语音学与音系学经典丛书

语音学 批评性引论

Ken Lodge 著

A Critical Introduction to Phonetics



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出版说明

语言学研究是外教社学术出版的重要领域之一。一直以来,外教社坚持原创与引进并举,经典与前沿并重,先后推出了一系列广受赞誉的语言学著作,对我国语言学的教学和科研发挥了巨大的推动作用。

近年来,语音研究呈现出强劲的发展势头,学派众多,理论新颖,成果丰硕。国内越来越多的高校开始认识到语音学与音系学教学与科研的重要性,并陆续开设了相关课程。

为此,外教社根据国际上语音研究的最新成果,结合国内高校对语音 学与音系学用书的迫切需要,从西方已出版的众多著作中遴选出一批有代 表性的经典书目,推出"语音学与音系学经典丛书"。本系列涵盖了语音 学和音系学的核心内容,既有涉及语音学与音系学入门知识的基础教材, 又包含了这一领域研究者必读的经典之作,系统介绍了西方语音学与音系 学的研究现状与发展趋势,在一定程度上弥补了国内这一方面学术资源的 匮乏,便于读者由浅入深,循序渐进,为学习和研究打下坚实基础。

希望这套丛书的推出能满足国内语音学和音系学领域读者的实际需求,进一步推动我国语言学研究的发展与繁荣。

前言

语音不仅是语言三个基本要素之一,而且还是第一基本要素。汉语的语音研究由来已久,但长久以来,在我国它却一直作为一种以认读字音、作诗吟曲等为目的的辅助性学问。进入20世纪,西方语音学理论与方法传人我国后,才真正改变了中国传统语音研究的理念与方法。一百多年来,经过我国几代学者们的不懈努力与奋斗,我们逐渐形成了现代汉语的语音学理论与方法,并发表了一系列具有重要历史影响的学术论文与论著。

但与此同时,也不得不承认:我们的语音学研究与英美等西方国家相比还存在较大差距。特别是20世纪初以来,西方语音学研究在诸多方面都发生了根本性变化,尤其体现在以下两大方面:

首先是在学科领域的划分上。因研究目的与方法的不同而形成了两个不同的重要语音研究领域:语音学与音系学。20世纪初,音系学从语音学研究领域中脱离出来,逐渐形成了一门独立的学科。一百多年以来,音系学先后经历了两个大的发展阶段:第一阶段是介绍和发现音位概念、探索语音之间关系为主的结构主义音系学(亦称"音位学");第二阶段是以SPE为基础理论框架的生成音系学,特别是在后一阶段中呈现出学派众多、理论新颖、观点各异、精彩纷呈的景象。

其次是在语音研究的工具与手段上。随着计算机信息技术的突飞猛进,语音分析工具不断推陈出新,这为语音学的迅猛发展提供了坚实可靠的研究基础。在众多不同学科背景的学者通力协作下,语音合成、语音识别的自然度与技术水平有了极大的提高,各种实用语音软件得到普及,并很快进入到人们的日常生活之中,正在实现语言学家多年来一直追求的语言研究产业化的目标与理想。

要跟上语音研究领域的强劲发展势头,我们就必须及时全面系统地了解西方语音学与音系学的研究现状与发展趋势。为此,外教社从西方已出版的众多语音学与音系学著作中精心选取并推出了一批有代表性的经典著作。应该说,成规模地推出一批有代表性的当代语音学与音系学著作专集,在国内还是第一次,这无疑是一件非常有意义的事情,值得庆贺。近年来,越来越多的人开始认识到语言学学科的重要性。现在,开设语言学课程的高校不少,选择语言学专业或方向的学生也很多,但我们知道,能开设并系统讲授语音学尤其是音系学课程的学校却不多。众所周知,这方

面的课程在英美国家语言学专业都是必修课程。试想,如果我们的高校连语音学和音系学入门课程都不能开设,那么何以称得上是语言学专业?当然,造成这一局面的原因是多方面的,但缺少好的语音学和音系学方面的教材与著作,是其中的一个重要因素。外教社推出的"语音学与音系学经典丛书",既关注语音研究领域中的代表性重要成果,也考虑到国内众多语言学专业或方向的学生学习语音学与音系学的实际状况和迫切需要。希望这套丛书的出版在一定程度上能够弥补国内这方面的缺陷,满足国内学者和学生的实际需求。

此外, 需要指出的是, 语音学与音系学是两个既相关又有所不同的学 科领域。国内汉语学界对此并不做区分,所用的"语音学"是它的广义概 念、既包括语音学、也包括音系学。但西方语言学界对此是做区分的,他 们通常所使用的是狭义的语音学,即指对语音的一种跨学科研究,一般是 不包括音系学(语音的语言学研究)的。近年来,由于多学科的积极参与 和努力,现代语音学研究已日趋科学化,其研究方法更像是一门理工科的 学问。这对于文科背景的语言学专业学生来说,确实是一种挑战,但也并 非想象的那么难。事实上,只要具备一定的(高中)理科知识,学习起来 也是不成问题的。"音系学"这个概念比较新,它源自英语的phonology, 20世纪80年代中期之后,这个译名才逐渐被接受。音系学不同于语音学, 它是非物质或非物理的,是人类语言所具有的能产性属性赖以存在的基 础,是有关储存于人脑中的语音知识的学问。很显然,音系学非常抽象, 要想理解和掌握音系学的理论原则与分析方法, 就需要具有比较严谨的逻 辑推理和分析能力。由于音系学研究的目的在于发现和揭示表层语音知识 背后的不同语言普遍具有的潜在力量或规律,因而音系学教材不可避免地 会涉及很多我们甚至从未听说过的语言的语料。这些语料看似复杂,其实 不然,它们一定都遵循某种潜在的规律。这也正是音系学研究的意义所 在。综上所述,语音学更关注实际的语音体现形式,而音系学则更关注潜 在的语音结构与规律。这套丛书将两者结合起来, 意在加强和促进国内在 这两个研究领域的通力协作,以推动中国当代语音学与音系学理论的发展 以及两者在汉语中的应用。

希望这套丛书能成为广大读者的良师益友。

复旦大学外文学院 2017年3月

A Critical Introduction to Phonetics

Ken Lodge

Preface

This book is the outcome of some thirty years teaching phonetics, mainly articulatory phonetics to undergraduate and postgraduate students with a variety of interests, though their core has always been students on a linguistics programme. As an introduction to phonetics, it will take a somewhat different stance from a traditional approach on the presentation of basic phonetic skills for students of linguistics and others (e.g., speech and language therapists). It assumes that

- (i) natural, everyday speech is the true reflection of the linguistic system (the phonology in particular);
- (ii) speech is not a concatenation of discrete segments (whatever sort of phonology we may wish to establish);
- (iii) universal characteristics of phonetic realization of the linguistic system are at best poorly understood; and
- (iv) ear-training, production and acoustic analysis should be taught in equal measure, since all three should be used hand-in-hand, as they are complementary rather than superior to one another.

In this book, however, my main focus is on articulation and ear-training with a final chapter on how spectrograms can help us interpret what is going on in speech and sharpen our observations of it.

Assumption (i) means that linguists should always consider connected speech as well as or even in preference to the phonetic characteristics of individual words, in particular their citation forms, that is the sound of the word spoken in isolation. After all, in most circumstances we do not communicate with one another in single-word utterances, and even if we do, we do not necessarily pronounce the words we use as though we were reading them out of a dictionary. Assumption (ii) means that, whereas as an introductory platform to phonetics the description and transcription of individual sounds may make sense, this alone cannot achieve a full appreciation of the nature of continuous speech, which requires a non-segmental approach to the contributory rôles of the various parameters of articulation, that is, vocal cord activity, manner of constriction, nasality, and so on.

Assumption (iii) relates to a large extent to the assumptions made by phonologists about the most appropriate way of representing a native speaker's knowledge of phonological structure. Of course, phonologists are often phoneticians, too, and they wear different hats on different occasions. So, it is not impossible for one and the same researcher to stress the continuous nature of the articulation and the acoustics of speech from a phonetic point of view, and then to opt for a purely segmental kind of phonological analysis. The problem is that all too often there is no discussion of how the two different kinds of interpretation are connected. My contention is that, if we are to understand the nature of the relationship between the two, phonetic detail and phonological structure, then we need as much information as possible about the nature of spoken language from a physical point of view, as well as the continuing investigations into the psycholinguistic aspects of phonological knowledge. This book is an introduction to the complexity of the physical characteristics of speech. In this task it tries to avoid presenting the phonetics in such a way as to make mainstream phonological theory seem obvious; for instance, it rejects the notion that if phonological structure is based on strings of segments, then let's present phonetics in the same way.

Assumption (iv) reflects my belief that a good ear is as important as a good eye and good analytical and observational skills. Ear-training and an ability to transcribe as accurately as possible what is heard (impressionistic transcription) is the starting point for a phonetician, despite the many excellent advances in instrumental support for the observation of speech that have occurred since the Second World War. And if the phonetician is also a phonologist, no amount of equipment and software will give her/him answers of an analytical nature. What it will do, of course, is provide even more detail for consideration.

During the very long gestation period of this book I have been grateful to have had the opportunity to try out my approach in teaching phonetics to several cohorts of students, without whom none of this would have been necessary. I am also grateful to the many colleagues over the years with whom I have discussed the issues laid out above. I have appreciated the opportunity to argue my case over the years, even if sometimes I have failed to convince and at other times I have been preaching to the converted. There are too many to mention or even remember, but I would particularly like to acknowledge my indebtness to the following friends and colleagues. They are in no particular order, and have contributed a variety of input from information about languages of which I am not a speaker to offering technical facilities for the preparation

of the material that supports the text of the book. So, thanks to: Dan Silverman, whose sister book to this on phonology convinced me I should finally put pen to paper (and fingers to keyboard!), Zoe Butterfint, Lela Banakas, John Local (one of the converted), Richard Ogden (another of them), Peter Trudgill, John Gray; Francis Nolan and Geoff Potter, who kindly offered their laboratory facilities at Cambridge; and Janette Taylor for her illustrations of the human speech organs. As regards getting all this into print, I have to acknowledge the help, encouragement and, in particular, patience from Jenny Lovel, who initiated the project, Gurdeep Mattu, who took over halfway through, and Colleen Coalter, all of Continuum Books.

I hope that in the end at least some people feel that it has been worth all the effort.

Ken Lodge Norwich March, 2008

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2005)

CONSONANTS (PULMONIC)

© 2005 IPA

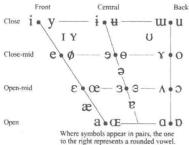
	Bil	abial	Labio	dental	Der	ntal	Alve	colar	Posta	lveolar	Reti	offex	Pal	atal	V	elar	Uv	ular	Phary	ngeal	Glo	ottal
Plosive	p	b					t	d			t	d	С	J	k	g	q	G			?	
Nasal		m		m				n				η		n		ŋ		N			000	
Trill		В						r										R				
Tap or Flap				V				ſ				t										
Fricative	ф	β	f	V	θ	ð	S	Z		3	ş	Z.	ç	j	X	γ	χ	R	ħ	S	h	ĥ
Lateral fricative							1	ß									70			135	A	
Approximant				υ				I				-Į.		j		щ					23	
Lateral approximant			563					1				l		λ		L						

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible,

CONSONANTS (NON-PULMONIC)

	Clicks	Voi	ced implosives		Ejectives
0	Bilabial	6	Bilabial	,	Examples:
	Dental	ď	Dental/alveolar	p'	Bilabial
!	(Post)alveolar	f	Palatal	t'	Dental/alveolar
#	Palatoalveolar	g	Velar	k'	Velar
	Alveolar lateral	ď	Uvular	s'	Alveolar fricative

VOWELS



OTHER SYMBOLS

Voiced labial-palatal approximant Simultaneous and X

H Voiceless epiglottal fricative

Yoiced epiglottal fricative

Voiced epiglottal fricative can be represented by two symbols joined by a tie bar if necessary.

Epiglottal plosive

SUPRASEGMENTALS

	rimary st	ress
1	Secondary	
	,fe	ne]tt'enuo
*	Long	e.

' Half-long C'

Minor (foot) group

Major (intonation) group

. Syllable break _ri.ækt

Linking (absence of a break)

L	TONI		WORD AC		TS OUR
é «	٦	Extra high	ě or	Λ	Rising
é	7	High	ê	V	Falling
ē	4	Mid	ĕ	1	High
è	1	Low	ĕ	1	Low
è	J	Extra	è	7	Rising
1	Dov	rnstep	1	Glo	bal rise
1	Line	ten	1	Cita	hal fall

DIACRITICS Diacritics may be placed above a symbol with a descender, e.g. $\mathring{\eta}$

0	Voiceless	ů ď		Breathy voiced	þ	a	Dental T	ď
	Voiced	şţ	~	Creaky voiced	þ	a	Apical I	d
h	Aspirated	th dh		Linguolabial	ţ	đ	Laminal t	d
3	More rounded	Ş	W	Labialized	tw	dw	~ Nasalized	ẽ
r	Less rounded	ą	j	Palatalized	t^j	dj	n Nasal release	d^n
	Advanced	u	Y	Velarized	tY	dY	Lateral release	d^{l}
	Retracted	e	?	Pharyngealized	t٢	ď	No audible release	ď
**	Centralized	ë	-	Velarized or pha	ryngea	lized 1		
×	Mid-centralized	ě	_	Raised	ę	Į,	= voiced alveolar fricative)
1	Syllabic	ņ	т.	Lowered	ę	ιβ	= voiced bilabial approxin	sant)
^	Non-syllabic	ĕ	4	Advanced Tongs	ie Roo	ę		
r	Rhoticity	a a		Retracted Tongu	e Root	ę		

Affricates and double articulations

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Why Phonetics?

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The reasons for the study of phonetics should be made clear at the outset. This chapter is intended to set out the reasons why linguists (and any other people interested in spoken language of any kind) need phonetics as a tool of investigation.

1.1 How do we describe speech?

Traditional education largely ignores spoken language; even in drama and foreign language learning, little attention is paid to the details of speech in an objective way. We, therefore, need a method of describing speech in objective, verifiable terms, as opposed to the lay approaches which typically describe sounds as 'hard', 'soft', 'sharp' and so on, which can only be properly understood by the person using such descriptions. Such an approach to any subject of study is totally subjective: since only the person carrying out the descriptions can understand them, other people are expected to be 'on the same wavelength' and clever enough to follow them. So, if we are to observe and describe speech

in any meaningful way, we need some kind of objectively verifiable way of doing so. In fact, there are three ways of approaching the task.

What is speech exactly? The expression 'a lot of hot air' is rather a good starting point. Speech is made by modulating air in various ways inside our bodies. The organs of speech - the lungs, throat, tongue, nose, lips and so on, which we shall discuss in detail in Chapter Two - can be moved into many different configurations to produce the different sounds we perceive when listening to spoken language. A study of the ways in which these articulators of speech behave is called articulatory phonetics. In this book the detailed investigation of articulation will take up in eight out of the nine chapters.

Basically, air is pushed out of the body and disturbs the outside air between the speaker and anyone in the vicinity who can hear him/her. These disturbances are known as pressure fluctuations, which in turn cause the hearer's eardrum to move. The molecules of the air move together and then apart in various ways, producing a sound wave. The study of the physical nature of sound waves is acoustic phonetics. We shall look at this aspect of speech and the relationship of articulation to acoustic effects in Chapter Nine.

The third way of considering speech, auditory phonetics, deals with the ways in which speech affects and is interpreted by the hearer(s). This aspect of the investigation of speech will not be considered in this book.

To simplify, the three separate but interacting aspects of speech relate to the speaker (articulation), the hearer (audition) and what happens between the speaker and the hearer (acoustics).

1.2 Speech versus writing

Another way in which untrained people describe and discuss speech is by means of seeing it as a (funny) version of writing. Of course, it is equally possible to see writing as another form of speech, but writing tends to be given central, superior status as a means of linguistic expression. In such a view, letters represent the sounds that people utter, in some unspecified way, and so spelling must be a reliable guide to pronunciation. This view of speech took hold of all forms of linguistic description in particular during the eighteenth century (for a fascinating discussion of this period in England, see Beal, 1999). Indeed for many people, written language has come to represent the 'real' language, a basis on which one is in a position to determine all other aspects of a language. As a consequence many people believe that a language can be captured and set in stone in an authoritative dictionary, for example, the Oxford English Dictionary. What belongs to English is what is in the dictionary; what

is not in the dictionary is not worth bothering with in serious studies. This is an untenable position. Not only do we find considerable variation across different written languages, but even within one language we find variability in the representation of sounds in the orthographic (i.e., writing) system; consider, for example, the different sounds represented by *ch* in English, French and German, and consider the different values of the letter *c* in *receive*, *conduct*, *indict* and *cappucino*. It is also the case that in two important senses, speech is prior to writing. First, when children acquire language naturally, it is the spoken language that is acquired. Writing is artificial and has to be taught, as is noted in Table 1.1. Children will not acquire the ability to write with the Roman alphabet (or any other kind) naturally with no adult intervention in the form of teaching. Second, in the development of human beings, speech evolved and then writing was invented much later when the social need arose. So, to understand all the facets of language, we need to study both speech and writing.

The differences between speech and writing should be considered in some detail here: for example, speech is transient, while writing is permanent;

Table 1.1 Some characteristics of speech and writing

WF	ITTEN	SPOKEN					
1.	Occurs in space	1.	Occurs in time				
2.	Permanent inscription on material	2.	Evanescent occurrence in behaviour				
3.	Source can be absent	3.	Sources of speech often conversational, face to face				
4.	Is transcribed by definition	4.	Can be transcribed from recordings				
5.	Skills: writing, reading – literacy	5.	Skills: speaking, listening – oracy				
6.	Acquired by formal education	6.	Naturally acquired by about age 5				
7.	Must be taught	7.	Not taught, appears innate				
8.	Must be acquired second	8.	Acquired first naturally				
9.	Allows detailed planning	9.	Spontaneous				
10.	Allows complex interpretative procedures, which may not relate to speaker's intentions	10.	Usually comprehended in terms of speaker's communicative intentions (speaker has authority)				
11.	Based on sentences	11.	Based on intonational groups				
12.	Space between words	12.	Continuous stream of speech				
13.	Sentence construction according to conventions of writing	13.	Performances include semi-sentences, repeti- tions, re-statements, corrections, false starts and hesitations				
14.	Standardized spelling	14.	Accent variation				
15.	Enables all practices involving writing – administration, business, bureaucracy, literature, history, note-taking, letter-wrting, etc.	15.	Constitutes conversational and all other spoken uses of language – telling narratives, jokes, etc.				
16.	Segmental mode of transcription	16.	Continuous articulation				

4 A Critical Introduction to Phonetics

speech is usually carried out face-to-face, whereas writing is designed for communication at a distance in space or time. There have also been changes to the traditional types of medium brought about by recent technology. In the first instance, both speech and writing should be considered completely separate media; one is then in a position to consider what the relationship between the two might be, a topic that will not be elaborated in this book, which focusses on the nature of speech.

As a starting point, Table 1.1 gives a simplified list of several features of speech and writing in a contrastive way.

I will take a few of these to exemplify the differences in more detail.

1.3 Intonation

Given that writing is relatively permanent (we can still read original Shakespearean manuscripts, consult the Dead Sea scrolls or ancient Egyptian inscriptions), whereas speech is transient (although we have been able to record and replay speech for a little over a century, we do not do so as a general rule), this difference has certain consequences. By its very nature, speech has to be processed virtually instantaneously by the hearer(s), so a lot of cues as to the speaker's meaning have to be reliably identified. Writing has the luxury of being able to be returned to for numerous re-readings to determine the meaning, if need be. One of the most important cues (in English, at least) in spoken language in determining interpersonal meaning is what is called intonation. By 'interpersonal meaning' I mean those aspects of communication that are not determined by the lexical meaning of words nor by some aspects of the syntax. Intonation patterns can convey a speaker's attitude to the content of what (s)he is saying to the hearer(s); in interaction with the order of syntactic phrases they can also indicate what the speaker believes to be new information for the hearer(s).

We shall be looking at the physical characteristics of intonation further below (see Chapters Six and Nine), but the term refers to the rise and fall of the pitch of the voice, brought about by the change in rate of vibration of the vocal cords. (Many non-specialists call this 'inflection of the voice'; this is not the usage of linguists, because the term 'inflection' is reserved for quite a different linguistic phenomenon, namely, the system of endings on words of the same grammatical category that give them different functions in a sentence, e.g., live, live+s, liv+ing, live+d.) For now let us take a number of examples of how