CAMBRIDGE STUDIES IN LINGUISTICS 94

Phonology and Language Use

JOAN BYBEE

Phonology and Language Use

JOAN BYBEE
University of New Mexico

CAMBRIDGE
UNIVERSITY PRESS

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

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

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 high-frequency 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

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

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

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.

Contents

Figures

Tables

1

Language Use as Part of Linguistic Theory

1.1 Substance and Usage in Phonology

This book introduces into the traditional study of phonology the notion that language use plays a role in shaping the form and content of sound systems. In particular, the frequency with which individual words or sequences of words are used and the frequency with which certain patterns recur in a language affects the nature of mental representation and in some cases the actual phonetic shape of words. It is the goal of the present work to explore to the extent possible at the present moment the nature of the relation between the use of linguistic forms on the one hand, and their storage and processing on the other.

To someone approaching linguistics from other disciplines, it might seem odd that language use has not been taken into account in formulating theories of language. However, since language is such a complex phenomenon, it has been necessary to narrow the field of study to make it manageable. Thus we commonly separate phonology from syntax, synchrony from diachrony, child language from adult language, and so on, constantly bearing in mind that interactions exist that will eventually have to be taken into account. We then go on to formulate theories for these domains – a theory of syntax, a theory of phonology, a theory of language acquisition – knowing all the while that the ultimate goal is to encompass all these subfields in one theory of language.

Early in the twentieth century, a proposal was made to distinguish the shared knowledge that a community of speakers has from the actual uses to which that knowledge is put (de Saussure 1916). Many researchers then focused their attention on the structure of that shared knowledge (called 'langue' by Saussure and 'competence' by Chomsky

1965) and paid little attention to language use in real time. The focus on competence, or the structure of language, turned out to be extremely productive. Structuralism provided linguists with a workshop of analytic tools for breaking down the continuous speech stream into units, and these units into features; structuralism postulated hierarchical relations among the units and assigned structures to different levels of grammar, organizing language and the people who study it into subfields – phonology, morphology, syntax, and semantics.

The present work proposes to demonstrate that the focus on structure needs to be supplemented with a perspective that includes more than just structure, a view that includes two other important aspects of the language phenomenon – the material content or substance of language, and language use. The SUBSTANCE of language refers to the two polar ends – phonetics and semantics – that language molds and structures, the two ends between which language forms the bridge. Language USE includes not just the processing of language, but all the social and interactional uses to which language is put. For present purposes, in the context of phonology, the frequency with which certain words, phrases, or patterns are used will be shown to have an impact on phonological structure. I will return to a discussion of these two aspects of language and the role they play in past and future theories after describing some recent developments in linguistics and related fields that suggest a need for an enlarged perspective on language.

In the domain of morphosyntax, a substantial development beyond structuralism has already taken place. The content of grammatical categories has been studied as a substantive rather than a structural matter, for example, in crosslinguistic studies of subject, topic, noun, verb, tense, aspect (Comrie 1976, 1985, Dahl 1985), mood, and so on. Also use is being studied as a prime shaper of syntactic structure (Givón 1979, Haiman 1994, Hopper and Thompson 1984, and others) and morphological structure (Bybee 1985, Bybee et al. 1994, DuBois 1985). So far, no comparable development has occurred in phonology, but there are several indicators that it is time to open up the field to new questions and new sources of data and explanation.

Despite having looked carefully at matters of structure, having defined and redefined units such as phoneme and morpheme (or formative), having shifted and reshifted levels such as phonemic and morphophonemic, we find that problems and questions still remain. Units and levels do not submit to definitions that work for every case. We still do not have strict definitions of even the most basic units, such as

segment, syllable, morpheme, and word. Instead we find variation and gradience commonplace in empirical studies, and we find phonological phenomena intimately bound up with lexicon and morphology, syntax, discourse, and social context.

Developments from outside linguistics also point to a new view of language. Studies of natural categorization by psychologist Eleanor Rosch and her colleagues have had an impact on the way that linguists view categories, including word meaning (Lakoff 1987), grammatical classes such as gender (Zubin and Köpcke 1981), verb classes (Bybee and Moder 1983), grammatical functions such as subject and topic, and phonetic categories (K. Johnson 1997, Miller 1994, and other 'exemplar' approaches to phonetic categories). In particular, these studies show that the way human beings categorize both nonlinguistic and linguistic entities is not by discrete assignments to categories based on the presence or absence of features, but rather by comparison of features shared with a central member. All category members need not have all of the features characterizing the category, but a member is more central or more marginal depending on the number and nature of shared features. Moreover, Nosofsky (1988) has shown that the perceived center of a category can shift toward the more frequently experienced members.

A second development important to linguistic modeling is the development of computer models that can reproduce apparent 'rule-governed' behavior as well as probabilistic behavior using parallel distributed processing (Daugherty and Seidenberg 1994, Rumelhart and McClelland 1986, and others). In such models, labeled connectionist models, structures are not given in advance (i.e., innate), but take their form from the nature of the input, just as neurological matter is structured by the input it receives. Connectionist models, then, are quite compatible with usage-based theories of language. Langacker (1987) and now Ohala and Ohala (1995) argue that storage of linguistic percepts should be like the storage of other mental percepts.

Yet a third recent development applicable to a large array of sciences is the study of complex systems and their emergent properties. The basic idea behind emergence as it will be applicable here is that certain simple properties of a substantive nature, when applied repeatedly, create structure. Lindblom et al. (1984) are, to my knowledge, the first to apply the notion of emergent structure in linguistics. They illustrate emergence in the following way: