

Formal Grammars in Linguistics and Psycholinguistics

Volume 1: An Introduction to the Theory
of Formal Languages and Automata

Volume 2: Applications in Linguistic Theory

Volume 3: Psycholinguistic Applications

Willem J.M. Levelt

Max Planck Institute for Psycholinguistics,
Nijmegen

John Benjamins Publishing Company
Amsterdam / Philadelphia



™ The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences – Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Library of Congress Cataloging-in-Publication Data

Levelt, W. J. M. (Willem J. M.), 1938-

[Formele grammatica's in linguïstiek en taalpsychologie. English]

Formal grammars in linguistics and psycholinguistics / Willem J.M. Levelt; [translation: Andrew Barnas].

p. cm.

Translation of *Formele grammatica's in linguïstiek en taalpsychologie*, 1974.

Includes bibliographical references and index.

1. Mathematical linguistics. 2. Formal languages. 3. Psycholinguistics. I. Barnas, Andrew. II. Title.

P138.L4713 2008

4io.i'5i--dc22

2008046396

ISBN 978 90 272 3251 9 (Hb; alk. paper)

© 2008 - John Benjamins B.V.

Contains a reprint with minor corrections of the 1974 edition, published by Mouton (The Hague & Paris)

No part of this book may be reproduced in any form, by print, photoprint, microfilm, or any other means, without written permission from the publisher.

John Benjamins Publishing Co. - P.O. Box 36224 • 1020 ME Amsterdam • The Netherlands
John Benjamins North America • P.O. Box 27519 • Philadelphia PA 19118-0519 • USA

Contents

Preface to the 2008 edition	vii
-----------------------------	-----

I: An Introduction to the Theory of Formal Languages and Automata

Preface	I:v
Table of contents	I:ix
1. Grammars as formal systems	I:1
2. The hierarchy of grammars	I:9
3. Probabilistic grammars	I:35
4. Finite automata	I:53
5. Push-down automata	I:75
6. Linear-bounded automata	I:91
7. Turing machines	I:101
8. Grammatical inference	I:115
Historical and bibliographical remarks	I:131
Bibliography	I:135
Author index	I:139
Subject index	I:140

II: Applications in Linguistic Theory

Preface	II:v
Table of contents	II:vii
1. Linguistics: Theory and interpretation	II:1
2. Pure models: Phrase-Structure Grammars	II:6
3. Mixed models I: The Transformational Grammar in <i>Aspects</i>	I 4 1
4. Mixed models II: Other Transformational Grammars	II:90
5. The generative power of Transformational Grammars	II:145
6. Statistical inference in linguistics	II:158
Historical and bibliographical remarks	II:178
Bibliography	II:182
Author index	II:189
Subject index	II:191

III: Psycholinguistics Applications

Preface	III:v
Table of contents	IIIvii
1. Grammars in the psychology of language: Three problems	III:a
2. Grammars and linguistic intuitions	III:66
3. Grammars in models of the language user	III:41
4. Grammars and language acquisition	III142
Historical and bibliographical remarks	III184
Bibliography	III:i86
Author index	III199
Subject index	III:202

Postscript

What has become of formal grammars in linguistics and psycholinguistics?	P:i
--	-----