Introducing Phonology

Designed for students with only a basic knowledge of linguistics, this leading textbook provides a clear and practical introduction to phonology, the study of sound patterns in language. It teaches in a step-by-step fashion the logical techniques of phonological analysis and the fundamental theories that underpin it. This thoroughly revised and updated edition teaches students how to analyze phonological data, how to think critically about data, how to formulate rules and hypotheses, and how to test them.

New to this edition:

- Improved examples, over 60 exercises, and 14 new problem sets from a wide variety of languages encourage students to practice their own analysis of phonological processes and patterns
- A new and updated reference list of phonetic symbols and an updated transcription system, making data more accessible to students
- Additional online material includes pedagogical suggestions and password-protected answer keys for instructors

David Odden is Professor Emeritus in Linguistics at Ohio State University.
Cambridge Introductions to Language and Linguistics

This new textbook series provides students and their teachers with accessible introductions to the major subjects encountered within the study of language and linguistics. Assuming no prior knowledge of the subject, each book is written and designed for ease of use in the classroom or seminar, and is ideal for adoption on a modular course as the core recommended textbook. Each book offers the ideal introductory material for each subject, presenting students with an overview of the main topics encountered in their course, and features a glossary of useful terms, chapter previews and summaries, suggestions for further reading, and helpful exercises. Each book is accompanied by a supporting website.

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Introducing Phonology

Second Edition

DAVID ODDEN
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About this book

This is an introductory textbook on phonological analysis, and does not assume any prior exposure to phonological concepts. The core of the book is intended to be used in a first course in phonology, and the chapters which focus specifically on analysis can easily be covered during a ten-week quarter. Insofar as it is a textbook in phonology, it is not a textbook in phonetics, and it presupposes an elementary knowledge of transcriptional symbols.

The main emphasis of this book is developing the foundational skills needed to analyze phonological data, especially systems of phonological alternations. For this reason, there is significantly less emphasis on presenting the various theoretical positions which phonolologists have taken over the years. Theory cannot be entirely avoided, indeed it is impossible to state generalizations about a particular language without a theory which gives you a basis for postulating general rules. The very question of what the raw data are must be interpreted in the context of a theory, thus analysis needs theory. Equally, theories are formal models which impose structure on data – theories are theories about data – so theories need data, hence analysis. The theoretical issues that are discussed herein are chosen because they represent issues which have come up many times in phonology, because they are fundamental issues, and especially because they allow exploration of the deeper philosophical issues involved in theory construction and testing.
Acknowledgments

A number of colleagues have read and commented on versions of this book. I would like to thank Lee Bickmore, Patrik Bye, Chet Creider, Lisa Dobrin, Kathleen Currie Hall, Sharon Hargus, Tsan Huang, Beth Hume, Keith Johnson, Ellen Kaisse, Susannah Levi, Marcelino Liphola, Mary Paster, Charles Reiss, Richard Wright, and especially Mary Bradshaw for their valuable comments on earlier drafts. I would also like to thank students at the University of Western Ontario, University of Washington, University of Tromsø, Ohio State University, Kyungpook National University, Concordia University, and the 2003 LSA Summer Institute at MSU, for serving as a practical sounding board for this book. Numerous colleagues have provided valuable input leading to the revised version of this book, and I regret being unable to thank them all personally.

Data from my own field notes provide the basis for a number of the examples, and I would like to thank my many language consultants for the data which they have provided me, including Tamwakat Gofwen (Angas), Bassey Irele (Efik), Edward Amo (Gâ), Jean-Paul Lamah (Guerze), John Mtenge and the late Margaret Fivawo (Hehe), Beatrice Mulala (Kamba), Oben Ako (Kenyang), Deo Tungaraza (Kerewe), Matthew Kirui (Kipsigis), Habi (Kotoko), Rose Kamwesa (Llogoori), Emmanuel Manday (Matuumbi), Patrick Bamwine (Nkore), David Mndolwa (Shamba), Kokerai Rugara (Shona), Udin Saud (Sundanese), Nawang Nornang (Tibetan), and Christopher Oruma (Urhobo).

I would like to thank a number of professional colleagues for providing or otherwise helping me with data used in this book, including Charles Marfo (Akan), Grover Hudson (Amharic), Bert Vaux (Armenian), David Payne (Arxinde Campa), Hamza Al-Mozainy (Bedouin Hijazi Arabic), Nasiombe Mutonyi (Bukusu), the late Ilse Lehiste (Estonian), Anders Holmberg (Finnish), Georgios Tserdanelis (Modern Greek), Lou Hohulin (Keley-i), Younghee Chung, Noju Kim, Mira Oh and Misun Seo (Korean), Chacha Nyaigotti Chacha (Kuria), Martin Haspelmath (Lezgian), Marcelino Liphola (Makonde), Karin Michelson (Mohawk), Ove Lorentz (Norwegian), Berit Anne Bals Baal (North Saami), Nadya Vinokurova (Sakha/Yakut), Wayles Browne, Svetlana Godjevac, and Andrea Sims (Serbo-Croatian), and Rose Aziza (Urhobo), all of whom are blameless for any misuse I have made of their languages and data.

Finally, I would like to acknowledge my debt to authors of various source books, in particular Whitley 1978, Halle and Clements 1983, Pickett 2002, and especially Kenstowicz and Kisseberth 1979.
A note on languages

The languages which provided data for this book are listed below. The name of the language is given, followed by the genetic affiliation and location of the language, finally the source of the data (“FN” indicates that the data come from my own field notes). Genetic affiliation typically gives the lowest level of the language tree which is likely to be widely known, so Bantu languages will be cited as “Bantu,” and Tiv will be cited as “Benue-Congo,” even though “Bantu” is a part of Benue-Congo and “Tiv” is a specific language in the Tivoid group of the Southern languages in Bantoid. Locations will generally list one country but sometimes more; since language boundaries rarely respect national boundaries, it is to be understood that the listed country (or countries) is the primary location where the language is spoken, especially the particular dialect used; or this may be the country the language historically originates from (the Yiddish-speaking population of the US appears to be larger than that of any one country in Eastern Europe, due to recent population movements).

Akan [Volta-Congo; Ghana]: Dolphyne 1988; Charles Marfo p.c.
Amharic [Semitic; Ethiopia]: Whitley 1978; Grover Hudson p.c.
Angas [Chadic; Nigeria]: FN.
Arabela [Zaparoan; Peru]: FN.
Aramaic (Azerbaijani) [Semitic; Azerbaijan]: Hoberman 1988.
Araucanian [Araucanian; Argentina, Chile]: Echeverria and Contreras 1965; Hayes 1995.
Armenian [Indo-European; Armenia, Iran, Turkey]: Vaux 1998 and p.c.
Axinimca Campa [Arawakan; Peru]: Payne 1981 and p.c.
Bedoun Hijazi Arabic [Semitic; Saudi Arabia]: Al-Mozainy 1981 and p.c.
Bukusu [Bantu; Kenya]: Nasiombe Mutonyi p.c.
Cairene Arabic [Semitic; Egypt]: Broselow 1979.
Chukchi [Chukotko-Kamchatkan; Russia]: Krauss 1981.
Efik [Benue-Congo; Nigeria]: FN.
Evenki [Tungusic; Russia]: Konstantinova 1964; Nedjalkov 1997; Bulatova and Grenoble 1999.
Ewe (Anlo) [Volta-Congo; Benin]: Clements 1978.
Farsi [Indo-European; Iran]: Obolensky, Panah, and Nouri 1963.
Finnish [Uralic; Finland, Russia]: Whitney 1956; Lehtinen 1963; Anders Holmberg p.c.
Fore [Papuan; Papua New Guinea]: Pickett 2002.
Gà [Volta-Congo; Ghana]: FN in collaboration with Mary Paster.
Gen [Kwa; Togo]: FN.
Greek [Indo-European; Greece]: Georgios Tserdanelis p.c.
Guerze (Kpelle) [Mande; Guinea]: FN.
Hebrew [Semitic; Israel]: Kenstowicz and Kisseberth 1979.
Hebe [Bantu; Tanzania]: FN in collaboration with Mary Odden.
Holoholo [Bantu; Congo]: Coupez 1955.
Isthmus Zapotec [Oto-Manguean; Mexico]: Pickett 2002.
Jita [Bantu; Tanzania]: Downing 1996.
Kamba [Bantu; Kenya]: FN in collaboration with Ruth Roberts-Kohno.
Karok [Hokan; USA]: Bright 1957; Kenstowicz and Kisseberth 1979.
Keley-i [Austronesian; Philippines]: Kenstowicz and Kisseberth 1979; Lou Hohulin p.c.
Kenyang [Bantu; Cameroon]: FN.
Kera [Chadic; Chad]: Ebert 1975; Kenstowicz and Kisseberth 1979.
Kerewe [Bantu; Tanzania]: FN.
Kipsigis [Nilotic; Kenya]: FN.
Kolami [Dravidian; India]: Emeneau 1961.
Korean [Korean; Korea]: Martin 1992; Younghee Chung, Noju Kim, Mira Oh and Misun Seo p.c.
Koromfe [Gur; Bourkina Fasso]: Rennison 1997.
Kotoko [Chadic; Cameroon]: FN.
Kuria [Bantu; Kenya]: FN.
Lardil [Pama-Nyungan; Australia]: Klokeid 1976.
Latin [Indo-European; Italy]: Allen and Greenough 1983; Hale and Buck 1966.
Lezgian [Northeast Caucasian; Dagestan and Azerbaijan]: Haspelmath 1993 and p.c.
Lithuanian [Indo-European; Lithuania].
Luganda [Bantu; Uganda]: Cole 1967; Snoxall 1967.
Lulubo [Nilo-Saharan; Sudan]: Andersen 1987.
Makonde [Bantu; Mozambique]: Marcelino Liphola p.c.
Maltese [Semitic; Malta]: Aquilina 1965; Borg and Azzopardi-Alexandre 1997; Brame 1972; Hume 1996.
Manipur [Sino-Tibetan; India, Myanmar, Bangladesh]: Bhat and Ningombha 1997.
Margyi [Chadic; Nigeria]: Hoffmann 1963.
Matuumbi [Bantu; Tanzania]: FN.
Mbuya [Bantu; Tanzania]: FN.
Mende [Mande; Liberia, Sierra Leone]: Leben 1978.
Mixtec [Mixtecan; Mexico]: Pike 1948; Goldsmith 1990a.
Mixteco [Oto-Manguean; Mexico]: Pickett 2002.
Mohawk [Hokan; USA]: Postal 1968; Beatty 1974; Michelson 1988 and p.c.
Mongo [Bantu; Congo]: Hulstaert 1961.
Mongolian [Altai; Mongolia]: Hangin 1968.
Nkore [Bantu; Uganda]: FN in collaboration with Robert Poletto.
Norwegian [Germanic; Norway]: Ove Lorentz p.c.
Osage [Siouan; Oklahoma]: Gleason 1955.
Ossetic [Indo-European; Georgia, Russia]: Abaev 1964; Whitley 1978.
Palauan [Austronesian; Palau]: Josephs 1975; Flora 1974.
Polish [Slavic; Poland]: Kenstowicz and Kisseberth 1979.
Quechua (Cuzco) [Quechua; Peru]: Bills, Vallejo, and Troike 1969; Cusihuamán 1976.
Saami [Uralic; Sápmi (Norway, Sweden, Finland, Russia): FN in collaboration with Curt Rice and Berit Anne Bals Baal.
Sakha (Yakut) [Altai; Russia]: Krueger 1962; Nadezhda Vinokurova p.c.
Samoan [Austronesian; Samoa]: Milner 1966.
Serbo-Croatian [Slavic; Yugoslavia]: Kenstowicz and Kisseberth 1979; Wayles Browne, Svetlana Godjevac, and Andrea Sims p.c.
Shambaa [Bantu; Tanzania]: FN.
Shona [Bantu; Zimbabwe]: FN.
Slave [Athapaskan; Canada]: Rice 1989.
Slovak [Slavic; Slovakia]: Kenstowicz 1972b; Rubach 1993.
Sundanese [Austronesian; Indonesia]: FN.
Swati [Bantu; Swaziland]: FN.
Syrian Arabic [Semitic; Syria]: Cowell 1964.
Tera [Chadic; Nigeria]: Newman 1968.
Thai [Tai; Thailand]: Halle and Clements 1983.
Tibetan [Sino-Tibetan; Tibet]: FN.
A note on languages

Tohono O’odham (Papago) [Uto-Aztecan; USA]: Saxton 1963; Saxton and Saxton 1969; Whitley 1978.
Tonkawa [Coahuiltecan; USA]: Hoijer 1933.
Tswana [Bantu; Botswana]: Cole 1955; Snyman, Shole, and Le Roux 1990.
Turkish [Altaic; Turkey]: Lees 1961; Foster 1969; Halle and Clements 1983.
Ukrainian (Sadžava, Standard) [Slavic; Ukraine]: Carlton 1971; Kenstowicz and Kisseberth 1979; Press and Pugh 1994 (Standard); Popova 1972 (Sadžava).
Urhobo [Edoid; Nigeria]: Aziza 2008 and p.c.; FN.
Vata [Kru; Côte d’Ivoire]: Kaye 1982.
Votic [Uralic; Russia]: Ariste 1968.
Wintu [Penutian; USA]: Pitkin 1984.
Woleaian [Austronesia; Micronesia]: Sohn 1975.
Xavante [Jé; Brazil]: Pickett 2002.
Yekhee (Etsako) [Edoid; Nigeria]: Elimelech 1978.
Yiddish [Germanic; Eastern Europe]: Neil Jacobs p.c.
Yoruba [Kwa; Nigeria]: Akinlabi 1984.
Zoque [Mixe-Zoquean; Mexico]: Pickett 2002.
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<th>Meaning</th>
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<tbody>
<tr>
<td>abl</td>
<td>ablative</td>
<td>masc</td>
<td>masculine</td>
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<tr>
<td>acc</td>
<td>accusative</td>
<td>ms(c)</td>
<td>millisecond</td>
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<tr>
<td>ant</td>
<td>anterior</td>
<td>nas</td>
<td>nasal</td>
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<tr>
<td>ATR</td>
<td>advanced tongue root</td>
<td>neut</td>
<td>neuter</td>
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<tr>
<td>bk</td>
<td>back</td>
<td>nom</td>
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<tr>
<td>c.g.</td>
<td>constricted glottis</td>
<td>obj</td>
<td>object</td>
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<tr>
<td>cl</td>
<td>class</td>
<td>pl</td>
<td>plural</td>
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<tr>
<td>cons</td>
<td>consonantal</td>
<td>poss</td>
<td>possessive</td>
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<td>cont</td>
<td>continuant</td>
<td>pres</td>
<td>present</td>
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<td>cor</td>
<td>coronal</td>
<td>rd</td>
<td>round</td>
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<tr>
<td>dat</td>
<td>dative</td>
<td>sg. sing</td>
<td>singular</td>
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<tr>
<td>dB</td>
<td>decibel</td>
<td>s.g.</td>
<td>spread glottis</td>
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<td>del.rel</td>
<td>delayed release</td>
<td>son</td>
<td>sonorant</td>
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<td>dim</td>
<td>diminutive</td>
<td>sp</td>
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<td>distr</td>
<td>distributed</td>
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<td>e.o.</td>
<td>each other</td>
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<td>intr</td>
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<td>1</td>
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