Linguistic Meaning

Volume Two

Keith Allan

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The principal symbols and conventions

Symbols other than the ones listed below may be used from time to time with values that will be made clear within the co-text.

S	speaker
H	hearer
U	utterance
L	language
C	context
W	world spoken of
PA	perfunctory face-maintaining verbal acknowledgment
E	language expression
*E	E is ungrammatical or unacceptable
?*E	E is seemingly ungrammatical or unacceptable
??E	E is of very dubious grammaticality or acceptability
?E	E is of dubious grammaticality or acceptability
Σ	sentence
NP	noun phrase
$N_{\emptyset}$	uninflected noun
VP → V (NP)	a verb phrase has for its immediate constituent(s) a verb and optionally a noun phrase
Γ	variable for a category node
λ	variable for a lexicon item
Φ	prosody of U

ˈ	
(C)V(C)	ˈ stress
Tones:	ˊ fall, ˈ rise, ˋ rise-fall ˆ fall-rise, ˉ level
/	disjuncture
Keys:	high key / mid key / low key
x	

P	proposition
P,Q	variables for propositions
$A \rightarrow B$	A implicates B
$A \longleftrightarrow B$	A and B have the same meaning
A & B	A and B
A v B	A or B
$\{^{A}_{B}\}$	A or B
~A	not-A
$x \in F$	x is a member of F
$F \subset G$	F is a subset of G
$F \cup G$	F is the union of F and G
$F \cap G$	the intersection of F and G
$F = (G \cup G')$	F equals the union of G and its complement set

Categories such as **Bird**, **Tomato**, **Traitor** are written with an initial capital letter

›‹	boundary between two information constituents (ch. 7)
[P]	preparatory condition (on illocutionary act, ch. 8)
[S]	sincerity condition (ch. 8)
[I]	illocutionary intention (ch.8)
$[E_S]$	executive condition on speaker (ch. 8)
$[E_U]$	executive condition on utterance (ch. 8)
$[E_C]$	executive condition on context (ch. 8)
§8.5.3.2	refers to ch. 8 section 5.3.2
(6.3.7)	refers to the seventh example in section 6.3

italics are regularly used for cited forms and for book titles; they are sometimes used in examples to pick out significant expressions

SMALL CAPITALS are used for emphasis within the text

'single-quotes' are regularly used for quotations and the titles of articles

"double quotes" are regularly used to enclose meanings; sometimes lexemes; and sometimes as 'scare' quotes

Phonetic symbols have IPA values, e.g. English /biid/ = *bead*; /bi·t/ = *beat*; /θiŋ/ = *thing*; /'plɛʒə/ = *pléasure*; /æt/ = *at*; /tʃəətʃ/ = *church*; /dʒʌdʒ/ = *judge*; /hɒt/ = *hot*, or in Cockney /ʔɒʔ/ = *'o'*; /jɔɔ/ = *your*; /pɑt/ = *put*; /buu/ = *boo*; /ɪə/ = *ear*; /ðɛə/ = *there*; /ʃai/ = *shy*; /kaɑ/ = *cow*; /kɔɪ/ = *coy*; /pɛɪ/ = *pay*; /gəɑ/ = *go*.

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Chapter 6

Prosody and meaning

> Machines don't hear like people because people hear things that aren't there.
>
> (Fred Householder 'Accent, juncture, intonation and my grandfather's reader' (1957:244)

6.1 Introduction

The speaker S makes an utterance U to hearer H in context C, and U consists of a sentence Σ spoken with prosody Φ. We have looked at ways in which the meaning of Σ can be determined from the meanings of its constituents; we now turn to the contribution which the prosodic components stress, disjuncture and intonation make to the meaning of U. First of all we argue, in §6.2, that stress and intonation cannot be defined using acoustic measurements, but that H's auditory perception of them is based on the analysis-by-synthesis of S's prosody using acoustic cues and a knowledge of the conventional production procedures for prosody. Next, in §6.3, we discuss what stress is, and decide that it is only primary stress or '1 stress' (as we shall call it) which affects meaning. After discussing hypotheses for the location of 1 stress in English utterances, we conclude that the function of 1 stress is to mark information focus – though the notion of 'information focus' is left to be discussed in ch.7. In §6.4 we turn to disjunctures and find them to be used differently in spontaneous speech from the way they are used in the competent delivery of planned texts (reading aloud, rehearsed speeches, etc.). In the delivery of planned texts, disjunctures mark sense group boundaries; and the greater the temporal duration of the prosodic disjuncture, the more severe the semantic disjuncture between the sense groups it separates. In spontaneous speech, disjunctures occur at the boundaries between one planned bit of discourse and the next. They are used to mark both semantic

disjuncture and to indicate whether S is relinquishing or retaining the floor: if the former, a disjuncture will fall at the end of a clause or some other sense group; if the latter, the disjuncture will fall after a minor category transition element (e.g. conjunction, determiner, auxiliary, preposition), which is a constituent in the syntactic structure immediately following the disjuncture, and in the sense group co-extensive with that syntactic structure. Between adjacent disjunctures is the tone group. In planned texts the tone group is co-extensive with a sense group, but this is not necessarily the case in spontaneous speech. The onset syllable to a tone group is uttered at a certain pitch level or 'key' which is either the same as, or higher than, or lower than the pitch level of the previous tone group. The key may change not only at the onset syllable to the tone group, but also at or after a 1 stressed syllable within the tone group. A high key is used to attach greater significance to the information presented in that key and, conversely, less significance is attached to information presented in a low key. In addition to the key or general pitch level, stressed syllables are marked with kinetic tones, i.e. they have either fall ˋ, rise ˊ, fall-rise ˇ, rise-fall ˆ, or level ¯ pitch: a meaning for each of these is given and exemplified in §6.5.2. Together, the key or keys and kinetic tone(s) constitute an intonation contour. In a planned text the intonation contour ranges over a tone group and therefore over a sense group. In spontaneous speech an intonation contour still ranges over one sense group, but may extend over more than one tone group. Intonation indicates how S intends that H should interpret the string of words that the contour overlays. In §6.5.3 there is a case study of the form and function of the high rise terminal contour used with declarative sentences, which is increasingly characteristic in speakers of Australian English; this Australian phenomenon is related to the general intonation system of English, and also to intonational universals in language. Finally, in §6.6 we summarize the contributions that the major prosodic categories of stress, disjuncture, and intonation make to utterance meaning and sketch the contributions of an additional five minor categories.

6.2 The auditory analysis-by-synthesis of prosodic categories

When as listeners we perceive the stress that other people are making, we are probably putting together all the cues available in a particular utterance in order to deduce the motor activity (the

> articulations) we would use to produce those same stresses. It seems as if listeners sometimes perceive an utterance by reference to their own motor activities. When we listen to speech, we may be considering, in some way, what we would have to do in order to make similar sounds.
>
> (Peter Ladefoged *A Course in Phonetics* 1982:104)

People see faces in the fire and familiar objects in the configurations of the stars – e.g. the Southern Cross, the Great Bear, the Plough, the Hunter, and so forth; in the days before continuously welded railway tracks, a train traveller seemed to hear the clacking of the wheels over the gaps between the rails as a rhythmic 'diddlydum-diddlydum-diddlydum': human beings are predisposed to perceive sense data in terms of familiar motifs or recurrent patterns. Consequently, people listening to identical tones of, say, 20 msecs duration located at regular intervals on a tape, will typically perceive every second or third tone to be stressed, creating an iambic or anapaestic rhythm (cf. Fred Householder 'Accent, juncture, intonation and my grandfather's reader' 1957:244). If these particular tones are modified by increasing their frequency (raising their pitch), increasing their amplitude (making them louder), and increasing their duration over that of adjacent tones, they will certainly be interpreted as stressed, and the sequence of tones will undoubtedly be perceived as rhythmic. In language, prosodic stress and intonation units bounded by disjunctures (pauses) give the spoken utterance a rhythmic quality; but the rhythms we perceive in speech are not always acoustically definable. As Householder (1957:244) has said: 'Machines don't hear like people because people hear things that aren't there, but the machines do hear very well all the factors which induce us to hear what isn't there.' The rhythm of language is most regular in metrical verse; and it is pretty regular in the delivery of planned texts (e.g. in competent reading aloud or in the rehearsed oratory of a good speaker). Regular rhythm is sought after in spontaneous speech, too; but then it is subservient to formulating and communicating a message, so that truly spontaneous speech has irregular rhythms – although there is evidence that H will perceive S's irregular rhythms to be more regular than acoustic measurement would confirm. There are many tidbits of evidence that auditory perception of prosodic categories may be, or rather may SEEM to be, at variance with the acoustic data, and the explanation is that at least some auditory perception is based on analysis-by-synthesis.

To begin discussing this, consider the analysis of metrical verse into metrical feet. For the purpose we can do no better than use Samuel T.

Coleridge's verse entitled 'Metrical feet'.

```
   1          1          1          1
| Trochee | trips from | long to | short; |
      1          1          1          1
| From long | to long | in sol|emn sort |
   1    1   1    1         1    1          1  1
| Slow spon|dee stalks; | strong foot! | yet ill able |
   1          1          1          1
| Ever to | come up with | Dactyl tri|syllable. |
   1          1          1          1
| Iam|bics march | from short | to long; |
         1          1          1          1
| With a leap | and a bound | the swift an|apaests throng; |
```

The divisions between the feet, marked by '|', are not systematically phonetically marked, yet we can locate them with a great deal of confidence. We can do so because we recognize the recurrent pattern of stresses and match it with what we know of the conventional
1 1 1 1
patterns of metrical feet: this is why 'slow spondee stalks' gets analyzed into two feet, i.e. two spondees, rather than four feet – each with a single stress. Thus the process of analyzing verse into metrical feet is analysis-by-synthesis: the actual stress pattern heard is analyzed by synthesizing the acoustic cues into conventional patterns of metrical feet. A similar method is used in recognizing certain emic categories in the understanding of ordinary speech. In the quote from Ladefoged (1982:104) at the head of this section we find him saying that to analyze speech, H probably puts together all the cues available in a particular utterance in order to deduce what he would have had to do in order to produce the sounds S makes. This almost echoes a similar observation made very much earlier by Daniel Jones:

> When a strong stress is given to a sound incapable of receiving any noticeable increase of loudness, a person unfamiliar with the language would be unable to tell that a stress was present except by observing the gestures. A hearer familiar with the language would not perceive the stress objectively from the sound apart from the gestures, but he perceives it in a subjective way; the sounds he hears call up to his mind (through the context) the manner of making them, and by means of immediate 'inner speech' he knows where the stress is. The process is analogous to that by which the beats of the

> bar are felt in syncopated music at points where no notes are played.
> (Jones *An Outline of English Phonetics* 1932:227 n.1)

What both Ladefoged and Jones are describing is a method of analysis-by-synthesis which hearers (Hs) use to identify the prosodic category of stress.

In 'An experimental study of some intonation contours' 1964, Kerstin Hadding-Koch & Michael Studdert-Kennedy presented Hs with a variety of intonation contours of the general form in Figure 6.1. Hs were asked either (a) was the contour a statement or a question, or (b) did the contour terminate in a falling or a rising pitch. The results correlated a perceived falling terminal contour with statements and a perceived rising terminal contour with questions. However, the PERCEIVED direction of the terminal contour did not always match the acoustic data; e.g. where there was a steep fall preceding a terminal rise, the terminal contour was often perceived to fall; in other cases, an acoustic fall was perceived nonetheless as an auditory rise. Thus, as Hadding-Koch & Studdert-Kennedy point out, not only terminal rise or fall, but also preceding peak and turning point[1] are relevant in perceiving the direction of the terminal contour. Interpreting these results, Philip Lieberman in ch.4 of *Intonation, Perception and Language* 1967 concludes that the criterial factor in perception is H's recognition of the degree of effort required by S to reach the end point from the turning point, taking into account the exhalation involved in achieving the peak and dropping to the turning point. In particular, H seems to respond to an awareness that subglottal air pressure will be lower after a high peak (because it requires more air and energy to produce than a low peak) therefore a rise from the turning point after a high peak will be low pitched unless there is increased tension in the laryngeal muscles.[2] Consequently, Hs perceive terminal rises only when they can infer the presence of increased tension in the laryngeal muscles such as would produce a high end point; otherwise a fall is perceived. In the Hadding-Koch & Studdert-Kennedy experiments a greater degree of imputed laryngeal tension was interpreted as a terminal rise more often and with greater confidence than was a lower degree of imputed tension. Thus H analyzes the acoustic signals by synthesizing them into particular types of contours, using his knowledge of the production procedures for the conventional forms of the contours.

We conclude that Hs perceive stress and intonation (and perhaps other prosodic categories) in terms of their approximation to a particular conventional pattern, in a way that is roughly analogous to

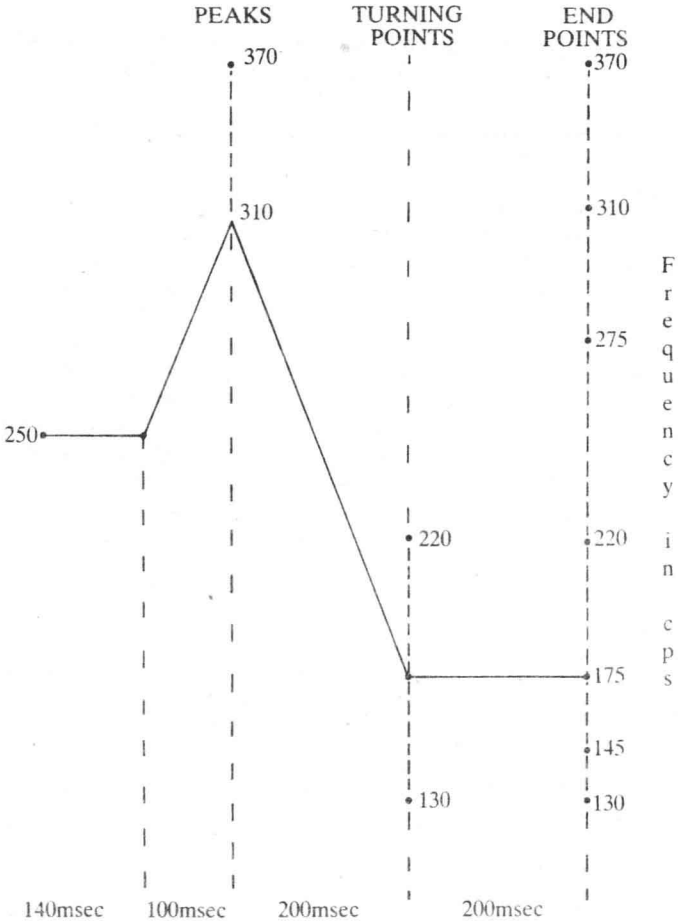

Figure 6.1 The general form of the intonation contours used by Hadding-Koch & Studdert-Kennedy 1964. The words *for Jane* were processed by means of a Vocoder. All contours started at 250 cps, which frequency was maintained for 140 msec; it then rose to a peak of either 370 or 310 cps before falling to a turning point of either 220, 175, or 130 cps. The contours then proceeded to one of seven end points between 370 and 130 cps

the way people perceive the boundaries of metrical feet.

6.3 Stress (in English)

1 1
The purpose of hitchhiking is not to walk, but not to walk.
(Grace Allan, personal communication, 1980)

6.3.1 What stress is

Prosodic stress is an emic category whose corresponding phonetic characteristics are as follows: (a) pitch obtrusion, i.e. a marked movement in or sustention of pitch when uttering a given syllable (which creates the kinetic tones discussed in §6.5.2); (b) pitch obtrusion is usually accompanied by greater amplitude (loudness), and often (c) greater duration of the stressed segment, and sometimes (d) a different vowel quality from that which normally occurs in a
1 1
comparable unstressed syllable (compare *convict*/'kɒnvɪkt/ vs. *convict* /kən'vɪkt/). Variations in pitch during speech are produced by tightening or slackening the muscles which alter the length and thickness of the vocal cords, thus varying the rate at which they vibrate when air is forced through them from the lungs: the faster the rate of vibration, the higher the pitch. Because the vocal words vibrate only in the production of voiced phones, pitch variation is only possible on voiced phones. Since stress is primarily realized by pitch obtrusion, stress has to be located on voiced phones.

Stress is characteristic not of individual phonemes, but of syllables. This can readily be shown in a contrastive utterance such as

(3.1.1) 1 1
I said interests not interest.

In order to emphasize the plural 'interests' in contrast with the singular 'interest' it is not possible (or at least, not usual[3]) simply to stress the plural morph *-s*, because the latter consists only of a phoneme; instead, the domain of stress is the whole of the syllable in which the phoneme occurs. Recalling that the characteristic pitch obtrusion which marks stress must occur on a voiced segment, and because a syllable nucleus is typically a vowel (and therefore voiced), stress is systematically located on the syllable nucleus.[4] We conclude that stress is perceived as an acoustic prominence given to the nucleus of a syllable, but that its domain is recognized as being the whole syllable.[5]