

Second Language Acquisition *and* Linguistic Theory



edited by JOHN ARCHIBALD



Second Language Acquisition and Linguistic Theory

Edited by

John Archibald

University of Calgary

Copyright © Blackwell Publishers Ltd 2000. Editorial arrangement and introduction
copyright © John Archibald 2000.

First published 2000

2 4 6 8 10 9 7 5 3 1

Blackwell Publishers Inc.
350 Main Street
Malden, Massachusetts 02148
USA

Blackwell Publishers Ltd
108 Cowley Road
Oxford OX4 1JF
UK

All rights reserved. Except for the quotation of short passages for the purposes of criticism and review, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher.

Except in the United States of America, this book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, resold, hired out, or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

Library of Congress Cataloging-in-Publication Data

Second language acquisition and linguistic theory / edited by John
Archibald.

p. cm.

Includes bibliographical references and index.

ISBN 0-631-20591-8 (alk. paper). — ISBN 0-631-20592-6 (pbk. :
alk. paper)

1. Second language acquisition. I. Archibald, John.

P118.2.S425 2000

401'.93—dc21

99-16612

CIP

British Library Cataloguing in Publication Data

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

Typeset in 10 $\frac{1}{2}$ on 13pt Sabon

by Graphicraft Limited, Hong Kong

Printed in Great Britain by MPG Books, Bodmin, Cornwall

This book is printed on acid-free paper.

Contributors

John Archibald is a Professor of Linguistics at the University of Calgary. He specializes in research on the acquisition of phonology in both first and second languages. He has been involved in the authoring or editing of six books on linguistics and language acquisition, most recently *Second Language Phonology* (John Benjamins, 1998) and (co-edited with William O'Grady) the fourth edition of *Contemporary Linguistic Analysis* (Prentice-Hall, in press).

Cynthia Brown is an Assistant Professor of Linguistics at the University of Delaware. Her research focuses on the acquisition of phonological systems by young children and the impact of phonological acquisition on the development and organization of the speech perception system. In addition, her research examines the role that phonological representations play in the on-line processing of native and non-native speech sounds by adults and she has conducted several studies investigating the second language acquisition of English sound contrasts by speakers of Japanese, Mandarin, and Korean.

Alan Juffs is Associate Professor of Linguistics at the University of Pittsburgh. His research interests include the semantics-syntax interface and constraint-based approaches to second language processing.

Donna Lardiere is Associate Professor of Applied and Theoretical Linguistics at Georgetown University. Her research has primarily focused on the relationship between morphology and syntax in second language acquisition, and the role of morphology in formulating theories about access to Universal Grammar in SLA. She lives in Washington, D.C.

Gary Libben is Professor of Linguistics at the University of Alberta, Canada. His research has focused on the role of morphology in lexical processing and has examined differences among languages and subject populations. In his research publications, Dr Libben has also advanced new techniques for the

investigation of both on-line and off-line lexical processing by native speakers, aphasics, bilinguals, and second language learners.

Bonnie D. Schwartz is a Reader in the Department of Linguistics and English Language at the University of Durham. She specializes in first and second language acquisition of syntax, in addition to research in Germanic syntax. She has published widely in a variety of journals.

Rex A. Sprouse is an Associate Professor of Germanic Studies at Indiana University. Within the field of second language acquisition, his primary research interests lie in the roles of Universal Grammar and transfer. Much of his current research is devoted to the development of the Full Transfer/Full Access model (with Bonnie D. Schwartz, University of Durham) and to exploring the syntax- semantics interface in Interlanguage (with Laurent Dekydtspotter, Indiana University). He is also interested in the syntax of Germanic, Romance, and Celtic languages.

Lydia White is Professor of Linguistics at McGill University. She was one of the first researchers to argue for a role for Universal Grammar in L2 acquisition and she has published extensively in this area. She is on the editorial boards of several journals and she is co-editor of the book series Language Acquisition and Language Disorders, published by John Benjamins.

Martha Young-Scholten is a senior lecturer at the University of Durham. Her research revolves around the adult second language acquisition of phonology and morpho-syntax and the implications of such research for classroom teaching. These areas, as well as language and literacy and first language acquisition in exceptional circumstances, are the focus of her teaching.

Acknowledgments

I would like to thank the following people for helping to put this collection together: Susan Bennett, Naomi Bolotin, Susanne Carroll, Ton Dijkstra, Lynn Eubank, Eithne Guilfoyle, Michael Harrington, Murray Munro, Wayne O'Neil, Joe Pater, Keren Rice, Betsy Ritter, and Sara Thomas Rosen. I would also like to thank Anthony Grahame, the copy-editor of this project, for his careful reading of the text, as well as Steve Smith and Beth Remmes at Blackwell Publishers for their help and guidance. Jana Carson proofread the entire text.

Contents

List of Contributors	vi
Acknowledgments	viii
Introduction	1
1 The Interrelation between Speech Perception and Phonological Acquisition from Infant to Adult Cynthia Brown	4
2 Second Language Syllable Structure Martha Young-Scholten and John Archibald	64
3 Mapping Features to Forms in Second Language Acquisition Donna Lardiere	102
4 Second Language Acquisition: From Initial to Final State Lydia White	130
5 When Syntactic Theories Evolve: Consequences for L2 Acquisition Research Bonnie D. Schwartz and Rex A. Sprouse	156
6 An Overview of the Second Language Acquisition of Links between Verb Semantics and Morpho-syntax Alan Juffs	187
7 Representation and Processing in the Second Language Lexicon: The Homogeneity Hypothesis Gary Libben	228
Index	249

Introduction

As its title may well suggest, this collection is concerned with many aspects of second language grammars. Over the years, the amount of research in different sub-fields of second language acquisition research has made it difficult for scholars to keep abreast of all the current literature. This collection is designed to deal with that difficulty (admittedly with the limitation of considering work undertaken within the formalist, generative tradition of grammar). A grammar, then, is taken to be the representation of knowledge that individuals have of their language within a particular domain.

Investigating the properties of these grammars is not simple. Throughout the book, we will see how a number of tools can be brought to bear on the problem: perception studies, processing studies, and the traditional arsenal of linguistic theory.

In this collection, I have brought together chapters that look at knowledge of phonological segments, syllable structure, morphology, syntax, and semantics. There is also a chapter that deals with what processing studies tell us about the storage of second language grammars.

Cynthia Brown, "The interrelation between speech perception and phonological acquisition from infant to adult," develops a model of speech perception, couched within current phonological theory, that accounts for the influence of the native grammar in both infant and adult speech perception. This model accounts for the differential success that speakers of different first languages have in acquiring a given non-native contrast.

Martha Young-Scholten and John Archibald, "Second language syllable structure," also contrast first and second language acquisition of phonological structure focusing on the differing repair strategies (e.g., deletion versus epenthesis) employed by the two populations. They discuss the influence of such factors as elicitation task, written input, and first language feature geometry that may influence the second language syllable structure. They conclude that, as in other domains, while it may be possible to reset existing structures, it may prove to be difficult if not impossible to trigger new structure that is not present in the first language.

Donna Lardiere, "Mapping features to forms in second language acquisition," examines the relationship of morphological form to syntactic competence in second language acquisition. Within current generative models, the featural properties associated with functional categories are presumed to drive syntactic movement via feature-checking computations. She argues that the features thought to be responsible for UG-constrained operations such as subject raising, nominative case licensing, verb raising, etc. are present and fully specified in the L2 grammar despite deficient morphological affixation. This suggests that syntactic and morphological development are autonomous (though related by a mapping procedure) in second language development.

Lydia White, "Second language acquisition: from initial to final state," addresses three broad themes: (1) theories about the L2 initial state and the kind of grammatical knowledge that the L2 learner starts out with, (2) theories about stages of development, the nature of the stages, and the kind of grammar development that takes place, and (3) theories about the final state or ultimate attainment possible in L2 acquisition. She demonstrates that L2 learners can acquire subtle and abstract properties of the L2 which are not obviously present in the L1 and which are underdetermined by the L2 input. This suggests that interlanguage grammars can be pushed in new directions whether the more abstract underlying principles come from UG, or the L1, or both.

Bonnie D. Schwartz and Rex A. Sprouse, "When syntactic theories evolve: consequences for L2 acquisition research," note that the leading question animating generative research on second language acquisition is whether interlanguage grammars fall within the boundaries set by UG, and if they do not, what their formal properties are. In this chapter, they illustrate how the revisions in linguistic theory can fundamentally affect the conclusions drawn in generative L2 acquisition research. By stepping back from the technicalities of theory, researchers must determine if they have uncovered genuine poverty-of-the-stimulus effects, and whether they see convergent developmental paths among speakers of typologically distinct L1's. Such practice illuminates the etiology and epistemological status of interlanguage grammars.

Alan Juffs, "An overview of the second language acquisition of links between verb semantics and morpho-syntax," provides us with an overview of the research on the place of verb semantics in syntactic theory, as well as a discussion of how second language learners come to acquire the knowledge of mapping from the lexicon to morpho-syntax. He addresses such phenomena as the dative alternation, the locative alternation, and the causative/inchoative alternation. He shows strong evidence for the influence of L1 effects in this domain, however, advanced learners seem able to recover from overgeneralizations by relying on positive evidence from verbs which share the same semantic conflation class.

Gary Libben, "Representation and processing in the second language lexicon: the homogeneity hypothesis," addresses the question of how words

are represented in the bilingual lexicon and how they are accessed in language production and comprehension. He argues that monolinguals, bilinguals, and second language learners possess the same kinds of lexical representations and employ the same kinds of processes in the activation of words in the mental lexicon. Thus, lexical knowledge can be represented in a single lexical architecture and there is no need to postulate individual lexicons for individual languages.

It should be obvious by now that the scope of this collection is sweeping. I hope that its breadth will be of use to second language acquisition researchers who would like to catch up on what has been going on outside their area of specialization. The collection could also serve as a textbook for senior undergraduate or graduate courses on second language acquisition and linguistic theory.

John Archibald
Calgary, March 1999

The Interrelation between Speech Perception and Phonological Acquisition from Infant to Adult*

Cynthia Brown

Introduction

The acquisition of a second language (L2) is clearly *somehow* different from that of a first language (L1): adult second language learners rarely (if ever) achieve the same native competence that children do learning their first language and, conversely, children never experience the degree of difficulty that L2 learners do.¹ This disparity between L2 and L1 acquisition is perhaps most apparent with respect to the acquisition of a second phonological system. Whereas children consistently achieve native competence across the full range of subtle and complex phonological properties of their language,

* Portions of this research were previously presented at the 1994 Boston University Conference on Language Acquisition, the 1994 Second Language Research Forum, and the 1996 Pacific Second Language Research Forum; this chapter is a revised version of chapter four of Brown (1997). Several people have contributed to the completion of this research: I am grateful to Joseph Tomei and John Matthews for lending their voices for experimental stimuli, to Masanobu Ueda for his assistance with the DAT equipment at Hokkaido University, to Dongdong Chen for recruiting Chinese subjects in Montreal, Canada, to Takako Kawasaki for recruiting Japanese subjects in Montreal, Canada and to Michie Namita for recruiting Korean and Chinese subjects in Sapporo, Japan. I would also like to thank Heather Goad and Lydia White for their guidance throughout the course of conducting this research. Finally, this research could not have been completed without the generous contribution of John Matthews to the design and presentation of these studies. The experimental research was supported by SSHRC research grant #410920047 to Lydia White; materials used in stimuli preparation for the picture test reported here were adapted from the Bilingual Aphasia Test (Paradis and Libben, 1987).

second language learners often have extraordinary difficulty mastering the pronunciation and intonation patterns of their L2. This lack of success is often taken as evidence that Universal Grammar (UG) does not operate in second language acquisition; but, perhaps there is another explanation. As White (1989) points out, other factors, in addition to UG, are necessary for successful first and, presumably, second language acquisition (for example, sufficient input and various learning mechanisms). An intriguing line of research suggests that the failure of some L2 learners to attain a native-like competence is attributable to these other factors, rather than to the non-operation of UG.

One such factor that distinguishes second language acquisition from first language acquisition is the fact that the second language learner comes to the task of acquisition already knowing a language. Most current theories of second language acquisition do, in fact, assume that the native language of the learner plays a role in acquisition. Although researchers generally agree that the learner's existing linguistic knowledge exerts some influence on the acquisition process, there is considerable debate as to precisely *what* role the native language plays (e.g., Bley-Vroman's *Fundamental Difference Hypothesis*, 1989, versus White's *Transfer Hypothesis*, 1988; see also papers in Schwartz and Eubank, 1996, on the L2 initial state). Moreover, existing research suggests that the influence of the native grammar is not absolute: some aspects of the L1 seem to prevent successful acquisition of particular L2 structures, whereas other properties of the L2 are acquired with little or no interference from the native grammar (Schwartz, *in press*). The challenge for second language theory now is to provide a principled explanation for the presence or absence of L1 influence, that is, what determines "partial influence".

Building on the insights of prior phonological research, this chapter develops a model of speech perception, couched within current phonological theory, that accounts for the influence of the native grammar in both infant and adult speech perception. More specifically, by utilizing the theory of Feature Geometry, the proposed model demonstrates how the monotonic acquisition of phonological structure by young children restricts their sensitivity to particular non-native contrasts and how the continued operation of this existing phonological structure in adult speech perception constrains which non-native contrasts adult learners will be sensitive to in the L2 input and, therefore, are capable of acquiring. By forging a link between infant speech perception and phonological acquisition, this research lays the foundation for a unified theoretical account of the interrelation between phonological acquisition and speech perception in children and adults. It also offers an explanation for why learners perceive L2 sounds in terms of their native phonemic categories; by isolating and characterizing those phonological properties of the L1 that impinge upon L2 acquisition, this research identifies why and how this equivalence classification takes place. Finally, by demonstrating how the L1 grammar

can both facilitate and hinder acquisition, these findings provide an answer to one of the questions currently central to second language acquisition theory: what determines partial L1 influence? The model outlined in this chapter accounts for the differential success that speakers of different L1s have in acquiring a given non-native contrast; it also accounts for the differential success that speakers with the same L1 have in acquiring various non-native contrasts. Furthermore, the experimental studies reported here demonstrate how the existing phonological system may block accurate perception of the input, thereby preventing the acquisition of novel segmental representations; it also establishes the circumstances in which the native grammar actually facilitates perception of non-native contrasts, demonstrating that when there is sufficient intake to the acquisition device, novel segmental representations can be successfully acquired.

We will begin by reviewing some of the previous research that has been conducted on the L2 acquisition of segments in order to set the context for the present research program and see why a new analysis is needed. Next, the relevant aspects of phonological theory will be laid out and explained. This will be followed by an examination of the development of the native phonological and perceptual systems, which will then lead us to a theory of phonological interference. After the implications of this theory for second language acquisition are laid out, the results of three experimental studies which test this theory will be reported and discussed. The chapter concludes by considering some of the implications of these experimental data for the theory of phonological interference developed here as well as our theory of second language acquisition.

Historical Context and Theoretical Background

Previous L2 phonological research

Although previous L2 phonological research has addressed the question of *whether* the native language plays a role (e.g., Briere, 1966; Flege, 1981; Wode, 1978, 1992), it has not attempted to answer the question of *why* the native language influences L2 acquisition, nor has it formally articulated the mechanisms by which the native grammar influences this acquisition. Using the tools of current phonological theory, we are now in a position to develop a theory of L2 phonological interference which includes a principled explanation for the existence of L1 influence in some instances and its absence in others, as well as a description of the mechanism(s) by which this influence is exerted.

Conducting research in applied areas such as acquisition requires one to strike a delicate balance between (at least) two continually developing theories: our theory of acquisition and our theory of grammar. In the case of

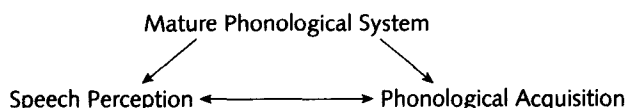


Figure 1.1 Interrelation between speech perception, phonological acquisition and the mature system

L2 phonological acquisition, we must integrate insights from the theory of second language acquisition and current phonological theory. Advances in one of these usually requires us to reinterpret implications of the other in light of these new developments and to recast our theoretical models and experimental hypotheses. Similarly, failure of our acquisition models to correctly account for some aspect of the data force us to consider whether it is the acquisition theory or the linguistic theory underlying our model which is inadequate and needs to be modified. This complex bi-directional relationship often leads to a non-linear flow of progress in acquisition research. We are now once again at a point of reinterpretation, forced by the limitations of current models to reformulate our theory of L2 phoneme acquisition in terms of shifts within both the theory of segmental representation and the theory of second language acquisition.

Successful acquisition of phonological representations requires accurate perception of phonemic contrasts in the input; it is therefore clear that a comprehensive model of L2 phoneme acquisition must integrate not only a theory of second language acquisition and a theory of phonological representation, but also a theory of speech perception. Thus, it is not enough to ask only how the existing phonological system affects acquisition of L2 segments; we must consider all of the relationships illustrated in figure 1.1.

The majority of research on L2 phonological acquisition has investigated the relationship between the mature phonological system and phonological acquisition. But, the interrelation of these factors raises three additional issues that an adequate theory of L2 phoneme acquisition must explain: (1) how does the mature phonological system affect speech perception? (2) how does speech perception affect phonological acquisition? and (conversely) (3) how does phonological acquisition affect speech perception? By isolating the specific research questions addressed by previous L2 phoneme research and highlighting the particular theory of acquisition and/or theory of phonological representation assumed by each approach, we will see why a new analysis is needed.

The earliest systematic approach to the acquisition of L2 segments was undertaken within the contrastive analysis framework, the prevailing theory of second language acquisition of the time (Lado, 1957; Lehn and Slager, 1959; Stockwell and Bowen, 1965). The primary question addressed by this research was how the L1 influenced the acquisition of L2 segments, where acquisition was measured by the learner's ability to produce those segments.

This approach, however, was unable to account for aspects of the observed acquisition data. In particular, it incorrectly predicted that an L2 learner would have the same degree of difficulty with any and all of the L2 sounds not present in the L1 inventory, when, in fact, learners' performance on different L2 segments in experimental conditions ranges from native-like levels of accuracy to chance performance (see Munro, Flege and MacKay, 1996, for a detailed discussion of this point). This approach also failed to explain why learners with different L1s would substitute different L1 sounds for a given L2 sound (e.g., Japanese speakers substitute [s] for [θ] but Russian speakers substitute [t], despite the fact that these L1s contain both /s/ and /t/ – Hancin-Bhatt, 1994a). These shortcomings, and in fact the most significant limitation of this approach, were due not to its comparison of L1 and L2 inventories, but rather to the level of phonological representation at which the languages were compared: these researchers took the phoneme to be the relevant unit of analysis.

Influenced by developments in generative phonology (and publication of Chomsky and Halle's *The Sound Pattern of English*, 1968), the next wave of research on L2 phoneme acquisition focused their analyses on the differences and similarities in distinctive features between the L1 and L2 (Michaels, 1973, 1974; Ritchie, 1968). According to this line of research, difficulty with particular L2 sounds could be explained in terms of featural differences between the L1 and L2, combined with the learner's perceptual biases. This line of research constituted an advance over the previous contrastive analysis approach in that its focus on the distinctive feature as the relevant unit for comparing the L1 and L2 provided language-internal evidence for differential substitutions. Moreover, it represented the first attempt to address the issue of how the mature phonological system might affect speech perception and how that, in turn, might affect phonological acquisition; however, it did not attempt to formally articulate this L1–L2 perceptual mapping, nor did these researchers provide any experimental evidence for their claims about how the native grammar influenced perception.

In the 1970s and 1980s, several perceptual studies conducted with native speakers and language learners provided the necessary experimental evidence, demonstrating that phonemes are indeed generally perceived in terms of the speaker's native categories (Abramson and Lisker, 1970; Miyawaki, Strange, Verbrugge, Liberman, Jenkins and Fujimura, 1975; Werker and Tees, 1984b; Williams, 1977). Since that time, three models have been proposed to explain how L2 sounds are mapped onto L1 sounds. The first model we will consider restricts itself to the relationship between the mature phonological system and speech perception; it does not address how phonological acquisition relates to these two factors. Best (1993, 1994) has developed the Perceptual Assimilation Model (PAM) to explain the role that a speaker's L1 phonological system plays in the perception of non-native sounds. According to this model, non-native sounds are assimilated to a listener's native categories on

the basis of their respective articulatory similarities (more specifically, the spatial proximity of constriction location and active articulators); the degree to which a non-native contrast can be assimilated to native categories determines how well (if at all) a listener will be able to perceive that non-native contrast. While Best's proposal is based on, and supported by, experimental perceptual data, it lacks precise objective criteria for determining how non-native contrasts will be assimilated into native categories. Thus, although the PAM describes the role that a speaker's L1 phonological system plays in the perception of non-native sounds, it does not provide an explanation for why or precisely how this mapping occurs. Moreover, Best's model, concerned primarily with the role of the L1 in the perception of *foreign* sounds, is essentially static; that is, it does not include any means by which the existing L1 phonemic system might be altered by exposure to non-native segmental contrasts and, therefore, does not directly address the acquisition of novel segments.

One model that does address the issue of L2 segment acquisition is the Speech Learning Model (SLM), developed by Flege (1991, 1992, 1995). The SLM attempts to explain how speech perception affects phonological acquisition by distinguishing two kinds of sounds: "new" and "similar". New sounds are those that are not identified with any L1 sound, while similar sounds are those perceived to be the same as certain L1 sounds. Flege suggests that although the phonetic systems used in production and perception remain adaptive over the life span and reorganize in response to sounds in the L2 input, a process of "equivalence classification" hinders or prevents the establishment of new phonetic categories for similar sounds. However, this model does not include a theory-based proposal as to how L2 sounds are equated with L1 sounds; although equivalence classification is stated in probabilistic terms, allowing for the eventual development of L2 categories, there is no concrete proposal for how or when this takes place. Thus, these two models, the PAM and the SLM, attempt to elucidate the interrelation between the mature phonological system, speech perception and L2 phonological acquisition. However, despite their claim that there is an underlying mechanism that maps L2 sounds onto L1 categories, they fail to articulate the nature of that mechanism or adequately formalize the perceptual mapping process.

The most extensive model of speech perception-phonological acquisition interaction to be proposed thus far is Hancin-Bhatt's Feature Competition Model (FCM) (1994a, b). Expanding on the earlier work by Ritchie (1968) and Michaels (1973) described above, this model assumes that the features utilized in a grammar differ with respect to their "prominence": features (and feature patterns) used more frequently in the language's phonology will be more prominent than less frequently used features. Those features that are more prominent in the L1 system will tend to have a greater influence on learners' perception of new L2 sounds; that is, the feature prominences in the L1 will guide how L2 sounds are mapped onto existing L1 categories. Thus,

like the PAM and SLM, the FCM assumes that L2 sounds are assimilated to L1 categories, yet this model goes one step further by providing an algorithm for determining feature prominence and, thereby, generating testable predictions for differential perception and substitution of interdentals across learners with different L1s. Furthermore, it is the first comprehensive model to investigate both the relationship between the mature phonological system and speech perception and the relationship between speech perception and the acquisition of L2 phonemic representations. Thus, this model addresses two of the three relationships indicated in (1) above; it also provides a more formal articulation of the L1-L2 perceptual mapping. However, to date its scope has been limited to the study of interdental substitutions; it is not clear whether this model can account for substitutions of other types of segments cross-linguistically or whether it can account for differential difficulty that speakers of a single L1 encounter in the acquisition of various L2 segments. Most importantly, though, the FCM does not address the reciprocal relation between perception and acquisition, namely how (L1) phonological acquisition affects speech perception.

So, while we are moving closer and closer to a formalization of the influence that the mature phonological system has on speech perception (and the consequence of this for L2 acquisition), we still do not understand how the interrelation between speech perception and phonological knowledge originates; therefore, we fail to capture the essential nature of the phonological transfer mechanism. Investigating the development of speech perception and phonological acquisition in young children will enable us to explain why the mature phonological system exerts such a profound influence in adult speech perception; moreover, utilizing the tools of current phonological theory will allow us to articulate the L1-L2 perceptual mapping mechanism more precisely, as well as allow us to explain how the new phonemic categories develop in the L2 learner (i.e., how the relationships in figure 1.1 change over time).

Phonological theory and the representation of phonemes

Whereas previous research on L1 phonological interference primarily considered the phonemic categories of a language, phonological theory within the generative framework assumes that phonemes themselves have an internal structure. Thus, one way current phonological theory provides greater insight into the phenomenon of L1 influence is the distinction made between phonological representations and the components that comprise those representations. L2 phonological researchers now have an additional tool of analysis: the internal sub-components of phonemes constitute a further level of linguistic knowledge which may impinge upon L2 acquisition. However, these components (i.e., distinctive features) are not simply unordered bundles, as was assumed in the SPE framework (and theories of L2 phoneme acquisition couched within this framework). Instead, the distinctive features are