Evolutionary Phonology

Evolutionary Phonology is a new theory of sound patterns which synthesizes results in historical linguistics, phonetics, and phonological theory. In this groundbreaking book, Juliette Blevins explores the nature of sound patterns and sound change in human language over the past 7,000–8,000 years, the time depth for which the comparative method is reasonably reliable. This book presents a new approach to the problem of how genetically unrelated languages, as far apart as Native American, Australian Aboriginal, Austronesian, and Indo-European, can often show similar sound patterns, and also tackles the converse problem of why there are notable exceptions to most of the patterns that are often regarded as universal. It argues that in both cases, a formal model of sound change incorporating misperception and variable articulation can account for attested sound systems without reference to markedness or naturalness within the synchronic grammar.

Wide-ranging, clearly structured, and original, this book will be of key interest to all linguists working in phonology, phonetics, historical linguistics, and language change.

JULIETTE BLEVINS was formerly Visiting Professor at the Department of Linguistics, University of California, Berkeley from 2002, and joined the Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology, Leipzig, in Fall 2004. Her research interests span almost every domain of phonology, including syllable structure, tone, feature structure, stress, and metathesis. In addition to numerous articles on phonology, morphology, and sound change, she has also previously published *Nhanda: an aboriginal language of Western Australia*, and is currently working on a grammar and dictionary of Yurok, an endangered language of northwestern California.

Evolutionary Phonology

The emergence of sound patterns

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For Jim,

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Contents

Preface

This is a book about phonology or sound patterns of the world's languages. In this book I present a new synthesis of historical and non-historical accounts of sound patterns. Anyone who studies phonology soon comes to realize that many sound patterns occur with more-than-chance frequency. Other sound patterns are quite rare. In this book, I provide evidence that recurrent sound patterns are the transparent result of recurrent sound change, where sound change is a direct consequence of the indirect transmission of language across generations. Other recurrent sound patterns reflect direct inheritance from a mother tongue. Rare sound patterns are either the result of uncommon sound changes, or result from the combined effects of independent sound changes. Certain sound changes are more common than others because they are rooted in the way we hear and speak. By attributing common sound patterns to phonetically based sound change, there is no need to encode the same phonetic explanations in synchronic grammars. Synchronic grammars model speakers' knowledge of language. In the realm of sound patterns, synchronic grammars include seemingly universal categories of features, segments, syllables, and other prosodic categories. At the same time, they encode many language-specific sound patterns. By viewing recurrent sound patterns as instances of parallel or convergent evolution in the domain of speech perception and production, synchronic grammars can be modeled as pure expressions of grammatical knowledge.

This book is about how the mature human language faculty, in all its complexity, has given rise to thousands of languages which, in many cases, though genetically unrelated, show similar sound patterns. Contrary to what the title may imply, this is not a book about the evolution of language in the human species. Though I do draw parallels between the evolution of sound patterns and Darwin's theory of natural selection, these parallels are largely metaphorical. This book does not deal with the biological or neurological foundations of language and should not be read as a neo-Darwinian treatise. The period of study is roughly the past 7,000 years – extremely short by biological standards, but a widely accepted

estimate of the approximate time depth for which the comparative method of historical reconstruction is reliable.

The parallels between biological evolution and language change across generations must be metaphorical by definition. While the brain's general capacity for language is genetically transmitted from one generation of humans to the next, the ability to speak *a particular language* is not transmitted in this way. On the contrary, natural first-language learning occurs through complex social interactions. And evidence is mounting that a large amount of the knowledge we have of language is highly language specific, from fine details of pronunciation, to ways in which events are situated in time and space. If so much of language learning involves acquired knowledge, then we cannot make a direct parallel between inherited genetic traits and inherited features of language; direct inheritance in genetics is the norm, while indirect inheritance (via human transmission) is the norm in language transmission. Whenever evolutionary models are mentioned then, I will try to be explicit about where parallels are helpful and enlightening, and where they may be misleading.

This book is written for anyone with a general background in linguistics, whose interests include sound patterns, sound change, and the relationship between phonetics and phonology. It is not meant to be an introduction to phonology, nor is it meant solely as an advanced technical work for specialists in the field. Rather, it is written for enquiring minds who would like to understand why the sound systems and sound patterns of languages are the way they are. Those with serious interests in phonology, phonetics, sound change, typology and universals, markedness theory, explanation and naturalness, and the relationship between synchrony and diachrony will find, in this volume, a link between all these domains of inquiry. Those with interests in biological properties of the human organism and evolutionary theory will find in this volume explanations for structure in one component of human language – the sound system – which essentially demonstrate the emergent character of many structural properties.

This book should also be of interest to scholars in closely related fields (e.g. neurology, psychology, computer science, philosophy, anthropology) who have come to question the view that the grammars of all languages are basically the same due to inherited properties of the human species. A bold claim of this model is that the precise set of sounds, sound sequences, and context-determined sound alternations found in a given language are all *learned aspects of grammar*. These aspects of grammar are language-specific and subject to a great deal of variation across languages. In other words, cross-linguistic tendencies are real things in the same

way that natural selection is real. Natural selection may result in brightly colored foul-tasting butterflies alongside well-camouflaged sweet-tasting moths. The cooccurrence of bright colors/bad taste and camouflage/good taste however is not attributed to any intrinsic property of particular butterflies or moths. On the contrary, we know very well that many other combinations of properties can and do exist. The *tendency* for certain combinations to be more common than others in the natural world can, in many cases, be seen as a consequence of natural selection: an association of bright colors and bad taste warns predators of a sickening meal; the absence of such colors will yield higher rates of predation, unless an organism has other means of avoiding capture, e.g. well-developed camouflage. In the field of linguistics, it has become quite common to attribute recurrent properties or combinations of properties to intrinsic properties of the language faculty. In this book, I show that many of these recurrent properties are the result of common pathways of language evolution. If a particular sound change can be shown to be common, then the sound pattern which results from that sound change is predicted to be common. This simple relationship between common sound change and common sound patterns appears to account for the majority of attested recurrent sound patterns in the world's languages.

For courses in phonology, phonetics, or historical linguistics, this book will fill a noticeable gap: while standard textbooks often address phonetic explanations for sound change, or phonetic explanations for synchronic phonological patterns, there are few texts where phonetic explanations, sound change, and synchronic sound patterns are connected in a coherent way. For courses in phonological theory, chapters can be used to stimulate debate in numerous areas, including: explanation in phonology; the role of naturalness and markedness in grammar; the inventory of phonological universals; the nature of phonological conspiracies; methods of assessing phonological productivity; the interpretation of data from language acquisition; and models of phonologization. A student of experimental or descriptive phonetics will find in this book a concrete example of how phonetic science informs linguistic theory. It is only through detailed understanding of speech perception and production that we come to understand the range of phenomena which underlie regular sound change. To the extent that sound change defines synchronic sound patterns, this detailed understanding is invaluable to advances in the field. For historical linguistics, this book provides a general link between neogrammarian discoveries, advances in modern phonetics, and phonological theory. It can be read as an expanded treatise on the nature and role of regular sound change in grammar, as a general reification of the importance of

historical explanations in our conceptions of grammar, or as an exemplification of the non-teleological nature of sound change when viewed in the broadest terms.

For readers with interests in evolutionary biology, I suggest that this book be read as a complement to other work in the field of language evolution. Collections such as Briscoe (in press), Hurford et al. (1998), and Knight et al. (2000) provide a wide range of views on the evolution of linguistic form and grammatical structure. This book can be seen as picking up from the point where Lindblom (1998), Kohler (1998), de Boer (2001), and others leave off. Once a system of categories and contrasts has been established, what are the forces which continue to shape sound systems, and which have led to similar sound patterns in so many of the world's languages? How can regular sound change, as one aspect of language evolution, shed light on the synchronic patterns which modern phonology attempts to formalize? What aspects of linguistic phonetics and language structure lead to ambiguity or biases in the acquisition process? Are there default strategies in language acquisition which play a role in regular sound change? And more generally, in comparing language evolution with biological evolution, what parallels are useful and instructive? Is there a role for natural selection in the world of sounds?

The general outlines of Evolutionary Phonology are presented in part I, with empirical support and exemplification in part II. Theoretical implications are discussed in part III. I ask the forbearance of the non-phonologist for the amount of data and technical detail discussed in part II. Given the somewhat controversial nature of the approach, I feel obligated to present its empirical basis in some detail. At the same time, at the risk of alienating those with little phonetic background, I have presented only the barest outlines of cross-linguistic patterns, phonetic explanations, and experimental findings, hoping that those with interest will consult the sources cited in the text. For those with backgrounds in the biological sciences, there is a brief reference to the evolution of toepads in lizards in chapter 2, and to frog calls in chapter 6; otherwise, the comparison with biological systems, as stressed in chapter 2, is strictly metaphorical. For those interested in language acquisition, a close reading of chapter 2, where the general model of sound change is spelled out, can be combined with relevant facts from the acquisition literature summarized in chapter 9. As the empirical basis of this work lies equally in historical linguistics, phonetics, modern phonological theory, and language acquisition, there is no way the range of debate in all of these domains can be properly represented within a single volume. Wherever possible, I have given key references within each subfield which summarize the range of empirical data relevant to points under discussion.

While this book can be read as a modern neogrammarian treatise, its empirical foundations are the sound patterns which characterize synchronic phonological systems. Historical explanations are not only meant to account for language-particular detail, but also for the broad range of cross-linguistic generalizations characteristic of synchronic sound patterns. Phonetic science is a tool which allows us to understand how and why regular sound change occurs. Where regular sound change remains unexplained, it is only a matter of time before phonetic hypotheses can be tested in the laboratory. It is my hope that this book will serve as a catalyst for future phonetic studies whose results will provide explanations for sound patterns which are not yet well understood.

This book is the culmination of nearly twenty years of cross-linguistic research in phonology. This research includes studies of: syllable structure (Levin 1985a, 1987a; Blevins 1995a, 2001b, 2002a, b, 2003a, to appear a); stress (Levin 1988a, 1988b; Blevins 1992; Blevins and Harrison 1999); tone (Blevins 1993b, 1995b); segment structure (Blevins 1994a, 2003a); laryngeal phonology (Blevins 1993a, 2002b, 2003a; Blevins and Marmion 1995); prosodic phonology and morphology (Levin 1983, 1985b; Blevins 1994b, c, 1996, 1999b, 2003b); segment underspecification (Levin 1987b, c; Blevins 1993c); and sound change (Blevins 1997, 1999a, to appear b, c; Blevins and Blust 2003; Blevins and Garrett 1993, 1998; Blevins and Marmion 1994; Garrett and Blevins to appear). Past and current research, as reflected in this book, covers a wide range of languages, including, but not limited to, Austronesian, Native American, Australian Aboriginal, and Indo-European languages. Despite the wide range of topics and languages covered, a theme runs through many of these studies, one which provides the foundation for this work: phonological theory will be greatly enriched by providing precise analyses of largely ignored, misunderstood, problematic, and exceptional facts. In the course of investigating exceptional patterns, it becomes clear that the exceptions cannot be understood without first understanding the basis of the original phonological generalization they appear to violate. It is this search for understanding that has led slowly, but steadily, to the approach presented here.

As I write these words, I am conscious of the fact that another language will die this month, and more this year. Whether you, as a reader, are convinced by the linguistic arguments in this book or not, let me try to convince you here of something different, which I firmly believe. The science of linguistics advances as we come to understand the possible range of variation within and across languages. Much of this understanding is impossible without examining language in its social and cultural context. For this reason, the future advance of the scientific study

of language depends, in part, on the survival of endangered languages and cultures. In this book alone, I rely on data from hundreds of languages, most of which are endangered. Many of the central arguments I present could not be made but for the hard work of linguists who have devoted their lives to language description and language maintenance. And I am not alone. The phonological literature is filled with seminal references to endangered and dormant languages, from Yowlumne here in California, to Lardil of Mornington Island. Whether you are a general reader, a professional linguist, a linguist-in-training, or a tropical fish specialist working in the forests of Mexico, look around you, and see if there is any way you can help an endangered language survive. As students of language, language endangerment threatens us all. Let us all try to do something, before it is too late.

Acknowledgments

This book, like most, is not the work of an isolated individual. There are many people who have provided me with guidance, encouragement, data, arguments, counterarguments, and more, who I would like to briefly acknowledge.

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My view of sound patterns is informed not only by the many descriptive grammars available in print but also by patient teachers who have allowed me to attempt my own grammatical descriptions. If there is anything that has led to my appreciation of language-specific aspects of grammar and their historical origins, it is this work. Sincere thanks to my Nhanda teacher, Lucy Ryder of Northampton, Western Australia; may she and her language rest in peace. Ongoing thanks to my Yurok teachers, Aileen Figueroa of Westhaven, California, and Jimmie James of Hoopa, California, and to the Language Committee of the Muwekma Ohlone Tribe for allowing me to learn the Chochenyo language in the context of their revitalization movement.

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began to question some of the basic assumptions of modern phonological theory. I am grateful to John for replying to so many of my queries, and for keeping me on his mailing list for so many years. I also thank the same four people for their professional support. My career has taken some odd turns, geographically and otherwise, and having this support has made it easier to do what I felt was right.

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