Lecture Notes in Logic 2

J. Oikkonen J. Väänänen (Eds.)

Logic Colloquium '90

ASL Summer Meeting in Helsinki

Springer-Verlag

Editorial Policy

§ 1. Lecture Notes aim to report new developments - quickly, informally, and at a high level. The texts should be reasonably self-contained and rounded off. Thus they may, and often will, present not only results of the author but also related work by other people. Furthermore, the manuscripts should provide sufficient motivation, examples and applications. This clearly distinguishes Lecture Notes manuscripts from journal articles which normally are very concise. Articles intended for a journal but too long to be accepted by most journals, usually do not have this "lecture notes" character. For similar reasons it is unusual for Ph. D. theses to be accepted for the Lecture Notes series.

§ 2. Manuscripts or plans for Lecture Notes volumes should be submitted (preferably in duplicate) either to one of the series editors or to Springer- Verlag, Heidelberg . These proposals are then refereed. A final decision concerning publication can only be made on the basis of the complete manuscript, but a preliminary decision can often be based on partial information: a fairly detailed outline describing the planned contents of each chapter, and an indication of the estimated length, a bibliography, and one or two sample chapters - or a first draft of the manuscript. The editors will try to make the preliminary decision as definite as they can on the basis of the available information.

§ 3. Final manuscripts should preferably be in English. They should contain at least 100 pages of scientific text and should include
- a table of contents;
- an informative introduction, perhaps with some historical remarks: it should be accessible to a reader not particularly familiar with the topic treated;
- a subject index: as a rule this is genuinely helpful for the reader.

Further remarks and relevant addresses at the back of this book.

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FOREWORD

The 1990 European Summer Meeting of the Association for Symbolic Logic was held in Finland from July 15 to July 22, 1990. The meeting was called *Logic Colloquium '90* and it took place in the Porthania building of the University of Helsinki as part of the program of the 350th anniversary of the university.

The meeting was attended by 140 registered participants and 31 accompanying persons, from 23 different countries. The organizing bodies were the Department of Mathematics of the University of Helsinki, The Philosophical Society of Finland, and The Finnish Mathematical Society. Financial support was received from the Ministry of Education of Finland, The Academy of Finland, Suomen Kulttuurirahasto Foundation, UNESCO, Rolf Nevanlinna Institute, and IUHPS.

The Organizing Committee of the meeting consisted of Aapo Halko, Heikki Heikkilä, Lauri Hella, Taneli Huuskonen, Tapani Hyttinen, Kerkko Luosto, Ilkka Niiniluoto (vice chairman), Juha Oikkonen, and Jouko Väänänen (chairman), all from the University of Helsinki.

The Program Committee consisted of Peter Aczel (Manchester), Max Dickmann (Paris), Heinz-Dieter Ebbinghaus (Freiburg), Jens Fenstad (Oslo), Jaakko Hintikka (chairman, Boston), Wilfrid Hodges (London), Alistair Lachlan (Vancouver), Azriel Levy (Jerusalem), Heikki Mannila (Helsinki), Ilkka Niiniluoto (Helsinki), Juha Oikkonen (Helsinki), and Jouko Väänänen (secretary, Helsinki).

The program of the meeting is listed on the following pages. Warren Goldfarb, Ronald Jensen, Phokion Kolaitis, Per Martin-Löf, Alan Mekler, and Hugh Woodin did not contribute a paper to the proceedings. As comparison between the contents of this book and the actual program reveals, some authors made an agreement with the editors to contribute a slightly different paper from the one read in the meeting. Also Joan Moschovakis and Alan Silver were approached by the editors and they submitted the paper they read in a contributed papers session of the meeting.

The editors are indebted to Heikki Heikkilä, Yiannis Moschovakis, Martti Nikunen, and Hannele Salminen for their help during the preparation of this volume. We owe special thanks to Herbert Enderton for the substantial work he has done in putting together the final manuscript.

Juha Oikkonen
Jouko Väänänen

Invited talks of Logic Colloquium '90

WILFRIED BUCHHOLZ (München)
Cut-elimination in uncountable logic and collapsing functions

BARRY COOPER (Leeds)
Definability and global degree theory

PATRICK DEHORNOY (Caen)
About the word problem for free left distributive groupoids

HANS-DIETER DONDER (München)
On ω_1-complete filters

DOV GABBAY (London)
Labelled deductive systems

WARREN GOLDFARB (Harvard)
On Gödel's philosophy

JAAKKO HINTIKKA (Boston)
Is there completeness in mathematics after Gödel?

IAN HODKINSON (London)
An axiomatisation of the temporal logic with until and since over real numbers

RONALD JENSEN (Oxford)
Remarks on the core model

HAIM JUDAH (Bar-Ilan)
Δ^1_3-sets of reals

PHOKION KOLAITIS (Santa Cruz)
1. *Logical definability and complexity classes*
2. *Model theory of finite structures*
3. *0-1 laws*

RICHARD LAVER (Boulder)
Elementary embeddings of a rank into itself

PER MARTIN-LÖF (Stockholm)
Logic and metaphysics

ALAN MEKLER (Vancouver)
Almost free algebras: 20 years of progress

GRIGORI MINTS (Stanford)
Gentzen-type systems and resolution rule for modal predicate logic

YIANNIS MOSCHOVAKIS (Los Angeles)
Sense and denotation as algorithm and value

TULENDE MUSTAFIN (Karaganda)
On similarities of complete theories

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