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**Review of Bolinger 1986 Intonation and its Parts;
Cruttenden 1986. Intonation; Couper-Kuhlen 1986. An
Introduction to English Prosody.**

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Review article in *Phonology* 1989,

Dwight Bolinger (1986) *Intonation and its Parts. Melody in Spoken English*. (1985 Stanford; California, Stanford University Press) London, Edward Arnold. xiii + 421.

Alan Cruttenden (1986) *Intonation*. (Cambridge Textbooks in Linguistics) Cambridge : Cambridge University Press. Pp. xiv+214.

Elizabeth Couper-Kuhlen (1986) *An Introduction to English Prosody*. (Tübingen, Max Niemeyer Verlag.) London, Edward Arnold. viii+239.

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1986 was a bumper year for intonation studies, with the (British) publication of three important books on the subject. Bolinger's book is a major work by one of the world's leading specialists on the question, while both Cruttenden's and Couper-Kuhlen's books are attempts to fill a serious gap in the literature by providing introductory textbooks on the subject for students of phonetics and linguistics. Cruttenden's jacket cover suggests the potential audience also includes "speech therapists and all those concerned with speech in any way", Couper-Kuhlen's jacket cover mentions "students and teachers of English as a foreign language, while Bolinger's preface maintains that intonation is "too important to be left just to linguists" and claims relevance for psychologists, musicians, jurists, anthropologists, writers and "all those in the language arts".

The trouble is that the requirements of linguists interested in intonation are not necessarily the same as those of students from other fields. One thing which makes the study of intonation attractive for many people, and which for many others probably makes it just as unattractive, is the fact that it cuts right across traditional subject boundaries, so that whereas the study of syntax, for example, implies only a minimal interaction with a closely related subject like phonology, intonation continually requires reference to a bewildering number of different fields covering the whole range of linguistics from phonetics to pragmatics and far beyond. There are probably not many other fields where one might find references to *Cognition*, *Journal of the Acoustic Society of America*, *Studies in African Linguistics*, *Linguistic Inquiry*, *Journal of Pragmatics*, *Journal of Semantics*, *Language and Style*, *Analytic Sociology*, *Perception and Psychophysics*, *Cortex* and *The British Medical Journal* to mention just a few of the widely diverse specialised journals cited among the references of three recent collections of articles on intonation (Cutler & Ladd

1983, Gibbon & Richter 1984 and Johns-Lewis 1986).

The ideal textbook for a course on intonation might be expected to provide a guide for students of intonation through the maze of various relevant fields. Topics which could usefully be covered in such a book might include the physiology of the vocal-folds, the acoustics and perception of fundamental frequency and intensity, the phonological description of tonal and accentual systems, and an account of relevant work in the fast developing fields of pragmatics and semantics as well, of course, as an introduction to the various ways in which intonation has been approached by linguists. Although none of the books reviewed here correspond very closely to this "ideal textbook", each makes an important individual contribution to the literature on intonation.

Bolinger's book is obviously not intended to be an introductory textbook. In the preface he warns the reader not to expect a "survey of past and present approaches to intonation" but a second volume dealing with the claims of the "grammatical school of intonology" is promised. Dwight Bolinger is no doubt one of the most prolific writers on intonation of all time : the references of this book cite 3 books and 13 articles of his and there is an additional bibliography of 46 other works "related to prosody" ranging from short notes or book reviews to full length articles. In the light of the considerable energy which he has devoted over a period of more than forty years to the description of intonation and of the no less considerable influence which he has had on all researchers in this field, the publication of his first full-length book devoted exclusively to intonation cannot be anything less than a major event.

The book is divided into three parts : Introduction, Accentual Prosody and Melodic Prosody. In the Introduction Bolinger outlines his theory of rhythm (presented in detail in Appendix A - a summary of this theory is also given in Cruttenden's book) based on an analysis of the English vowel system as containing two distinct categories of vowels : full and reduced. He also presents the claims he has defended in a number of other publications, that a fundamental distinction must be made between 'stress' as a lexical property and 'accent' as the physical manifestation of stress in an utterance, essentially (although not necessarily exclusively) by means of a pitch movement. Pitch movements are claimed to have two basic functions : signalling the existence of accents by their presence, and contributing to the melody of an utterance by their direction. In Part 3, a descriptive system is proposed using pitch accents, which can take the form of three basic "profiles" : Profile A : relatively high pitch followed by a jump down; Profile B : relatively high pitch without the jump down and Profile C : relatively low pitch. When there is no following syllable, the accented syllable is extended to include the following jump down or up, when there is no preceding syllable, the pitch jump is presumably made with respect to a notional reference level, since otherwise there would be no difference between "(It's)

John" with a low rising pitch (Profile C) and with a high rising pitch (Profile B) when the unaccented syllable is not pronounced.

If we assume that the only relevant pitch values for a given syllable are as either higher, lower or the same as the immediate neighbours, there are nine logical possibilities for a potential pitch accent which Bolinger would presumably classify as follows :

		TO the following syllable :		
		Jump UP	Level	Jump DOWN
FROM the preceding syllable :	Jump UP	B	B	A
	Level	(C)	-	A
	Jump DOWN	C	C	A

A syllable which is on the same level as both its neighbours obviously cannot qualify as carrying a pitch accent (although it can carry an accent of intensity or length). The C profile in brackets is described by Bolinger as being "comparatively infrequent" (Appendix B p 360) and in the original presentation of this model (Bolinger 1958) was in fact analysed as a profile B. One other difference with the earlier formulation is that Bolinger has now extended his inventory to include complex profiles such as CA, CB, AC, CAC. These primary and complex profiles combine to produce intonation Contours. Bolinger calls the profiles the minimal morphological units of intonation, while contours constitute syntactic units.

One might wonder why Bolinger does not go a step further and try to analyse the profiles into phonemic units (Step Up and Step Down for example or High and Low tones as in much recent work on the phonology of intonation). In fact, he explicitly criticises "those who would like to see a close analogy between speech and music" for attempting to idealise "certain critical points on a pitch curve as targets" implying that "what comes between the target pitches is accidental" (p 28). He then claims that "if we can show that there are differences in meaning between, say, two successive pitches at 120 and 180 hertz and a slide from 120 to 180, then we have refuted this claim." Bolinger's evidence for this is an opposition between "Ye-es ?" with "two level tones with a skip between" and "Yes ?" with a rise in pitch. The problem with Bolinger's argument here is that he does not give any indication as to how a "skip up" in pitch can be phonetically different from a rise. It is a truism to say that the only way to go from low to high is by rising, but providing we factor out the segmental contributions to a fundamental frequency contour (cf Hirst 1983, Di Cristo & Hirst 1986), using only entirely voiced sequences such as for example "No-o ?" and "No ?", it is not physically possible to produce discontinuous

fundamental frequency curves (excluding a change of register to falsetto, which is not what Bolinger intends). How then do the fundamental frequency curves of "No-o?" and "No?" differ if not by a difference between a skip and a rise? The answer is by the timing of the rise - whereas "No?" rises continuously throughout, "No-o?" remains static for the first half of the syllable and then rises continuously for the second half. Proponents of a "levels" analysis could thus analyse the two as a distinction between a L H contour and a L L H contour.

Bolinger, however, believes that accents are best interpreted not as linguistic categories but as gestures. The chapters on accentual prosody argue at length that the position of accents in an utterance is the result of two basic forces : a tendency to push the final accent as far to the right as possible (accent of power) and a tendency to highlight those parts of the message the speaker considers the most informative (accent of interest). Bolinger then argues in part three that the basic profiles each have an intrinsic gestural meaning : thus Profile A contrasts with Profile B in meaning "separateness" rather than "togetherness" and with profile C in meaning "newness" or "contrast" rather than "foreknowledge". The argument is abundantly illustrated with examples (with the intonation represented throughout by means of the famous "squiggly lines" of text which make an article by Bolinger recognisable from the other side of the road) many actually attested.

Bolinger's basic claim is that intonation "lies on the last frontier between primitive and civilized communication" (p 13) and that it "has its symbolizing power thanks to a primitive drive mechanism that raises pitch as tension increases and lowers it as tension falls" (p 194). He pleads guilty to a form of "reductionism" in attempting to explain everything in terms of emotionally-based gestures but recognises (p 197) that even if we admit an emotional origin for intonation meaning, this does not exclude the possibility that these meanings have been ritualised and integrated into the linguistic system. He opts for a mixed system "expressive at base but with adaptations that differ from culture to culture." (p 198).

The biggest drawback to Bolinger's approach, in my opinion, is not however that of reductionism so much as of a lack of predictive power. At the limit one feels that despite the wealth of fine and sensitive observations contained in this volume, one has not got any further towards predicting what possible intonational contours can occur with what syntactic structures and how the two interact formally to convey meaning.

For those who still believe that it is possible, and worthwhile, to describe intonation, even partially, by means of formal abstract systems, this book will be an indispensable reminder that linguistic (and particularly intonational) reality is always far more complex than the models which we invent to describe it.

The first two chapters of Cruttenden's book give a rather disappointing impression which is luckily made up for in many ways in the rest of the book. Chapter I "Preliminaries", covering as it does in a mere 15 pages both "the physiology and acoustics of pitch" announced on the back cover and also a taxonomy of languages as "tone-languages" "intonation-languages" and "pitch-accent languages", shows all the signs of being a hastily written addition, both from its length which hardly does justice to the subject and from the contents ; some parts are controversial - one wonders why Cruttenden bothers to introduce with practically no argument what he admits is an idiosyncratic definition of "pitch-accent" when he makes no further use of the notion in the rest of the book ; the term "intonation language" seems particularly ill-chosen, seeming to imply as it does that the other languages have no intonation; other parts are unverifiable - the section on "Intonation in tone languages" is illustrated by data from Panjabi whose source is not mentioned - or incomprehensible (the same data on Panjabi is accompanied by illustrations of pitch patterns which are badly drawn and difficult to link up with the description, and even sometimes inaccurate (the frequency which speakers judge to be the double of 1000Hz is 3000 Hz and not 4000Hz as Cruttenden states. The second chapter on "Stress, accent, and rhythm" gives a useful but too brief introduction to (English) stress rules in generative phonology including an account of metrical phonology (Lieberman & Prince 1977). Unfortunately the only example of a metrical tree pattern for word stress which Cruttenden gives :

```

      w           s
      s     w     s
    w s w w s s w
/d e n a t i o n a l i s a t i o n /
+ + - - + + -

```

is inaccurate, since in Lieberman & Prince's model, unstressed syllables in English are always attached to the stressed syllable to their left (except when word-initial.), forming "left feet" which are then gathered up into a right-branching structure, so that the tree for this word can only be :

```

          s
        w     s
      s     s
    w s w w w s w
/d e n a t i o n a l i s a t i o n /
+ + - - + + -

```

any tree-structure introduced by the cyclic application of the stress-rules would be wiped out by a process of "deforestation" at the beginning of each cycle.

A brief account of recent research into the phonological nature of word stress in different languages (cf. e.g. Hayes 1981 , 1983) would have been appropriate

either here or in chapter 5.

Chapter 3 "The Forms of Intonation" gives a short but on the whole well-managed account of English intonation within the framework of the British "contour" analysis followed by a brief comparison with "autosegmental" and "generative" approaches - strangely although Cruttenden refers to Autosegmental Phonology he makes no reference to its author John Goldsmith. Cruttenden analyses nuclear tones for English ("and almost certainly...all 'intonation languages' ") along three dimensions depending on

- a. the initial movement from the nucleus : fall, rise or level
- b. the beginning point of this initial movement : high or low (often indicated by a step-up or step-down from the preceding syllable)
- and c. a second change of pitch-direction following the nucleus

Unlike Couper-Kuhlen (see below) Cruttenden makes no provision (in RP) for an arrested fall stopping short of the extreme low-point of a speaker's range.

Presumably these would be transcribed by Cruttenden with a level nucleus.

The following chapter (4 "The Functions of Intonation") gives a useful summary of the main correlations which have been described in the literature between intonation groups and syntactic constituents, followed by an account of nucleus placement with broad and narrow focus. Cruttenden adopts an interesting approach to the problem of the meaning of individual nuclear tones by giving first an account of local meanings for each nuclear tone (e.g. a rise-fall is described as having two distinct local meanings : "impressed" and "challenging") before attempting to relate these to more general abstract meanings based on a binary division into rises and falls which is then modified by a tentative set of tonal features including accent range, complexity and stylisation.

By far the most interesting and original part of Cruttenden's book is his Chapter 5 in which he addresses the question of "Comparative Intonation" : a field which will no doubt prove to be a major area of research in the coming years. This chapter consists of a brief discussion of "Style, Class and Sex" followed by an account of intonational variation within English (treating both British and non-British dialects) and across languages. The difficulty of such an endeavour, as Cruttenden rightly points out, is that of pinning down stable meanings of intonation which can be related to different phonological or phonetic exponents in various languages. In the case of intonational dialectology in particular we need to face a logical problem which is that whether we consider intonation to be determined by syntax, semantics, pragmatics, context or attitude etc we still have to explain why it is that certain dialects make a greater use of the fall-rise, say, than others - since one would surely not want to claim that the speakers of these dialects make more use of contrast, contradiction, emotion or whatever we use to explain the choice of tone.

It is, however, surely precisely through such a comparative approach that we can hope to eventually isolate underlying stable meanings, by attempting to describe dialectal surface forms as variations on more abstract pandialectal themes. An example of the sort of insight we can hope to gain in this way is Knowles' analysis (cf references cited by Cruttenden and more recently Knowles 1984) of certain types of superficially rising and falling patterns in many of the northern British cities which are functionally equivalent to variants of rises and falls respectively (owing to the probable Celtic origin of these patterns, Knowles calls them Irish rises and falls which, perversely, go down and up respectively). As Cruttenden points out Knowles' analysis makes possible much wider generalisations concerning the co-occurrence of sentence types and intonation patterns than would be possible if we were to rely on purely surface characteristics.

The account of intonation across languages is brief but gives a good idea of the limited state of our knowledge at present. The data Cruttenden presents on intonation groupings shows a great deal of similarity to English - the only notable difference he finds is that of French which he claims can have shorter intonation groups so that :

Il est parti/ hier soir/ avec sa famille/ dans le train/ de Manchester/ à Londres/ is said to be a "not untypical" example. In fact, however, this is a rather unlikely grouping (just as unlikely I would think as a similar grouping in English) - a more likely one would be

Il est parti/ hier soir / avec sa famille // dans le train / de Manchester / à Londres // where (/) indicates stress group boundaries and (//) intonation group boundaries.

Greater variation is observed among European languages in nucleus placement and its interaction with word order. Cruttenden presents a comparison of typical intonation patterns for declaratives, yes-no questions, question word questions, imperatives and exclamatives, (the Russian transcriptions, incidentally, are incorrect, e.g. "ego" and "eø" are transcribed as /ego/ and /ee/ instead of /jevo/ and /jejo/), and completes the chapter with a discussion of intonational universals, intonation change and intonational acquisition. There is also a useful summary of the Lund and Eindhoven models of intonation.

In conclusion, Cruttenden has produced a very valuable book even though it is marred by a number of superficial imperfections.

Couper-Kuhlen's book is made up of eleven chapters which could have been divided into three distinct parts : a presentation of background material (Chapters I to IV); a description of the forms of English intonation (Chapter V) and an account of the ways in which the meaning of intonation has been approached (Chapters VI to XI).

Unlike Cruttenden's book there is no account of either dialectal variants of intonation or of the intonation of other languages although, according to the preface, comparative chapters on American and German intonation were originally planned.

The introductory material (I Prosody and Prosodic Features, II Stress and Accent, III Rhythm & IV Intonation) is on the whole handled rather better and in more detail than in Cruttenden's book. The account she gives is still, however, far from the "ideal textbook" I evoked above - but then ideal textbooks are not very common, after all no-one can be a specialist on everything. As in the case of Cruttenden's book, though, it is a pity that a book on prosody does not give even a brief introduction to the phonology of tone and accent particularly since this has been an especially productive area in the past ten years.

Couper-Kuhlen, like Cruttenden, sets out to describe intonation within the British "contour analysis" framework although the direct influence here is Crystal rather than O'Connor. She rightly rejects attempts to define the formal units of intonation by purely physical criteria (such as pauses of more than 600-800 ms as suggested by e.g. Brown, Currie & Kenworthy 1980) but still seems to believe in the possibility of a "search for tone units and tone unit boundaries based on phonological/phonetic criteria." (p76). In fact, phonological analysis (in general) is underdetermined by the phonetic data so that the only possible requirement (short of a proposing an algorithm for automatic recognition) is that the phonetic data be compatible with the phonological analysis. Thus, contrary to what Couper-Kuhlen claims (p 75 fn), there is in fact no circularity in Crystal's argument when he proposes that we "have recourse to grammatical or semantic criteria to place the boundary." These criteria are after all available to the speaker when he produces an utterance and to the listener when he hears one.

In Chapter V ("A System of Intonation"), Couper-Kuhlen presents a set of descriptive categories and features setting out to describe "all and only the significant aspects" of the English intonation system. (p 108). This analysis, a refinement of the system proposed by Crystal (1969), analyses a contour by means of the independent dimensions of pitch direction (applying both to the nucleus and the overall pattern of the head) and pitch range which includes height, width, slope and endpoint. Crystal originally proposed a binary distinction between height and width. Couper-Kuhlen rightly points out that this does not make it possible to distinguish between a wide pitch-movement which falls to an extreme low level and a similar movement which yet stops short of such an extreme level. She does not, however, draw what seems to be the obvious conclusion that the relevant feature is the value of the endpoint and not an opposition between wide and narrow pitch movements as she analyses them. In fact she explicitly excludes this conclusion "a non-extreme endpoint cannot necessarily be equated with narrow pitch-movement"

(p 89) although she later acknowledges that "it could be argued that given the specification of the end-point (...) and of the starting point (...) it is superfluous to distinguish the width of the pitch glide". As it is she prefers "to err on the side of over-specification" (p 91) but it seems evident that a system which distinguishes "fifteen different types of fall" (and as many rises), all presumably supposed to be phonologically distinct since "phonetically, the number of falls is much greater" (p 91), is pushing overspecification a great deal too far. A combination of her treatment of endpoints with Cruttenden's treatment of starting-points (relative to the height of the preceding syllable when appropriate) would probably be the ideal compromise.

The only other quarrel I would have with her transcription system is that she uses the tonetic marks to do two things (a) indicating pitch movements and (b) showing a syllable's status as nucleus of a contour. This leads her to introduce unnecessary complications when, for example, she wants to transcribe a contour composed of a sequence of falling pitch movements. Thus she gives the example : "you 'could have 'fooled M`E" with the gloss "falling glissando" (the term glissando being reserved for pitch movements on non-nuclear syllables) instead of transcribing this directly as : you could have foòled M`E"

This seems particularly unnecessary since the nuclear status of the syllable is already indicated in her transcription by the use of capitals. Here a lesson is to be drawn in my opinion from Bolinger's analysis of pitch accents.

Despite these criticisms, and despite the fact that the transcription system proposed by Couper-Kuhlen makes no claims beyond that of transcribing the intonation of British English, her proposals provide what is in fact a good first approximation to an "International Intonetic Alphabet" - something which, modified perhaps along the lines I have suggested, would be an extremely useful tool for the study of comparative intonology.

The last six chapters (VI Functions of Intonation, VII Intonation and Information, VIII Intonation and Grammar, IX Intonation and Illocution, X Intonation and Attitude, XI Intonation and Text / Discourse) constituting about half of the book, give a well-documented account of the various ways in which the problem of the meaning of intonation has been approached in the literature. The fact that intonation meaning can be approached in so many different ways, for results which, as Couper-Kuhlen admits, "are rather modest indeed" (p 209) seems to indicate that we have still not got properly started on the analysis of intonational meaning. As Cruttenden puts it "it is not yet even clear what sorts of meanings are involved." (p 184). Couper-Kuhlen's conclusion is that what is needed is a new approach to linguistic function. My own feeling is that we need two things : first of all we urgently need more detailed descriptions of the intonation systems of different languages, including descriptions of dialectal variations in order to reach the point where genuine

comparisons are at last possible; secondly, a real breakthrough will probably require a new approach to the way in which linguistic meaning is interpreted by the central cognitive mechanisms. In this respect the most promising framework I have seen in recent years is that outlined in Sperber & Wilson (1986) who present at least the beginning of an explicit model of the way in which linguistic knowledge relates to utterance interpretation - it remains to be seen whether an account of intonation meaning can be developed in this framework. As Cruttenden concludes "It is an exciting time for intonationists."

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