

PHONOLOGY AND LANGUAGE USE

A research perspective that takes language use into account opens up new views of old issues and provides an understanding of issues that linguists have rarely addressed. Referencing new developments in cognitive and functional linguistics, phonetics, and connectionist modeling, this book investigates various ways in which a speaker/hearer's experience with language affects the representation of phonology. Rather than assuming phonological representations in terms of phonemes, Joan Bybee adopts an exemplar model, in which specific tokens of use are stored and categorized phonetically with reference to variables in the context. This model allows an account of phonetically gradual sound change that produces lexical variation, and provides an explanatory account of the fact that many reductive sound changes affect highfrequency items first. The well-known effects of type and token frequency on morphologically conditioned phonological alterations are shown also to apply to larger sequences, such as fixed phrases and constructions, solving some of the problems formulated previously as dealing with the phonology-syntax interface.

Joan Bybee is the author of several books and articles on phonology, morphology, language universals, and linguistic change. Most recently, she served as a coeditor for both *Essays on Language and Function Type* (1997) and *Modality in Grammar and Discourse* (1995). Dr. Bybee is Regents' Professor of Linguistics and Chair of the Department of Linguistics at the University of New Mexico.



CAMBRIDGE STUDIES IN LINGUISTICS

General editors: S. R. Anderson, J. Bresnan, B. Comrie, W. Dressler, C. Ewen, R. Huddleston, R. Lass, D. Lightfoot, J. Lyons, P. H. Matthews, R. Posner, S. Romaine, N. V. Smith, N. Vincent

Phonology and Language Use



CAMBRIDGE STUDIES IN LINGUISTICS

In this series

- 72 LUIGI BURZIO: Principles of English stress
- 73 JOHN A. HAWKINS: A performance theory of order and constituency
- 74 ALICE C. HARRIS and LYLE CAMPBELL: *Historical syntax in cross-linguistic perspective*
- 75 LILIANE HAEGEMAN: The syntax of negation
- 76 PAUL GORRELL: Syntax and parsing
- 77 GUGLIELMO CINQUE: Italian syntax and Universal Grammar
- 78 HENRY SMITH: Restrictiveness in case theory
- 79 D. ROBERT LADD: Intonational phonology
- 80 ANDREA MORO: The raising of predicates: Predicative noun phrases and the theory of clause structure
- 81 ROGER LASS: Historical linguistics and language change
- 82 JOHN M. ANDERSON: A notional theory of syntactic categories
- 83 BERND HEINE: Possession: Cognitive sources, forces and grammaticalization
- 84 NOMI ERTESCHIK-SHIR: The dynamics of focus structure
- 85 JOHN COLEMAN: Phonological representations: Their names, forms and powers
- 86 CHRISTINA Y. BETHIN: Slavic prosody: Language change and phonological theory
- 87 BARBARA DANCYGIER: Conditionals and prediction: Time, knowledge, and causation in English
- 88 CLAIRE LEFEBVRE: Creole genesis and the acquisition of grammar: The case of Haitian Creole
- 89 HEINZ GIEGERICH: Lexical strata in English: Morphological causes, phonological effects
- 90 KEREN RICE: Morpheme order and semantic scope: Word formation in the Athapaskan verb
- 91 APRIL MCMAHON: Lexical phonology and the history of English
- 92 MATTHEW Y. CHEN: Tone sandhi: Patterns across Chinese dialects
- 93 GREGORY T. STUMP: Inflectional morphology

Supplementary volumes

- LILIANE HAEGEMAN: Theory and description in generative syntax: A case study in West Flemish
- A. E. BACKHOUSE: The lexical field of taste: A semantic study of Japanese taste terms
- NIKOLAUS RITT: Quantity adjustment: Vowel lengthening and shortening in early Middle English

Earlier issues not listed are also available



Phonology and Language Use

JOAN BYBEE

University of New Mexico





PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS

The Edinburgh Building, Cambridge CB2 2RU, UK 40 West 20th Street, New York NY 10011–4211, USA 477 Williamstown Road, Port Melbourne, VIC 3207, Australia Ruiz de Alarcón 13, 28014 Madrid, Spain Dock House, The Waterfront, Cape Town 8001, South Africa

http://www.cambridge.org

© Joan Bybee 2001

This book is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2001 First paperback edition 2003

Typeface Times Roman 10.25/13 pt. System QuarkXPress [BTS]

A catalogue record for this book is available from the British Library

Library of Congress Cataloguing in Publication Data Bybee, Joan L.

Phonology and language use / Joan Bybee.

p. cm. – (Cambridge studies in linguistics; 94) Includes bibliographical references and index.

ISBN 0 521 58374 8 hardback

1. Grammar, Comparative and general – Phonology. 2. Linguistic change.

3. Grammar, Comparative and general – Morphology. 4. Universals (Linguistics)

I. Title. II. Series.

P217.3 .B93 2001 414 – dc21

00-045525

ISBN 0 521 58374 8 hardback ISBN 0 521 53378 3 paperback

Transferred to digital printing 2003



To my parents



Contents

List of Figures		page XIII	
Li	st of T	Tables	XV
$A \alpha$	cknow	ledgments	xvii
1	Lan	guage Use as Part of Linguistic Theory	1
	1.1	Substance and Usage in Phonology	1
	1.2	Some Basic Principles of a Usage-Based Model	6
	1.3	The Creative Role of Repetition	8
	1.4	Frequency Effects	10
	1.5	Phonology as Procedure, Structure as Emergent	14
	1.6	Organization of the Book	16
	1.7	Language as a Part of Human Behavior	17
2	A U	sage-Based Model for Phonology and Morphology	19
	2.1	Introduction	19
	2.2	The Rule/List Fallacy	20
	2.3	Organized Storage	21
	2.4	Morphological Structure Is Emergent	23
	2.5	Rules and Schemas Compared	26
	2.6	Frequency Effects	28
	2.7	Units of Storage	29
	2.8	Phonological Units	31
	2.9	From Local to General Schemas	31
	2.10	Conclusion	33
3	The	Nature of Lexical Representation	35
	3.1	Introduction	35
	3.2	The Phonemic Principle	35

© Cambridge University Press

ix



X			Contents
	3.3	A Cognitively Realistic Model of Phonological	
		Representation	37
	3.4	Linguistic Evidence for Detailed and Redundant	
		Storage	40
	3.5	Usage-Based Categorization versus Phonemic	
		Representation	49
	3.6	Phonetic Detail in the Lexicon – Variation and the	
		Early Involvement of the Lexicon and Morphology	
		in Change	54
	3.7	A Model for Sound Change	57
	3.8	Special Reduction of High-Frequency Words and	
		Phrases	60
	3.9	Conclusion	62
4	Pho	nological Processes, Phonological Patterns	63
	4.1	Introduction	63
	4.2	Phonetic Etiology and Its Limits	65
	4.3	Articulatory Gestures	69
	4.4	Patterns of Change and Constraints on Processes	77
	4.5	Segments as Emergent Units	85
	4.6	Generalization over Syllable-Initial and Syllable-	
		Final Position	86
	4.7	Phonotactics	88
	4.8	Conclusion	95
5	The	Interaction of Phonology with Morphology	96
	5.1	Introduction	96
	5.2	Morphological versus Phonological Conditioning	97
	5.3	Lexical Storage of Complex Forms, Both Regular	
		and Irregular	109
	5.4	Lexical Strength	113
	5.5	Paradigmatic Relations Expressed as Lexical	
		Connections	117
	5.6	Lexical Classes: Productivity Due to Type	
		Frequency	118
	5.7	The Interaction of Lexical Strength and Lexical	
		Connection	124
	5.8	Product-Oriented Schemas	126
	5.9	Phonological Similarity in Gangs	130
		Conclusion	135



Co	ntent.	S	xi
6	The Units of Storage and Access: Morphemes, Words,		
		Phrases	137
	6.1	Introduction	137
	6.2	Phonological Representations of Words	138
	6.3	Morphemes within Words	144
	6.4	Phrases and Constructions with Alternations	157
	6.5	Conclusion	166
7	Constructions as Processing Units: The Rise and Fall		
	of I	French Liaison	167
	7.1	Introduction	167
	7.2	Final Consonant Deletion in French	168
	7.3	Grammatical Constructions and Liaison	171
	7.4	Loss of Liaison as Regularization	177
	7.5	Syntactic Cohesion as Frequency of	
		Co-occurrence	185
	7.6	Taking the Phonology Seriously	185
	7.7	Conclusion	187
8	Universals, Synchrony and Diachrony		189
	8.1	Universals and Explanation	189
	8.2	Searching for Universals	191
	8.3	Phoneme Inventories	197
	8.4	Two Main Mechanisms for Phonological Change	199
	8.5	Syllable Structure	204
	8.6	More Evidence against Universals as Purely	
		Synchronic	211
	8.7	Diachronic Sources for Formal Universals: The	
		Phonemic Principle and Structure Preservation	212
Rej	feren	ces	217
Author Index		231	
Subject Index		235	
Languages Index		238	



Figures

2.1	Lexical connections for [End] in send, lend, trend,	
	blend, bend.	page 22
2.2	Lexical connections for the [b] in bee, bet, bed, bad,	
	ban, bin.	23
2.3	Phonological and semantic connections yield Past	
	in played, spilled, spoiled, banned, rammed.	23
2.4	The emergence of the -ing suffix in play, playing;	
	ban, banning; ram, ramming; spoil, spoiling.	24
2.5	A network of formatives.	25
3.1	Exemplar representation and associations.	52
4.1	Tract variables and associated articulators proposed	
	by Browman and Goldstein.	70
5.1	The different relations in three sets of Singular-Plural	l
	forms.	116
5.2	Relations among some forms of the verb cantar	
	'to sing'.	118
5.3	Family resemblance structure for the <i>mentir</i> class.	133
8.1	The relations among three tiers of crosslinguistic	
	phenomena.	210

xiii



Tables

3.1

	Preceding Unstressed Sonorant-Initial Consonants	
	Tend to Delete (Hooper 1976b)	page 41
5.1	The Effects of Word Frequency on t/d Deletion in	
	Regular Past Tense Verbs (Non-Prevocalic Only)	112
5.2	Count of Verbs Used by French Nursery School	
	Children During Play (Guillaume 1927/1973)	120
5.3	A Semiproductive Verb Class of English (Bybee	
	and Moder 1983)	127
5.4	Examples of Strong Preterits in Spanish Compared	
	to Regulars	134
5.5	Family Resemblance Structure for Strong Preterits	
	in Spanish	134
6.1	The Variable Reduction of /s/ in Argentinian	
	Spanish (Terrell 1978, Hooper 1981)	140
6.2	The Variable Reduction of /s/ in Cuban Spanish	
	(Terrell 1977, 1979, Hooper 1981)	140
6.3	Percentage of Occurrence of Word-Final /s/ before	
	a Consonant, Vowel, and Pause in Two Dialects of	
	Spanish	142
6.4	Rate of Deletion for Regular Past Tense Compared	
	to All Other Words of Comparable Frequency (403	
	Tokens or Fewer)	147
6.5	Rate of Deletion According to Token Frequency for	
	All Non–Past Participle Tokens of Medial d	149
6.6	Rate of Deletion in the Past Participle Suffix	150
6.7	Rate of Deletion in the First Conjugation Past	
	Participle Suffix vs. /d/ Following /a/ Overall	151

American English Schwa Deletion: Poststress Vowels

© Cambridge University Press

 $\mathbf{x}\mathbf{v}$



xvi	I	ist of Tables
6.8	Rate of Deletion in the Second and Third	
	Conjugation Past Participle Suffix vs. /d/ Following	g
	/i/ Overall	151
6.9	Deletion/Retention Rates for High- and Low-	
	Frequency First Conjugation Past Participles	152
6.10	The Forms of Two Spanish Verbs with ue and with	n <i>o</i> 154
6.11	The Relation between the Transparent vs. Pragma	ıtic
	Uses of <i>I don't know</i> and the Full vs. Reduced	
	Vowel Variants	161
6.12	Number of Items Preceding and Following don't	163
7.1	Number of Instances of Liaison for the Forms of	the
	Verb être 'to be'	180
7.2	Ågren's Findings for Auxiliaries and Following	
	Infinitives	183



Acknowledgments

The idea for this book and the perception that it was needed arose in the context of the community of researchers who investigate the way language use gives rise to grammar. Indeed, it was these workers in usage-based functionalism, most notably my long-time friend Sandy Thompson, who first supported and encouraged a book that would show how principles that had been successfully applied to the explanation of morphosyntactic patterns could also be applied to phonology. This book was originally intended for these linguists and their students. However, the encouragement and support of phonologists was also forthcoming once the idea of the book was broached. I am grateful to Janet Pierrehumbert in her role as editor for Cambridge University Press for supporting this project and for giving me extensive comments and suggestions on the first draft of the manuscript. I am also much indebted to Martin Haspelmath, José Ignacio Hualde, and Carmen Pensado for their careful reading of the first draft and their detailed comments and questions. I am particularly grateful to José Ignacio Hualde for comments that caused me to rethink certain issues. In addition, suggestions from Jürgen Klausenburger and Robert Kirchner also led to revisions of the manuscript. Discussions with each of these individuals helped me develop a deeper understanding of the phenomena treated here, as well as an improved presentation of my ideas.

For assistance in researching and editing, computing, and formatting, I am grateful to Dawn Nordquist and Catie Berkenfield. Also, Dawn Nordquist coded and helped me analyze the data discussed in Section 6.3.3, with the assistance of Rena Torres-Cacoullos. Aaron Smith also assisted at various stages of the project. Thanks are also due to my colleague Caroline Smith for consultation on various issues in the

xvii



xviii

Acknowledgments

phonetics literature. To the many students who have posed interesting questions and problems over many semesters and to those whose research answered some of these questions, I am extremely grateful for the stimulation.

The University of New Mexico has provided research support in the Regents' Professorship I was awarded in 1996, and the College of Arts and Sciences has provided teaching relief in the form of a Research Semester in the spring of 1999. My parents, Robert and Elizabeth Bybee, have provided donations, matched by the Exxon Foundation, that made possible research assistance. Without these sources of support, this work would certainly have taken much longer to emerge.

And, finally, many thanks to Ira Jaffe, for the generosity and good humor with which he contributes to the peaceful home and working environment that we share.