>	52
Weak Implication: Theory and Applications <i>K.L. Kwast and S. van Denneheuvel</i>	65
Deriving Inference Rules for Terminological Logics <i>V. Royer and J.J. Quantz</i>	84
Linear Proofs and Linear Logic <i>B. Fronhöfer</i>	106
Relevance and Revision – About Generalizing Syntax-based Belief Revision <i>E. Weydert</i>	126
Modellings for Belief Change: Base Contraction, Multiple Contraction, and Epistemic Entrenchment <i>H. Rott</i>	139
A Framework for Default Logics <i>C. Froidevaur and J. Mengin</i>	154
A Conceptualization of Preferences in Non-Monotonic Proof Theory <i>A. Hunter</i>	174
Reasoning with Defeasible Arguments: Examples and Applications <i>G. Vreeswijk</i>	189
About Deductive Generalization <i>Ph. Besnard and E. Grégoire</i>	212
Transition Systems and Dynamic Semantics <i>T. Fernando</i>	232
Declarative Semantics for Inconsistent Database Programs <i>M.S. Mircheva</i>	252

Tableau-Based Theorem Proving and Synthesis of Lambda-Terms in the Intuitionistic Logic <i>O. Bittel</i>	262
A Constructive Type System Based on Data Terms <i>H.-J. Goltz</i>	279
An Ordered Resolution and Paramodulation Calculus for Finite Many-Valued Logics <i>N. Zabel</i>	304
An Efficient Constraint Language for Polymorphic Order-Sorted Resolution <i>C. Prehofer</i>	319
Default Theory for Well Founded Semantics with Explicit Negation (Invited Paper) <i>L.M. Pereira, J.J. Alferes and J.N. Aparício</i>	339
Computing Answers for Disjunctive Logic Programs <i>U. Furbach</i>	357
Expanding Logic Programs <i>C. Witteveen</i>	373
Disjunctive Logic Programming, Constructivity and Strong Negation <i>H. Herre and D. Pearce</i>	391