

REVIEWS

KEITH JOHNSON, *Acoustic and Auditory Phonetics*. Maldon, MA & Oxford: Blackwell, 2003. Pp. viii + 182. ISBN: 1-405-10123-7 (pbk), 1-405-10122-9 (hbk).
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In the introduction, the author indicates that this book is short and non-technical, dealing with four important topics in acoustic phonetics: (1) acoustic properties or classes of speech sounds, (2) the acoustic theory of speech production, (3) the auditory representation of speech, and (4) speech perception. He further suggests that the book supplements a general phonetics or speech science text and that it was written as an introduction for students in linguistic sciences, speech and hearing science, as well as those in electrical engineering and cognitive psychology who are dealing with speech.

A study of the contents indicates that while this book does indeed contain chapters with titles on the sort of topics one might expect to find in a book on acoustic phonetics, it has the very welcome addition of chapters on auditory topics, as indicated in its title. These are preceded by introductory treatments of basic principles, including: 'acoustics and acoustic filters', 'digital signal processing' (or DSP) and 'basic audition'. These are presented in sufficient detail to enable the reader to become familiar with essential concepts and they do provide a very useful and appropriate introduction to the topic areas. However, they do represent only just under one third of the book (54 out of the 168 chapter pages), and the DSP section in particular might well be found quite hard going for some readers for whom the book is intended. That is not, however, to suggest that the material on DSP is not relevant to modern acoustic and auditory phonetics.

The particularly refreshing part of this book is the inclusion of the sections on auditory phonetics, with emphasis being placed right at the end of the introductory chapter on basic audition and on acoustic analysis based on human hearing modelling in the form of a cochleagram. This form of presentation not only brings spectrographic analysis much closer to the acoustic patterns being presented to the brain by each ear, but it also clearly emphasises why it is that both wide and narrow band spectrograms tend to be used together for speech analysis.

Chapter 4 on speech perception leads the reader gently but firmly through how a perceptual test is conducted, which proves an elegant way of offering a basis for reinforcing learning. Perceptual maps of manner, place and tone perception are then presented. The acoustics of the vocal tract are explored, starting with standing wave resonances in a tube closed at one end (chapter 5) and moving on to the acoustic properties of a multi-sectioned tube to provide a basis for describing the vowel formants. Chapter 7 deals with fricatives and compares their analysis by standard acoustic as well as auditory means. The final chapters deal with stops and affricates (chapter 8) and nasals and laterals (chapter 9). In chapter 8 comparisons are made between spectrograms and cochleagrams, whereas in chapter 9 comparisons are offered between FFT and LPC spectra and standard spectrograms. A good set of references is provided and the book is well indexed.

There are one or two minor technical quibbles that could be proffered, but the only one worthy of note is in the description on page 6 relating to the inverse square law, which is supported by a statement that 'particle movement decreases by a power of 3 as a function of distance from the source' – rather than 2 (inverse SQUARE law). Overall, this

is an excellent addition to the acoustic phonetics library, particularly as it provides a clear account of the relationship with the operation of the auditory system. The writing style is engaging and there are a number of useful and practical short-answer questions provided with each chapter, some supported with answers. It is a text I believe many will return to regularly.

RICHARD CAULDWELL, *Streaming Speech: Listening and Pronunciation for Advanced Learners of English*. Birmingham: Speech in Action, 2002. Windows CD-ROM.

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Writing materials for the student from the computer generation requires a lot of thought, imagination and ingenuity. *Streaming Speech* is web-based software in CD-ROM format for Windows (sadly not available for Mac users) which demonstrates these characteristics at every click of the mouse. Aimed at advanced learners of English as a foreign or second language, *Streaming Speech* is a course in ‘fast speech made easy’ (front cover), aiming to help students learn to listen to fast speech (200–500 words per minute) and be able to follow it better, to become more fluent through learning about spontaneous speech, and to keep listeners interested by learning ‘expert speaker skills’ (front cover) such as using filled pauses to buy time. The author claims in his introduction that students will learn listening and pronunciation skills ‘in a revolutionary way’, this presumably being the method of delivery, which allows for clever animations and visuals, rather than the material itself. I found the presentation to be very attractive, with delightful graphics and interesting landscapes, an easy-to-use toolbar on the left hand side of the window, pop-ups containing useful information at salient points, and a layout which is generally highly accessible. The English is clear, with glossaries for less common words and phrases. Installation is automatic on insertion of the disk into the CD-ROM drive, with easy-to-follow instructions, including a section on what to do if automatic installation fails.

The CD-ROM begins with an introduction followed by ten chapters, each addressing a different aspect of fast, connected speech. The first eight chapters are presented (‘hosted’) in the voices of eight of the author’s colleagues – four male and four female. Each of these has an introduction to the speaker and topic followed by a listening activity, including questions about the fastest meaningful sections. The sections of the recording which contain the answers are then examined in detail and the student is told how fast the speaker was speaking in words per minute. Next Cauldwell focuses on discourse features and segments, works on ‘streaming speech’ (trying out fast, connected speech), and finally explains what has been achieved in that chapter. As well as providing answers in particular sections, it is possible for the student to record him/herself and give a self-evaluation in some of the sections of each chapter. The drag-and-drop technique is used quite a lot, usually with more items to drag and drop than there are answers – a clever pedagogical technique. The last two chapters use the speech of a variety of his colleagues in workshops on sounds and suprasegmentals.

In chapter one, hosted by Coron, the student learns about English ‘short vowels’ /ɪ e æ ɒ ʌ ʊ/, how to merge words together so that they form a ‘speech unit’ rather than

remaining separate, elision of speech sounds, and liaison. The initial interactive exercises are accompanied by encouraging feedback in clause form rather than a simple tick or cross – e.g. ‘and you got this right’ – which is motivating for learners, aided somewhat by the fact that the unit begins with an exercise in listening for specific information which is relatively easy, as do all the chapters. Later exercises do, however, use the tick or cross format for feedback. Feedback includes an explanation of why the answers were right or wrong, and in all cases it is possible to listen again as many times as is desired. Indeed, students can go back and do the exercise again if they wish. The answers are retained by the software, and students are given a final score at the end of each chapter.

In the discourse features section (1: 3.2), there is a superb simple animation showing how the individual words bunch together to form what the author refers to as a ‘speech unit’. A speech unit, according to Cauldwell, ‘is a stretch of speech, usually larger than a word, which has its own rhythm, tone, and other features, which make it streamlike’ (introduction: 7). Basically what this means is that speech units are instances of connected speech bounded by pauses, filled or otherwise. There is further description of speech units in chapter 10, so I will return to the matter there.

Discussion of discourse features includes work on elision of sounds in connected speech. The student is invited to drag and drop lines in order to cross out sounds which have been elided in Corony’s speech. Section 3.2, which describes the phenomenon of ‘missing and linked sounds’, raises the issue of whether ‘missing’ means ‘deleted’ or ‘changed in quality’. It is claimed that the /t/ in *that* does not occur in the phrase *drama and that kind of thing*; however, the vowel length for the syllable in question is clearly not appropriate for that of an open syllable, so some vestige of the consonant must remain. In fact the /t/ is realised as a glottal stop, so is not entirely missing. Similarly, the /d/ in *made* in the phrase *made quite a bit of money* (1: 3.3–3.4) is presumably assimilated to the following /k/ and so is, in some sense, still there; the phrase does not sound like *may quite a bit of money*.

The technique used for producing fluent connected speech, ‘streaming speech’, in section 4.4, which Cauldwell himself demonstrates, makes it straightforward and approachable for a learner of English. Presented in a pop-up, the student is guided by starting with a pause between each word, and then slowly building up speed, rhythmic pattern and other features of connected speech until their speech matches that of the target section. The student is then able to make a recording and compare it to the target. The ability to listen to and evaluate one’s own version in comparison with a native speaker is an excellent feature of these materials, as it is not always easy to self-monitor in an independent learning situation. Of course, this depends on having a microphone on your computer.

In the next section, which covers English ‘short vowels’, students are invited first to listen and then either to decide which vowel is being used or to imitate the speaker. Different amounts of speech are used, and at different speaking rates. Again, it is possible to listen to the stimuli as many times as desired. Immediate feedback is given in some sections when an exercise has been completed, and, in the sections where students repeat after the speaker, one is able to record oneself and then self-evaluate. The self-evaluation marks contribute to the final score at the end of the chapter.

Chapter 2 looks at ‘long vowels’ /i: ɑ: ɔ: u: ɜ:/, speech rhythm and prominence, and pausing. Rate increases gradually over the first eight chapters.

In this chapter, I differ with some of Cauldwell’s interpretations when it comes to rhythmic stress and prominence. For example, he claims that the phrase *he’s a jack of all trades* as spoken on the CD-ROM does not have a distinct rhythm, when it is clearly weak-weak-strong-weak-weak-strong. In the exercise which follows (2: 3.4), *house* in the last line is not considered to be prominent, whereas I hear a distinct rhythmic stress.

Chapter 3 covers diphthongs, planning time in speech, and level and falling tones. It is clear that one of the main influences in preparing the materials was the work of Cauldwell’s

former colleague, David Brazil. Intonation is expressed in terms of discourse features, very much a key issue in Brazil's work, and certainly suitable as an approach for learners of English in materials such as these. The notation used is very similar to that found in e.g. Brazil (1994). Much attention is given to practising level and falling tones. Exercises are accompanied by clear animations showing the direction of the tones.

It is perhaps unfortunate that the topic of this chapter is the making of sloe gin. While acceptable in many cultures, and certainly a feature of British life, this subject matter may not be suitable for students who disapprove of the consumption of alcohol for religious or cultural reasons. One can only hope that the decision to use the material on making sloe gin does not affect uptake of the CD-ROM.

Plosives and affricates, intonation in questions, restarting after a mistake and the observation of overlapping speech are the areas covered in chapter four. Cauldwell points out that communication of meaning can be achieved with stops, starts, hesitations, and so on occurring in normal speech, and that overlap can be a form of co-operation, not interruption. He also challenges the notion, often held by learners of English, that all questions – particularly 'yes/no' questions – must have a rising tone, showing that this is not the case in the recorded passage used here.

Chapter 5 covers the remaining obstruent consonants of English, using long and short 'speech units', speaking words without prominences, and self-correction in speech. The speaker in this chapter (Geoff) speaks quite fast in comparison with the previous speakers on the CD-ROM, making this a challenging section.

Once again, however, I must differ on some of the choices concerning suprasegmentals in the chapter. Utterance 188 (section 5: 3.2) sounds like it has a rhythmic stress on the second syllable, and utterance 200 (5: 3.4) very clearly has a fall-rise, not a fall as marked. There is also an error in the segmental transcription of *more* in utterance 187/187a (5: 3.8), which is given as /mu:/ instead of /mɔ:/.

The remaining consonants of English, stress-shift and repetition are covered in chapter 6. Concerning stress-shift, it is unclear whether utterance 075a *northern Japanese* is included as an example (it clearly is not one). The beginning of utterance 028 *of what I wasn't going to do* in section 3.5 is missing in the pop-up, meaning we only hear *I wasn't going to do*; this means it doesn't match with the paused version (supplied by Cauldwell). Another error is that *of* is transcribed in the paused version as /əv/, but pronounced as /ɒv/.

Consonant clusters, stress in long words, using intonation in lists, and high and low key are covered in chapter 7. Cauldwell points out that students should not confuse consonant clusters in spelling with consonant clusters in pronunciation, giving in section 4.1 the example *human sciences*; *sciences* is not pronounced with an initial cluster, whereas *human* is. I find the vocabulary notes in general very good and the items covered well chosen, and the notes found in this chapter are no exception. A good example is in 5.1 where the notes explain *I'm not a great joiner* and *I . . . did my own thing* in clear English. In 3.5, however, on observing fast speech, I find the transcription of utterance 051 *and that was the way to do well on the course* inaccurate. We again encounter the problem mentioned in chapter 1: the author comments that *that* loses its final consonant, but rather the final consonant is realised as a glottal stop.

Chapter 8 is a departure in that its host is Terry, who was born in Dublin and has a non-standard English accent, unlike the other seven. For example, the host of chapter 2, Gail, was born in Solihull near Birmingham, but does not display accent features associated with that area of England. Cauldwell comments in section 2.4 that he himself was born in Dublin, but tells the student that he lost his Dublin accent while at public school. One of the goals of this chapter is given in the preamble as listening 'to a non-standard accent of English', along with more consonant clusters, use of high pitch, effective use of repetition, and telling an anecdote. By the time the student reaches this chapter, he/she is listening to speech at a rate of up to 449 words per minute, and quite substantial chunks of text.

Chapters 9 and 10, as mentioned above, are ‘workshops’ for segments (chapter 9) and ‘speech units’ (chapter 10). In the case of the segments workshop, students are given the choice of six of the speakers found in chapters 1–8 to help them work on segments, and occasionally another speaker is substituted if there is no instance of a particular segment in your chosen speaker’s speech. Students work through the chapter, recording themselves repeating after their chosen speaker, and self-evaluating. There is also a ‘cluster buster’ element to this chapter, which focuses on consonant clusters, often problematic for foreign learners of English.

The ‘speech units’ workshop is, in my opinion, much more interesting. Students work on recognising speech units, using tones and key, and transcribing utterances using the ‘speech unit’ as a framework. Both grammatical and discourse functions of intonation are covered here, the blue ‘more . . .’ hyperlinks (e.g. 10: 1) pointing the students to more reading on both subjects: Halliday (1994) and Tench (1996) on intonation and grammar; Brazil (1997, 1995) on intonation and discourse organisation.

Here, I return to discussion of the ‘speech unit’. While similar to what Roach (2000) refers to as a ‘tone unit’ and O’Connor & Arnold (1973) call a ‘tone group’ in some respects – for example, it contains a single tone – the ‘speech unit’ appears to differ most dramatically in that it does not take account of rhythmic stresses in an utterance unless they are pitch prominent. ‘Speech units’, according to Cauldwell, are found in five different forms: single, double, triple, four prominence and incomplete. I find this approach redundant on the one hand and confusing on the other. The element of confusion is mostly to do with the difference between rhythmic stress and prominence.

In my opinion, this is a potential area of confusion for foreign learners of English. If it is Cauldwell’s aim to get students to produce English with prominences only on selected syllables – the head and the nucleus of a typical tone group, perhaps – this is all to the good. However, I fear that learners will have trouble with the notion that a word has inherent stress which does not appear in speech.

Concerning placement of the main stress (nucleus): I would like to have seen a lot more work on this than found in *Streaming Speech*. Nuclear placement is a crucial aspect of the communication of meaning in English, and often neglected in pronunciation teaching. It seems like an opportunity missed not to have had more on the use of nuclear placement for indicating new information or contrast and emphasis in English utterances.

I am, however, fully in favour of Cauldwell’s animations of intonation, which appear in section two. Different tones on the same ‘speech unit’ are demonstrated in the pop-ups in 2.2, with very clear animations of the five tones in question (falling, rising, fall-rise, rise-fall and level) over different numbers of syllables. In addition, low, mid and high key are addressed in a similar way.

Finally, section three invites the student to try guided dictation transcribing ‘speech units’, following the sequence listen, write, add prominence, add a tone, add key, and then check the transcript against the correct answer. Using four of the speakers, the complexity of the task is built up from a fairly short passage from Corony to a more complicated one from Bob. Here the student is really stretched – unless, of course, he/she cheats by looking at the answers first, which is always a possibility on this CD-ROM.

Overall, and speech rhythm notwithstanding, I can give nothing but a glowing reference to *Streaming Speech* for its innovative methods, clear presentation, authentic materials, general ease of use, and contribution to the pedagogical literature – electronic or otherwise – on English pronunciation and listening comprehension. I find it hard to believe that this CD-ROM has not been snapped up by a mainstream ELT publisher; instead, the author himself publishes the materials under the name ‘Speech in Action’. I would certainly recommend this CD-ROM to anyone wishing to work on English listening comprehension and pronunciation independently, as well as to institutions for their language laboratories or listening centres, and hope to see future editions which include more detailed work on nuclear placement.

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PHILIP CARR, *English Phonetics and Phonology: An Introduction*. Malden, MA & Oxford: Blackwell, 1999. Pp. xviii + 169. ISBN 0-631-19776-1.

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A British TV advertisement for paint and wood treatment preparations states, in refreshingly straightforward terms, that the products 'do exactly what it says on the tin'. The cover blurb on Carr's short, clear and user-friendly book (henceforth EPP) claims that it is 'perfect for introductory-level students of English phonetics and phonology' and 'ideal as an introduction for students who wish to subsequently progress to more advanced courses in English phonology or phonological theory'. Favourable first impressions led me to set EPP as the required text on an introductory English phonology course for undergraduates this year, and to judge from the enthusiastic evaluations of the book that students submitted at the end of the course, and its general appropriateness for teaching courses of this type, the claims made for EPP's suitability as an introductory text have been satisfactorily borne out. By and large, then, EPP does indeed do exactly what it says on the cover.

The book is divided in a fairly conventional way into two main sections: the basics of articulatory phonetics occupy chapters 1–4 (English Phonetics: Consonants (i) and (ii), and English Phonetics: Vowels (i) and (ii)), while chapters 5–10 deal with 'phonology'. EPP takes us in this second block of chapters through the phonemic principle, the phonemes of English, syllable structure, word stress, rhythm, connected speech processes and intonation, before concluding, in chapter 11, with a short survey of ways in which accents of English vary. This last topic is then illustrated in a thirteen-page appendix, which contains an account of the principal features of selected accents of English around the world (Australia, London, New York City, Scotland and Tyneside). Each chapter is followed by exercises, which I have found useful as supplementary material for practical classes, and Carr also supplies a list of suggestions for further reading if students wish to pursue topics in more depth.

The chapter on variation does not simply pander to the growing appetite among students and teachers of English phonology for more socially realistic accounts of the subject. Like Giegerich (1992) or McMahon (2001), EPP represents another welcome departure from the historical concentration on Received Pronunciation in British textbooks and reference books on English phonology (e.g. Cruttenden 2001). Carr – himself a Scot – has made the helpful decision to make reference throughout the text to multiple accents (Scottish Standard English, Received Pronunciation and General American English), which accounts in part for the positive feedback on EPP from my own students, some of whom had had little or no face-to-face experience of Received Pronunciation until they came to university, and to whom RP seems almost as foreign as General American pronunciation. It hardly needs to be said that making phonetics and phonology enjoyable and beneficial to students whose common initial reaction is alarm at the subjects' perceived 'overly technical' or 'scientific' nature can only be made easier if points of theory are illustrated using speech patterns they themselves are likely to use, or at any rate to be familiar with to the extent that they can have intuitions about them. EPP, my students tell me, finally made drop a number of phonological pennies suspended by their earliest – and reportedly highly confusing – introduction to (American) English phonology via Finegan (1999).

Carr's writing style is generally very clear and accessible, and nowhere is there a shortage of exemplification. The illustrations are also well-executed: the head diagrams in chapter 1 are particularly good by virtue of their simplicity, and there is no ambiguity as to which portions of the schematised sagittal sections represent cavities, and which solid tissue. The brevity of many of the chapters in EPP also no doubt makes tackling English phonetics and phonology somewhat less daunting for the beginner, but Carr could perhaps have been a little more generous with the space devoted to the phonetics component, which accounts for only around a fifth of the book. Chapter 2, for instance, deals with central versus lateral airflow, taps and trills, secondary articulations, affricates, aspiration (of /p/) and nasals in just seven short sides, of which two sides are exercises. As such, and as Wichmann's (2002) review of EPP points out, the book as it stands is really more an introduction to phonology than to phonetics and phonology, but perhaps a second edition could be beefed up a little in terms of the content of the introductory chapters. Inclusion of some links to online resources, such as Peter Ladefoged's *Vowels and Consonants* pages, might be a useful addition to this part of the book, as would a list of relevant URLs in the 'Further reading' section.

Further quibbles I have about EPP concern inaccuracies and contradictions in certain areas, which are potentially very confusing for readers. For instance, following a description of the various fricatives found in English Carr states that 'fricatives may be articulated at any point of articulation, but many of those sounds are irrelevant to the study of English. However, we will mention three.' (p. 9) Carr's trio of 'irrelevant' fricatives bafflingly includes [h]; the others are [x] and [ɰ], but even these can scarcely be described as irrelevant, particularly as Scottish Standard English – in which all three of these fricatives are contrastive – is used as an exemplar accent elsewhere in the book. Carr also chooses, misleadingly in my view, to represent the vowel of *lamb* and *ram* in Scottish Standard English using the [æ] symbol (p. 41), but later opts for [ɛ] in *Sam* and *psalm* (p. 64), and transcribes the vowel of *not* as [ɒ] (rather than the more accurate [ɔ]) in the same accent (p. 53). There are some surprising oversights in the sections on English phonotactics in chapter 7, too: surely [blæŋk] – unlike phonotactically comparable but non-occurring sequences like [blɛŋk] and [blɔŋk] – is an actual English word, while Carr's claim that 'only one sort of English onset exceeds binary. . . branching: /s/ + consonant + {/j/, /w/ or /ɹ/} onsets' rules out the obvious sequences /spl/ (*splash*, *split*) and /skl/ (*sclerosis*, *sclera*). Similarly, the statement that 'none of the voiced fricatives may occur in branching onsets' (p. 77) overlooks /vʲ/ (*view*, *revue*) and /vw/ (*reservoir*, *voile*), as well as the rarer *vroom* and *joie* (*de vivre*), both of which are listed in any reasonably comprehensive English dictionary.

In the sections dealing with suprasegmental phenomena, there are places in which additional or more explicit explanation would have been desirable. It isn't clear why *champagne* should contain two feet, for instance, but *maroon*, a word for which a 'stray' first syllable is posited, only one. Why should the /l/ in *personality* be resyllabified into the penultimate syllable, and why is the final syllable of *personal* classified as light on p. 90, but as heavy on p. 93? What is Carr's rationale for using superscripted numbers to indicate primary and secondary stress, rather than the equivalent IPA symbols, given that standard IPA transcription is used everywhere else in the book? Carr's definition of sonority in terms of 'resonance' in chapter 7 is not as clear as it might be, and it would perhaps have been helpful to have included diagrams representing sonority contours in syllables and polysyllabic words as per Giegerich (1992) and McMahon (2001).

Other desiderata for a second edition of EPP would include more detailed information on phonological processes such as elision, epenthesis and reduction, some of which are covered briefly in the text, the others being left until the final sections of the appendix. In the section of chapter 8 dealing with word-stress assignment and morphological structure, it would have been useful to have distinguished between patterns of alternation pertaining to Latinate roots versus Germanic ones, and to have discussed the sorts of alternations (palatalisation, spirantisation, devoicing, etc.) that are common in English words of classical origin. Also, it seems crucial that ambisyllabicity, a topic which at present does not rate even a mention anywhere in EPP, be dealt with in the sections on syllable structure. Carr does discuss the Maximal Onset Principle at some length, as well as stating that short vowels cannot appear in open syllables, but does not explain why utterances such as *I want a cup of coffee* (p. 108) should be syllabified as /aɪ.wʌn.tə.kʌ.pə.kʌ.fi/, when, for instance, the /t/ of *want* is in many British accents commonly realised as [ʔ] in such positions, suggesting that it is more appropriate to assign it to coda position. Lastly, the section on /r/-sandhi is possibly more detailed than it might be given a relative lack of depth on other topics that are arguably more important. On the other hand, the discussion of the phenomenon is both clear and interesting, and it raises important questions about the processes by which surface forms are derived from underlying forms, and vice versa. Nonetheless, this section could perhaps have been left until later in the book, especially as it is only of relevance to a subset of English accents (i.e. non-rhotic ones, and even then there are some non-rhotic accents, such as that of Tyneside, in which /r/-sandhi does not tend to occur).

In spite of these criticisms, however, EPP strikes a good balance by avoiding overloading readers with excessive detail that they are unlikely to be able to use, and giving them enough technical and theoretical background to enable them to attempt quite sophisticated analyses of English phonology. As a springboard to phonetics and phonology at a more advanced level, EPP succeeds very well, and it can be strongly recommended as an introduction to these subjects that students will find stimulating and readily comprehensible.

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LARRY SMALL, *Fundamentals of Phonetics: A Practical Guide for Students*. Boston: Allyn and Bacon, 1999. Pp. viii + 360. ISBN 0-205-27331-9.
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The development of book and audio packages to teach theoretical and practical phonetics is welcome to all who have to deal with the constraints of limited course hours and large class sizes. This textbook from someone with long experience and a justified reputation in the area is another step towards combined teaching and self-learning packages that will eventually utilize text, audio and video technologies. This book comes with audio cassettes and a CD giving examples and exercises for the students to undertake.

The title of the book leads us to expect more than is given, however. It might more fairly have been entitled 'English Phonetic Transcription for Speech-Language Pathology Students'. The market is clearly for those training in communication disorders (with a specialist chapter on clinical phonetics), and the cover material notes that the book aims to train readers in the transcription of individuals with disordered speech. This does not mean that other students of phonetics may not find this book useful, of course. Secondly, the author feels that in the speech and hearing sciences 'a phonetics textbook should heavily emphasize the *practice* of phonetic transcription' (p. vii; author's italics). This does not mean that other aspects of phonetics are totally ignored (there is a chapter on the anatomy of the speech mechanism), but we have no detail on speech acoustics and nothing on perceptual aspects of phonetics. Finally, and perhaps most importantly, the title misleads as to the (virtually) monolingually English nature of the phonetics described (though see below), and the mostly phonemic nature of the transcriptions practiced.

The facts that the book is dedicated to the communication disorders market and is mainly concerned with transcription are not, of course, problematic, except that the title doesn't predict this. However, problems do arise with the overwhelming concentration on English phonemic transcription for such an audience. It can be argued that this is balanced with the chapter on clinical phonetics. But this chapter introduces a range of specialist diacritics for non-normal speech (such as whistled fricatives, nasal emission and breathy voice) together with the IPA diacritics for normal allophonic variation (aspirated, unreleased stops, tongue height and advancement, and so on). What do you do if your client produces non-English consonants or vowels but not the atypical sounds covered by the diacritics of this chapter? Such sounds as a voiced velar fricative, a voiceless pharyngeal fricative, a palatal stop, a labio-palatal approximant, any lateral approximant other than alveolar, any consonant of a non-pulmonic airstream, or front rounded and back unrounded vowels? All of these surface in the clinic from clients whose target language is English (leaving aside multilingual clients or monolingual speakers of another language) but, apart from the IPA chart given on p. 14, symbols for these sounds are not given, nor are the sounds themselves described or practised anywhere in the book. This mixture of English phonemic symbolization and specialist diacritics, but few non-English symbols is, in my view, a serious shortcoming in a book preparing speech-language pathology students to describe the sounds they hear in the communication disorders clinic.

The book is divided into eight chapters, with review exercises, study questions and assignments provided for all but chapter 1, with many of the exercises included on the cassettes and/or CD. The first chapter describes the various branches of phonetics, briefly

refers to phonology and introduces the notion of a phonetic alphabet, and in particular the IPA. The chapter closes with a note on transcriptional variation. This last is most useful to students who often cannot understand why different texts chose to transcribe the ‘same’ sound in different ways. I would take issue, perhaps, with the idea that we condone some variation simply because it is easier to type or write certain symbols than others. Small points out that the use of /r/ for English [ɹ] has a long history, and is because the [ɹ] symbol is ‘cumbersome’ to write (though this causes him problems later when trying to distinguish Spanish [r] from English [ɹ]), and I have to admit this is long-established practice. I find it harder to accept that [ɑ] can be written [a] because it’s easier to do this on a typewriter or computer keyboard. This is not only downright confusing (especially if students are taught IPA values for these vowels), but with free IPA fonts available to anyone with access to the internet this is surely now a non-problem. In fact, this might well have been a good place to advise students on how to download free phonetics fonts.

Interestingly, the author decides to postpone a description of the speech production mechanism to chapter 3, after he has provided students with a ‘phonetic’ (in reality this is mostly phonological/phonemic) representation of English. Chapter 2, then, introduces transcription of English, but the author also takes the opportunity to discuss a variety of issues that students might encounter in their reading, such as distinguishing spelling from sound (which bedevils many students’ attempts at transcription and analysis in the early stages of a phonetics course); and introductions to morphemes, phonemes and distinctive features. While we might question why these appear in an avowedly PHONETIC text, we do often make reference to other levels in our teaching thus, such brief account of these terms may be of use. It is, however, somewhat surprising to come across description such as ‘Since the IPA is a phonetic alphabet, each symbol represents one speech sound or **phoneme**’ (p. 13), where the author’s use of bold leads us to believe he sees the terms ‘speech sound’ and ‘phoneme’ as synonymous, and has decided not to distinguish ‘phonetic’ from ‘phonemic’ at this point. He also tells us that ‘a phoneme is a speech sound that is capable of differentiating morphemes’, and further, ‘a change in a single phoneme always will change the identity of the morpheme’ (p. 13). Of course, if we alter /kæt/ to /ket/ we undoubtedly alter the identity of the morpheme, but Small’s definitions don’t really make explicit the contrastive, meaning-related aspects of the phoneme idea. We might also wonder why several pages are devoted to a very far from current account of distinctive features (even for those phonologists who still use them), and why this section is sandwiched between that devoted to the phoneme, and that dealing with allophones.

In the phoneme section, the author displays his list of English phonemes with symbols illustrated by sample words. For the most part, the list is as we would expect. However, Small departs from the phonemic principle by including separate /e/ and /eɪ/, and /o/ and /oʊ/; the monophthong in each instance being used in unstressed syllables, and the diphthong in stressed. The distribution of these allophones is described in chapter 4, although no rationale is given as to why we should transcribe this allophonic difference but not, say, long versus short vowels before lenis and fortis consonants (which is not covered until chapter 7, which deals with connected speech). In fact, in chapter 5, the author does recommend transcribing the tap allophone of /t/ and /d/ separately (although this is not listed in chapter 2!). It is, of course, always a difficult judgment to make in a basically broad transcription approach as to which divergent allophones to note separately. I would quite agree that for clinical transcription we need to temper broad transcription with allophonic details, but I would have to admit that these two vowel examples don’t leap out to me as being more worthy than others to be included. The chapter ends with a useful description of syllable structure and of word stress.

Chapter 3 provides a very useful description of articulatory phonetics with clear illustrations of important anatomical structures. Phonation is described, as are places of articulation (but only those used in English), illustrated by examples from English. Manner of articulation is not gone into in detail here, but is returned to in chapter 5. It could be argued that if this chapter had referred back to the IPA chart given earlier, it could have covered the

whole range of place and manner types (and perhaps airstream mechanisms) to provide the overall coverage of sound types needed by the clinician.

Chapters 4 and 5 deal with the vowels and consonants of English in detail, although their titles ('Vowel transcription' and 'Consonant transcription') again promise more than is delivered. The descriptions of the individual sounds are thorough, with cross-sectional diagrams of the vocal tract, important allophonic and dialectal variants, and sample spellings. In the introduction to chapter 4, a definition of vowel is given ('produced without any appreciable constriction or blockage of airflow in the vocal tract' p. 51) but no debate on the problems of such a definition for liquids and glides is provided. Likewise, the definition of a diphthong ('two vowels that comprise one phoneme' p. 53) doesn't explicitly make it clear that they comprise one syllable and that the tongue glides from one position to the other throughout the sound (though this becomes clearer later in the chapter). The terms 'tense' and 'lax' are illustrated for the English vowels, as are the terms 'rounded' and 'retracted'. This last (meaning neutral and unrounded lip shape) is, I feel, a wrong term to adopt as it is clearly confusable with retracted tongue position.

The author does not make use of the Cardinal Vowel System (traditionally not found in American phonetics books), but does provide a diagram of the 'Vowel quadrilateral' (figure 4.1, p. 53) with the vowels of English plotted on to it (although this is not clear from the figure title). The vowel [a] is plotted halfway between cardinal points 4 and 5, and we have to read the text to discover that this is only used as the start point of the diphthongs /aɪ/ and /aʊ/. However, because no discussion is given of the language-independent values of vowel symbols (whether through the Cardinal Vowel system or not) it will not allow students of this text to deal with transcriptions of other languages, especially if they encounter symbols such as [i, y, ø, ɤ, œ, u]. As noted above, the important allophonic durational differences in English vowels are not covered in this chapter, but are deemed to be part of connected speech phenomena, and so are dealt with in chapter 7.

Chapter 5 begins with a discussion of the differences between 'resonant' (used here for 'sonorant') and 'obstruent' consonants, a description of possible consonant positions (pre-, post- and intervocalic) and a few notes on acoustic characteristics of vowels and consonants. The author notes that one difference between vowels and consonants is that consonants, unlike vowels, cannot 'stand alone' (p. 107). This again illustrates the monolingual English outlook of this book, as we know that various syllabic consonants (including fricatives) are used, for example in Russian where /ɣ/ means 'in'.

Place, manner and voicing distinctions are then gone over before the English consonants are described individually. Again, some important allophonic detail we might expect to find in such a chapter does not occur: in particular, the issue of voice onset time, aspirated and unaspirated plosives, voicing in initial and final obstruents, and dental and postalveolar allophones of the apical stops. However, the flap allophone of /t/ and /d/ is discussed (and included in transcription exercises), and the advanced and retracted allophones of the velar stops are also introduced (but no means of transcribing them is furnished).

The glottal stop is introduced (in slant brackets) as an allophone of /t/. Its use is described as a hiatus marker, but also as the variant of /t/ when followed by a syllabic nasal (as in *kitten*, given as /kɪʔŋ/). It is, of course, a moot point whether we can easily hear the difference between a nasally released /t/, and a glottal stop-syllabic nasal combination as used by Small (especially since English may well use a glottally reinforced plosive here). I would have thought transcriptions such as /kɪŋ/ would have been simpler for students to learn and no less likely to reflect the articulation. It would also have relieved the author from introducing glottal stop into what is basically a phonemic system of transcription. Strangely, however, while glottal stop, the tap variants of /t/ and /d/, and the monophthongal variants of /eɪ/ and /oʊ/ are used in slant brackets, the clear, dark and dark syllabic variants of /l/ are given in square brackets. This causes confusion in the exercises where syllabic /l/ (shown with the velarization diacritic in the text) is to be transcribed with just the syllabic diacritic but not the velarization one. In the section on fricatives, the author notes that English has no bilabial

or velar fricatives, but they do occur in other languages and sometimes in disordered speech; would this not have been just the place to list the symbols, or at least have referred readers to the IPA chart?

Chapter 6 deals with connected speech covering a range of phenomena. These include assimilation, both in terms of allophonic similitudes (though diacritics for describing these are not covered until chapter 7) and phonemic changes due to juxtapositional assimilation. Also covered are elision, epenthesis (e.g. 'tense' pronounced as /tents/), metathesis (as in speech errors and dialectal forms) and vowel reduction in weak and strong forms. This chapter also covers suprasegmental aspects of speech, giving more details on syllable stress, and introducing a method of transcribing intonation (the use of contour lines that go under, over and through the relevant words). Tempo is also dealt with, including length differences in individual sounds as well as pauses and juncture features of intonation. Voice quality is not included here, but is touched on in the following chapter.

Chapter 7 is entitled 'Clinical phonetics', though a good part of it is devoted to phonological development, phonological processes (is this still the best model we can present to students?) and typical patterns of phonological disorder in children. At this point Small introduces the diacritics needed for allophonic transcription (though some justification as to why narrow transcription is often vital in clinical phonetics would have been welcome). These include most of the IPA diacritics and a few others from the American speech-pathology tradition. The lip-rounding diacritic is used above the symbol, unlike in IPA usage, as are the more and less rounded diacritics. We also have the term 'lateralization' which is often used in speech-pathology circles to mean a lateral fricative (normally alveolar). Small includes both diacritics and symbols for lateral fricatives, but perhaps should have made a choice between the perspective of viewing a lateral fricative as a sound in its right and that of viewing it as a variety of target /s/ or /z/.

The VoQS (Ball, Esling & Dickson 1999) and extIPA (Duckworth, Allen, Hardcastle & Ball 1990) symbol charts are given in this chapter and briefly described, but the author does make the valid point that two new sets of symbols appear overwhelming to the student. This is especially so if the student has just had to learn the IPA symbol set; unfortunately, as we have noted previously, this is just not what they have had to do. It is strangely unbalanced to include in this chapter sets of symbols and diacritics for atypical speech yet not to have covered the IPA symbols for normal, but non-English, sounds.

Chapter 8 covers dialectal variation of English. This chapter is greatly to be welcomed: speech-language pathology students suffer when they are not introduced to regional and social variation as they are not always aware of what constitutes a variant acceptable to the client's speech community and what is an error needing intervention. This chapter gives good coverage of the main US regional dialects, and also social and ethnic dialects such as African American Vernacular English. In this section, the author also introduces varieties of English influenced by a speaker's first language (such as Spanish, Chinese, Korean and Vietnamese). Here, then, Small has the opportunity to move beyond the confines of English, and a few non-English consonants are described: the voiceless velar fricative (though transcribed as /χ/), the palatal nasal and the trilled-r. I feel more could have been made of this chance, and a range of consonants useful for the clinical transcriber could have been described. If the Spanish-English bilingual client uses both Spanish and English in the clinic, a list of Spanish phonemes and their symbols would have helped the student deal with transcribing all the sample.

Textbooks of course reflect the organization of a course that has worked for the author, both in terms of what to include and how to order the material; and if I have criticized this above, such criticisms often derive from an alternative way of approaching the topic. There is much to be praised in this course: it presents topics clearly, it has copious exercises backed up with audio material, it deals with language variation, and covers the latest developments in the transcription of clinical data. Its shortcomings I feel derive from an uneasy balance of

English phonemic transcription and narrow clinical transcription: a lot of really useful detail needed by clinicians disappears between these two.

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JOAN BYBEE, *Phonology and Language Use*. Cambridge: Cambridge University Press, 2001. Pp. xvii + 237. ISBN 0 521 583748.
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Communication via language use is the implicit fundamental principle that Joan Bybee uses to explain her account of the structure and representation of speech sounds. In *Phonology and Language Use*, Bybee applies a functionalist perspective to phonology, drawing on learning theories derived from developmental cognitive psychology and connectionist modeling. Though the book was inspired by and written for fellow functional linguists and their students, I suggest that Bybee's ability to present her account within a broader theoretical context makes this book highly relevant and accessible to psychologists and research students in the general field of speech science. I have already recommended this book to colleagues in developmental psychology and research students in linguistics. This tells you as much about me as it does about the text itself: my persuasion towards functionalism arises out of my training in psychology rather than linguistics. Perhaps my hybrid background (speech science/psychology) is why I find Bybee's position so convincing. However, this book is no hybrid. In it, Bybee addresses core linguistic issues such as language universals, the phoneme principle and the phonology/syntax interface. The discussion of these topics is rooted in a number of non-linguistic specific principles.

Bybee offers an *exemplar* account of phonological representation, i.e. a theory in which mental representation of types is formed through recognition of and repeated exposure to tokens. In doing so she also adopts central themes from the literature on category formation, namely ANALOGY and the role of FREQUENCY OF INPUT ON REPRESENTATION. The discussion around the role of frequency of type and token on phonological representation and structure is easily the most recurring theme of the book. According to Bybee, substance, namely phonetics and semantics, combine with language use to create phonological structure. Bybee posits an emerging structure over innately specified rules. In accordance with this, rather than uphold the notion of language universals (via the presentation of absolutes and the inevitable accounting for exceptions) Bybee argues for UNIVERSAL PATHS OF CHANGE.

The theory is advanced in an inductive style. Bybee uses a wide range of empirical linguistic data (experimental and cross-linguistic) which are then synthesized with the

guiding principles. The book is structured into eight chapters: 1) language use as part of linguistic theory; 2) a usage-based model for phonology and morphology; 3) the nature of lexical representation; 4) phonological processes, phonological patterns; 5) the interaction of phonology with morphology; 6) the units of storage and access: morphemes words and phrases; 7) constructions as processing units: the rise and fall of French Liaison; 8) universals, synchrony and diachrony. Each chapter is separated into numbered sub-sections, which is necessary because arguments presented elsewhere in the book are frequently referred to by the author. As a reader I found that I needed to jump around from section to section in order to follow the argument and this was hard going at times. The inductive style of the book in many ways is an appropriate way to deliver the functionalist argument, however, I would have preferred the questions or position to be more explicitly stated at the beginning of sections as I think this would have reduced the amount of cross-referencing that seemed necessary and increased my understanding of the central points. Given the underlying principles of the theory presented here I thought it would have been appropriate for Bybee to develop her themes through reference to the relevant literature from clinical linguistics/speech and language pathology (i.e. phonological representation in the case of profound hearing impairment, visual impairment and motor speech impairments). This omission did not render the book weaker in a critical way, but reviewing this literature would have exposed a broader context in which the source and substance of phonological structure could have been discussed.

As a result of reading this book my understanding of the nature of phonological representations has been challenged, my interest in articulatory phonetics has been aroused and my preference towards an emergent view of language has been strengthened. I predict that colleagues who hold a wholly different view of language are not likely to be convinced by Bybee's arguments, but those who can adopt a functionalist perspective (however fleeting) will find it refreshing and enlightening. Perhaps with this book more than most, your approach to it will determine your learning outcome from it. I look forward to returning to *Phonology and Language Use* often for clarification, explanation and inspiration.

LINDA SHOCKEY, *Sound Patterns of Spoken English*. Oxford: Blackwell, 2003. Pp. 156. ISBN: 0-631-23080-7 (pbk), 0-631-23079-3 (hbk).

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This book provides a succinct but detailed description of the processes which take place in spoken English and which serve to merge individual sounds into the continuous stream of speech that actually occurs.

After a brief theoretical introduction, there are three main chapters, covering in turn: processes such as assimilation and deletion that are found in conversational English; the ways that various phonological models attempt to represent these processes; and the contributions of experimental studies to our knowledge and understanding of what actually happens in connected speech. Finally there is a short chapter discussing the implications for fields such as first and second language acquisition and speech recognition.

The chapter that introduces the processes describes and illustrates phenomena such as schwa absorption by a neighbouring consonant, plosives being weakened into fricatives, tapping of [t], glottalling of final [t], voicing and devoicing of consonants, [ð] reduction by assimilation to a neighbouring consonant, [h] dropping, and palatalization, as well as the conditioning factors that affect the incidence of these processes. It may be noticed that nearly all of the processes involve consonants, and there is very little discussion of influences on the pronunciation of vowels. This may be partly because consonantal processes are relatively discrete and so lend themselves better to phonetic description than the more gradual nature of influences on vowels, but the lack of discussion of vowels is still perhaps a little surprising.

The coverage of these processes is both authoritative and concise, so researchers working on the description of spoken language will find it exceptionally valuable. Shockey mentions in the preface that the book is not intended for beginners, so those with little background in phonetics may find it rather too terse, as there is little attempt to provide an explanation of some non-basic phonetic concepts. For example: when it is stated that a final velarized [ɪ] results in the lowering of the higher formants (p. 47), it is assumed that readers will already know what a formant is and why formants might be lowered under some circumstances; and the notion of the mora is invoked to account for the long consonant at the start of *the door* pronounced as [d:ɔɪ] in northern England (p. 26) with no further elaboration. While this brevity would constitute a barrier for novice readers, the detailed information that is densely packed into this quite short text will be appreciated by many phoneticians, who will find it an exceptionally useful summary of the processes that affect conversational speech and the contexts under which they are most likely to occur.

All the processes are illustrated with plenty of examples, from the careful transcriptions of a range of accents of English reported by others, especially Lodge (1984), and also from Shockey's own research on many varieties of English (with lots of additional downloadable examples available from the website mentioned on the back cover). One problem in comparing data from various sources is that it is hard to tell if some of the contrasts that are shown arise because of the different transcribers or represent genuine variation in the speech. For example, from Shockey's own research on American English, we find *a new* transcribed as [n'u] (p. 23), and on the same page for the Norwich accent reported by Lodge (1984) we find *another* pronounced as [n'nʌðə], but it is hard to be certain if the extra [n] represents a real contrast at the start of the two pronunciations or if it just arises out of the conventions of the two transcribers. Unfortunately, this problem is exacerbated by some errors in the phonetic script. For a speaker from Peasmarsh in the south of England *policemen* is shown as [p^hɪsmən] (p. 26), but Lodge (1984: 66) actually transcribes this as [p^hɪsmən], and *bottom* is shown with [a] in the first syllable (pp. 23, 30), but in fact Lodge (1984: 66, 70) transcribes this word with [ɑ] or with [ɒ] but never with [a]. And finally for speech from East London discussed by Wells (1982), the pronunciation of *forgot* is given as [fɡɑʔ] (p. 25), but Wells (1982: 321) in fact shows the vowel in the word as [ɒ]. However, although these flaws in the phonetic script are a pity, they do not seriously undermine the presentation, and anyone not afflicted with a reviewer's pedantically critical eye will probably not be too bothered by them, as the plentiful examples do provide effective and appropriate illustrations for all the processes that are described.

The chapter on phonological explanation compares how connected speech processes are handled in various models such as Generative Phonology, Natural Phonology, Autosegmental Phonology, Firthian Prosodics, Optimality Theory and Trace/Event Theory. As the ability to describe the incidence of such processes must surely be crucial to the success of any model, this chapter in effect provides a brief but thoughtful potted history of phonology. Consistent with the tone of the rest of the book, anybody with no background in the field will probably find some of the material a little tough, as for example there are no examples to demonstrate the application of rules in Generative Phonology, and the grid modified slightly from standard Optimality Theory to illustrate how this model can deal with the alternative

pronunciation of *seven times*, *butter* and *cat* in different British accents (p. 65) is likely to be incomprehensible to anyone not already familiar with such grids. However, for those who do have basic knowledge in these areas, the chapter provides an admirable overview of the advantages and disadvantages of the various approaches.

Much of the chapter on experimental research focuses on the contribution of electropalatogram (EPG) data, and in contrast there is just a single page on the use of spectrography with no example spectrograms shown. This is a little surprising as Shockey herself reports that use of spectrograms to check phonetic transcription is 'a sobering and enlightening experience' (p. 74). While it is certainly true that EPGs can provide far more detailed data than spectrograms for the comprehensive description of consonantal processes, other research for which the main focus is EPG data has found that spectrograms may be useful for the investigation and illustration of certain points (e.g. Nolan et al. 1996). One might also note that spectrograms can provide valuable data on processes affecting vowels, for which EPGs are not so helpful, but, as mentioned above, vowels are not the main focus of this book.

In contrast to the lack of spectrograms, substantially more space is accorded to the use of EPGs, including one complete example EPG output, and the summary of this research is thoughtful and informative. As before, the coverage is quite brief, so there are no figures that plot any quantitative results, but it does constitute a knowledgeable and valuable overview of experimental research on fast speech processes.

This chapter on research also incorporates discussion of some of Shockey's own experiments that use gated speech samples to investigate the perception of fast speech processes, including the assimilation of a nasal in a sequence such as *screen play* and the deletion of the [t] in *didn't resemble*. Some of this appears to constitute work in progress, and a full evaluation would require rather more details of the experimental conditions. However, certainly the research is both interesting and pertinent to the contents of the book, providing an excellent illustration of the kind of investigation that can contribute to our understanding of fast speech processes, so it does add substantially to the text, even if its inclusion contrasts quite sharply with the succinct presentation of the fruits of other research.

In conclusion, the book is packed with a wealth of detailed information about the pronunciation of consonants in conversational English, and the summary of accumulated knowledge in this area is presented with great authority. The dedication inside the front cover is to 'fellow sound anoraks and to others interested in spoken language', and people who have a reasonable background in phonetics and so can pass muster as 'speech anoraks' will find the book both fascinating and incredibly valuable as an overview of current knowledge about connected speech processes. Moreover they will probably appreciate the brevity of the presentation, as, for them, this may actually serve to enhance the clarity of the text.

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