

Frontiers of Phonology: Atoms, Structures, Derivations

Jacques Durand
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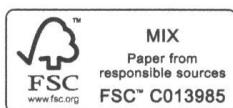
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Contributors

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Wiebke Brockhaus is Lecturer in German at the University of Huddersfield. She has worked mainly on aspects of the phonology of German, especially on final devoicing, about which she is now writing a book (based on her 1992 University of London PhD thesis). Having participated in a Government Phonology-based automatic speech recognition project at the School of Oriental and African Studies (University of London) in the past, she is currently involved in a similar undertaking at the University of Huddersfield.

John Coleman is Director of the Phonetics Laboratory at the University of Oxford. He has written many papers on declarative phonology, and has a special interest in developing computational implementations of non-segmental phonology and phonetics in speech synthesis. He is co-author (with J. P. Olive and A. Greenwood) of *Acoustics of American English Speech* (1993).

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John Harris, Reader in Linguistics at University College London, writes on phonological theory, language change and the history of English. He is the author of *Phonological variation and change* (1985, Cambridge University Press) and *English sound structure* (1994, Blackwell).

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Jonathan Kaye is Professor of General Linguistics at the School of Oriental and African Studies (University of London). The author of many books and papers on various aspects of phonological theory, notably *Phonology: A cognitive view* (1989), 'Coda' Licensing (1990) and *Constituent structure and government in phonology* (1990, with Jean Lowenstamm and Jean-Roger Vergnaud). Along with the two last mentioned linguists, he is one of the originators of the theory of Government Phonology.

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Douglas Pulleyblank is Associate Professor at the University of British Columbia. His research has centred on autosegmental representations, with a focus on West African languages. He is the author of *Tone in Lexical Phonology* (1986) and *Grounded Phonology* (with Diana Archangeli, 1994).

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Introduction

Jacques Durand and Francis Katamba

Frontiers of Phonology: Atoms, Structures, Derivations is a collection of essays that present a selective overview of recent trends in the linguistic analysis of sound structure. During the 1970s and the 1980s a fairly radical reconfiguration of the field of phonology took place, largely against the backdrop of Chomsky and Halle's *The Sound Pattern of English* (1968), hereafter abbreviated as SPE. The need to move away from the spartan approach to phonological representations advocated in SPE is now universally accepted but the range of solutions provided within current frameworks can be quite confusing for the non-specialist. Our aim is not to attempt to provide an exhaustive, panoramic coverage of the entire field, but rather to explore theoretical issues in three core areas of phonological theory from a number of different perspectives. The questions fall into three broad categories:

1. The nature and representation of phonological features (Are they unary or binary? What is the architecture of featural representations? Is underspecification justified?).
2. The role and structure of the skeletal tier and syllable structure.
3. The competing claims of derivational and declarative approaches to phonology.

All these issues are controversial. A major objective of this book is to provide a forum for the discussion of important theoretical topics from the standpoint of frameworks such as Autosegmental and Multidimensional Phonology, Moraic Phonology, Dependency Phonology, Government Phonology and Declarative Phonology.

Not surprisingly, no one approach has found all the answers to all the questions. So, in phonology, as in many other fields of inquiry, much is to be gained from constructive criticism, debate and dialogue with those who adopt a stance different from one's own.

Further, we hope that the light thrown on these matters by dialogue will facilitate the task of judging the relative merits of the competing post-SPE models. This should be a welcome result for anyone who is sometimes left bewildered by the claims made by adherents of phonological models which are in some respects radically different and in other ways quite similar – in spite of what their proponents might say.

This book is intended for a variety of readers: advanced linguistics students and professional linguists, psychologists, speech scientists and scholars in related fields who are interested in finding out what modern phonologists are up to today. While we expect the reader to have more than a nodding acquaintance with post-SPE generative phonology, a serious effort has been undertaken to provide essays which are self-standing and do not presuppose a specialist knowledge of the issues under discussion. Readers who feel that their background is not sufficient for coming to grips with the issues discussed in this book are referred to Durand (1990a) or Katamba (1989).

Part 1 of the book deals with the atoms of phonological representation. In SPE it is assumed that segments are made up of unordered sets of phonological features and that these features are binary. Both these assumptions have been challenged within a variety of frameworks but the dust has not yet settled on these debates. In Douglas Pulleyblank's 'Feature geometry and underspecification' (Chapter 1), it is first of all argued that to account properly for assimilatory processes one needs to move radically away from the SPE model. But it is not enough to organize features in different tiers or planes as is done in Autosegmental Phonology. The best account of assimilation processes requires a geometric organization of features, i.e. that features should be intrinsically organized into a hierarchical set of a universally defined nature. Pulleyblank's Chapter then turns to the degree of specification of phonological features. While in SPE all features are fully specified as + or -, evidence is given that underspecified representations (which allow for only one feature-value to be present) can be advantageous from the point of view both of phonology and of phonetic implementation. This does not mean, however, that only unary (or monovalent) features should be countenanced. While the class nodes of geometric representations are inherently monovalent, Pulleyblank argues that the terminal features which hang from

class nodes are binary in nature. Both values (+ or -) of features such as [ATR] or [voice], define a natural class and both can be manipulated by phonological processes.

In marked contrast with Pulleyblank's Chapter, John Harris and Geoff Lindsey in Chapter 2, 'The elements of phonological representation' claim that phonological primes are inherently unary. It should not be assumed, however, that the atoms of phonology (which they call 'elements') are the standard distinctive features minus the assumption of binarity. Harris and Lindsey put forward the idea that the elements are different from classical features in being independently interpretable – a hypothesis most vigorously defended within Government Phonology but also associated with Dependency Phonology and Particle Phonology. They then exemplify the theory of elements and show how phenomena assumed to require binary features can be appropriately handled with unary elements within a Government Phonology framework. The paper is also challenging in criticizing underspecification, and in tackling the question of the cognitive basis of phonological primes. In the wake of Jakobson, Harris and Lindsey argue strongly in favour of primes which are mappable in the first instance not onto articulations, but onto sound patterns. As part of the discussion, the authors offer a description of the elemental acoustic patterns which characterize a few of the primitives.

In 'Radical CV Phonology: the categorial gesture', Harry van der Hulst offers a discussion of phonological primitives from the standpoint of a revised version of Dependency Phonology. The symbols C and V in his title do not refer to the skeletal units in the sense of Clements and Keyser (1983), as used in Bickmore's article here, but to two phonological features which play a central role in his account. As in classical Dependency Phonology, van der Hulst assumes that phonological primes are grouped in hierarchical sets, called gestures, but unlike standard accounts of feature geometry (see Pulleyblank this volume) the dependency relation is seen as central to the internal structure of segments. For reasons of space, this article concentrates on the 'categorial' gesture. It includes an outline of classical Dependency Phonology proposals concerning this gesture (see Anderson and Ewen, 1987) which provides a clear point of departure for van der Hulst's own radical proposals.

Part 2 of the book is devoted to the skeletal tier and its relation to aspects of suprasegmental structure (in particular, the syllable). During the 1970s and 1980s, a lot of effort was devoted to the reintroduction of the syllable, and other units of the prosodic hierarchy, within phonological theory. It became accepted that phonological representations should be multidimensional and that

the various planes should be organized around a set of timing or weight units (Cs and Vs, Xs or morae according to the framework), often referred to as the skeleton or the skeletal tier.

Lee Bickmore's Chapter 4, 'Accounting for compensatory lengthening in the CV and moraic frameworks' begins with a survey of the developments in skeletal phonology that led to the rise of moraic theory. Bickmore then goes on to present a detailed analysis of compensatory lengthening of vowels in current moraic theory. The thesis offered in this chapter is that moraic theory presents a more adequate account of compensatory lengthening phenomena than skeletal accounts formulated in terms of either Cs and Vs or Xs. In Chapter 5, 'The role of moraic structure in the distribution of segments within syllables', Draga Zec defends the idea that the mora is the unit in terms of which segments are regulated and syllable structure is projected. She advances this thesis through an explanatory account of complex nasal interactions in Pali. This chapter is also interesting in presenting an account of phonological structure in terms of Prince and Smolenski's Optimality Theory (1993). This approach is based on constraints and constraint-interactions and claims that constraints (unlike classical phonological rules) do not impose absolute requirements but vary in degrees of strength and can be ranked accordingly. Next, in Chapter 6, is Wiebke Brockhaus's committed, but not uncritical, review of Government Phonology, with special emphasis on the representation of skeletal and syllabic structures. A major claim made by Brockhaus in 'Skeletal and suprasegmental structure within Government Phonology' is that in Government Phonology, neither the mora nor the syllable is needed as a unit of phonological structure, contrary to the claims of moraic phonology and other contemporary theories of syllable structure: licensing is the motor that drives phonology. In the last chapter in this section, Chapter 7, 'Skeleta and the prosodic circumscription of morphological domains', Francis Katamba takes a different standpoint. He sees virtue in moraic phonology. However, unlike the first two moraic phonology chapters by Bickmore and Zec, Katamba's concern is not structure below the syllable, but rather the place of skeletal structures in the circumscription of phonological structures to which morphological processes apply.

In Part 3, the nature of phonological derivations is reexamined. Jacques Durand in his 'Universalism in phonology: atoms, structures and derivations' (Chapter 8) argues that a strong universalist position in phonology is the best methodological stance. After examining universalism with respect to atoms and structures, he