

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison, UK

Josef Kittler, UK

Alfred Kobsa, USA

John C. Mitchell, USA

Oscar Nierstrasz, Switzerland

Bernhard Steffen, Germany

Demetri Terzopoulos, USA

Gerhard Weikum, Germany

Takeo Kanade, USA

Jon M. Kleinberg, USA

Friedemann Mattern, Switzerland

Moni Naor, Israel

C. Pandu Rangan, India

Doug Tygar, USA

FoLLI Publications on Logic, Language and Information Subline of Lectures Notes in Computer Science

Subline Editors-in-Chief

Valentin Goranko, *Technical University, Lyngby, Denmark*

Michael Moortgat, *Utrecht University, The Netherlands*

Subline Area Editors

Nick Bezhanishvili, *University of Amsterdam, The Netherlands*

Anuj Dawar, *University of Cambridge, UK*

Philippe de Groote, *Inria-Lorraine, Nancy, France*

Gerhard Jäger, *University of Tübingen, Germany*

Fenrong Liu, *Tsinghua University, Beijing, China*

Eric Pacuit, *University of Maryland, USA*

Ruy de Queiroz, *Universidade Federal de Pernambuco, Brazil*

Ram Ramanujam, *Institute of Mathematical Sciences, Chennai, India*

Glyn Morrill Reinhard Muskens
Rainer Osswald Frank Richter (Eds.)

Formal Grammar

19th International Conference, FG 2014
Tübingen, Germany, August 16-17, 2014
Proceedings



Springer

Volume Editors

Glyn Morrill
Universitat Politècnica de Catalunya
Departament de Llenguatges i Sistemes Informàtics
Barcelona, Spain
E-mail: morrill@lsi.upc.edu

Reinhard Muskens
Tilburg University, Department of Philosophy
Tilburg, The Netherlands
E-mail: r.a.muskens@gmail.com

Rainer Osswald
Heinrich-Heine-University Düsseldorf
Department of Linguistics and Information Science
Düsseldorf, Germany
E-mail: osswald@phil.hhu.de

Frank Richter
Goethe University Frankfurt am Main
Institute for English and American Studies
Department of Linguistics
Frankfurt, Germany
E-mail: frankmrichter@gmail.com

ISSN 0302-9743 e-ISSN 1611-3349
ISBN 978-3-662-44120-6 e-ISBN 978-3-662-44121-3
DOI 10.1007/978-3-662-44121-3
Springer Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014943008

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

© Springer-Verlag Berlin Heidelberg 2014

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

FG provides a forum for the presentation of new and original research on formal grammar, mathematical linguistics and the application of formal and mathematical methods to the study of natural language. Themes of interest include, but are not limited to:

- Formal and computational phonology, morphology, syntax, semantics and pragmatics
- Model-theoretic and proof-theoretic methods in linguistics
- Logical aspects of linguistic structure
- Constraint-based and resource-sensitive approaches to grammar
- Learnability of formal grammar
- Integration of stochastic and symbolic models of grammar
- Foundational, methodological and architectural issues in grammar and linguistics
- Mathematical foundations of statistical approaches to linguistic analysis

Previous Formal Grammar meetings were held in Barcelona (1995), Prague (1996), Aix-en-Provence (1997), Saarbrücken (1998), Utrecht (1999), Helsinki (2001), Trento (2002), Vienna (2003), Nancy (2004), Edinburgh (2005), Malaga (2006), Dublin (2007), Hamburg (2008), Bordeaux (2009), Copenhagen (2010), Ljubljana (2011), Opole (2012), and Düsseldorf (2013).

The present volume collects the papers from the 19th Conference on Formal Grammar celebrated in Tübingen in 2014. The conference comprised 10 contributed papers selected from 19 high quality submissions, and two invited contributions, by Thomas Icard and Christian Retoré.

We thank for their support the local organisers of ESSLLI 2014, with which the conference was colocated.

May 2014

Glyn Morrill
Reinhard Muskens
Rainer Osswald
Frank Richter

Organization

Program Committee

Alexander Clark	King's College London, UK
Benoit Crabbé	Université Paris 7, France
Berthold Crysmann	CNRS - LLF, France
Denys Duchier	Université d'Orleans, France
Annie Foret	IRISA - IFSIC, France
Nissim Francez	Technion, Israel
Philippe de Groote	Inria Nancy, France
Laura Kallmeyer	University of Düsseldorf, Germany
Makoto Kanazawa	National Institute of Informatics, Japan
Greg Kobele	University of Chicago, USA
Valia Kordoni	Humboldt-Universität Berlin, Germany
Wolfgang Maier	University of Düsseldorf, Germany
Stefan Müller	Freie Universität Berlin, Germany
Gerald Penn	University of Toronto, Canada
Christian Retoré	Université Bordeaux 1, France
Manfred Sailer	Goethe University Frankfurt, Germany
Ed Stabler	UCLA, USA
Jesse Tseng	CNRS - CLLE-ERSS, France
Oriol Valentín	Universitat Politècnica de Catalunya, Spain

Program Chairs

Glyn Morrill	Universitat Politècnica de Catalunya, Spain
Reinhard Muskens	Tilburg University, The Netherlands
Rainer Osswald	Heinrich-Heine-Universität Düsseldorf, Germany

Standing Committee

Glyn Morrill	Universitat Politècnica de Catalunya, Spain
Reinhard Muskens	Tilburg University, The Netherlands
Rainer Osswald	Heinrich-Heine-Universität Düsseldorf, Germany
Frank Richter	Goethe Universität, Frankfurt am Main, Germany

Table of Contents

Invited Contributions

Higher-Order Syllogistics	1
<i>Thomas F. Icard III</i>	
Typed Hilbert Epsilon Operators and the Semantics of Determiner Phrases	15
<i>Christian Retoré</i>	

Contributed Papers

Adjuncts and Minimalist Grammars	34
<i>Meaghan Fowlie</i>	
Models of Adjunction in Minimalist Grammars	52
<i>Thomas Graf</i>	
Quantifiers in Frame Semantics	69
<i>Laura Kallmeyer and Frank Richter</i>	
A Generalization of Linear Indexed Grammars Equivalent to Simple Context-Free Tree Grammars	86
<i>Makoto Kanazawa</i>	
Unifying Local and Nonlocal Modelling of Respective and Symmetrical Predicates	104
<i>Yusuke Kubota and Robert Levine</i>	
Learning Context Free Grammars with the Finite Context Property: A Correction of A. Clark's Algorithm	121
<i>Hans Leiß</i>	
A Dynamic Categorical Grammar	138
<i>Scott Martin and Carl Pollard</i>	
On Minimalism of Analysis by Reduction by Restarting Automata	155
<i>Martin Plátek, Dana Pardubská, and Markéta Lopatková</i>	

The Conjoinability Relation in Discontinuous Lambek Calculus 171
 Alexey Sorokin

The Cantor-Bendixson Analysis of Finite Trees 185
 Christian Wurm

Author Index 201