THE BINARY SUPRASEGMENTAL FEATURES OF ENGLISH

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The binary suprasegmental features proposed by Vanderslice and Ladefoged (in press) are shown in Table 1. Unaccented syllables of English come in two weights: heavy and light. This distinction is mainly cued by vowel quality and duration. As examples, we

TABLE 1

Vanderslice and Ladefoged's Binary Suprasegmental Features

Feature Name	Comments	Phonetic Correlates
HEAVY	A light syllable is unstressed and of briefer duration (cet. par.) than a heavy one.	Full articulation vs. reduced timing.
ACCENT	Corresponds roughly to IPA primary stress.	Presence vs. absence of increased respiratory energy and laryngeal adjustments causing a pitch obtrusion.
EMPHASIS	Subsumes Trager-Smith's pitch 4 and Halliday's tone 5.	Extra-large pitch obtrusion on an accented heavy syllable.
DIP	Causes a downward pitch obtrusion on an accented syllable.	
SCOOP	Delays the upward pitch obtrusion associated with an accented syllable.	
INTONATION	Abstract feature assigned to nuclear accented syllable, implying a plus value of one or both of the following features.	None.
CADENCE	Affects the postnuclear portion of a sense group.	Presence vs. absence of a low (usually falling) pitch pattern.
ENDGLIDE	Affects either the whole postnuclear portion of a sense group, or (with +Cadence) only the terminal portion.	Presence vs. absence of a rising pitch pattern.

may contrast the last syllable of (1a), which is heavy though unaccented, with that of (1b), which is light:

(1) (a) catcall (b) cackle (c) smorgasbord

If a syllable is heavy, then it may either be accented, like the first syllable of each of these words, or it may be unaccented like the last syllable in (1a) and (1c). Light syllables like the last one of (1b) and the middle one of (1c) are by definition unaccentable. Accent — as Bolinger (1965) and others have shown — is cued primarily by a pitch obtrusion.

The two features in (2) account for three prosodic classes of syllable — corresponding generally to the three IPA levels of stress, at least in the American or Kenyon-and-Knott interpretation. The reason for preferring two binary features to a ternary one is not economy but naturalness: the two distinctions displayed in (2) differ not in degree but in kind:

(2)

ACCENT	— HEAVY +	
+	(disallowed)	('smorg)
—	ăs	(ˌbord)

The pitch line of a long sense group having several accents can be modeled as a series of accentual pulses obtruding (normally upward) from a neutral pitch level:
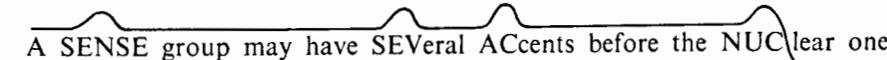
(3) A SENSE group may have SEVeral ACcents before the NUClear one.

Occasionally an accent pulse may obtrude by an extra amount if it is emphatic. Sometimes, as in (4a), the obtrusion is inverted by the feature [+ dip], and sometimes, as in (4b), the obtrusion is displaced in time by [+ scoop]:
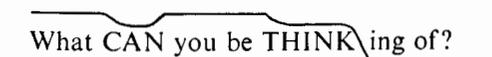
(4a) What CAN you be THINKing of?   (b) It's WONderful.
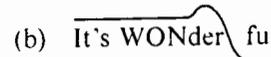
However, these last two features expound not grammatical, but rather what Abercrombie (1967) calls indexical, distinctions. They contribute to the sound-meaning relationship, but they are not part of the grammar as usually conceived.

By intonation I mean the pitch contour on or after the last accented syllable in a sense group. There are three grammar-expounding intonations in American English — falling, rising, and fall-rise — and these can be accounted for by the two binary features CADENCE and ENDGLIDE:

(5)

ENDGLIDE	+ CADENCE —	
+	fall-rise	rising
—	falling	(—intonation)

Whenever the last syllable is accented, then of course the whole intonation contour has to be crowded into that one syllable:

(6)   Where is THIS?   It's MontreAL. a LARGE CIty in QueBEC.

Where there is both [+ cadence] and [+endglide], as on *MontreAL*, the pitch on *AL* goes down below neutral level and back up again. Of course, it goes above neutral at the beginning of the syllable, but that is an accentual rather than an intonational phenomenon; and it is just here, in factoring out these separate influences on the pitch line, that this model makes one of its unique contributions. All three intonations are exhibited in (6).

But it's easier to see what's going on in (7) where the last or only accent comes well before the end:
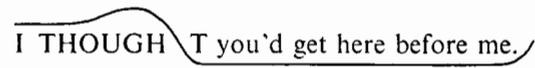
(7a)   I THOUGHT you'd get here before me.
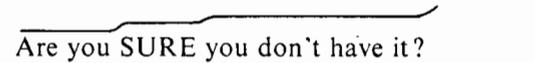
(b)   Are you SURE you don't have it?

In (7a) the pitch rises above neutral for the accent on *thought*, falls during *thought* to a low level because of CADENCE, and then rises on the last syllable *me* because of Endglide. However, the effect of Endglide in (b), with [— cadence], is different: the rise begins (in American English) right from the nuclear syllable.

Prosodic variations are assigned in at least three different sections of the grammar: first, there are rules (which I call orthoepic) that assign word accentuation. Secondly, there are rules for sentence accentuation (and intonations and emphases), and these are syntactico-semantic. Thirdly, there are low-level rules that scan the surface structure and take care of rhythmic phenomena and the like.

Word accentuation tells us which syllables of a polysyllabic word have a potential for pitch accent. Linguistically significant generalizations are captured if this is done by rules like those Chomsky and Halle (1968) propose. An example is their First Auxiliary Reduction Rule, given in (8) exactly as in SPE — except (8) shows how binary features can be substituted for stress levels. This affords a radical simplification of this rule by getting rid of all stress variables and conditions — yet with no loss of empirical content (cf. Vanderslice and Ladefoged, in press):

(8)   AUXILIARY REDUCTION—I

$$V \rightarrow \begin{bmatrix} -\text{HEAVY} \\ -\text{stress} \\ -\text{tense} \end{bmatrix} \Bigg/ \begin{Bmatrix} \langle VC_o \rangle \begin{bmatrix} -\text{ACCENT} \\ \alpha\text{stress} \\ \langle +\text{tense} \rangle \end{bmatrix} C_o^1 (=C_o) \begin{bmatrix} +\text{ACCENT} \\ \beta\text{stress} \\ V \end{bmatrix} \\ \left(\begin{bmatrix} \overline{} \\ \gamma\text{stress} \end{bmatrix} \ -\text{ACCENT} \quad [-\text{stress}]_o \# \right) \\ ([1\ \text{stress}]\ C_o \overline{} C_o\ [-\text{cons}]) \ -\text{HEAVY} \end{Bmatrix}$$
$$+\text{ACCENT}$$

(SPE conditions on the stress variables in (8) — eliminated from the revised rule — are: $\beta = 1, 2, 3$; α is weaker than β; γ is weaker than 2.)

It is a persistent fallacy of transformational phonology that the machinery for word stress can be made to double for sentence accents too. In fact the rules for English sentence accentuation are not even phonological rules at all. They are syntactic and semantic rules paralleling those for pronominalization, definitization, and ellipsis. For example, (9a) is unacceptable in standard English and must be transformed by accent deletion to (9b):
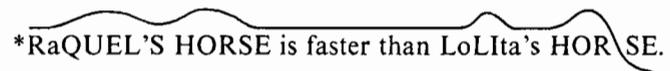
(9a)   *RaQUEL'S HORSE is faster than LoLIta's HORSE.
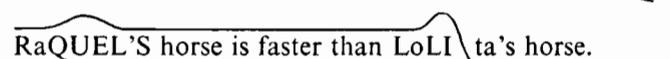
(b)   RaQUEL'S horse is faster than LoLIta's horse.

Further reductions such as deleting the second word *horse* altogether are clearly syntactic. Note that (9a) and (b) do not differ in intonation. The accentuation changes, causing *Lolita* to become nuclear instead of *horse*. The intonation features adapt themselves to the material in their domain.

The third source of accentual variation is low-level rules, of which the most important is the well-known rhythm rule. This accounts for the fact that many words having more than one heavy syllable are accentable on one or another, according to context. *Telegraphic* is such a word; Chomsky and Halle give it primary stress on *-graph-*. This is fine for say (10a):

(10a)   We esTABlished teleGRAPHic communiCAtion.

(b)   We esTABlished it by TELegraphic CONtact.

but it is wrong for (10b), where the surroundings require accent on *tel-*. The error arises from the insistence on a monolithic phonological component.

In this paper I have tried to show very briefly that accent assignment is a tripartite phenomenon, that sentence accentuation, and intonation, require rules that are less phonological than syntactic and semantic, and that the suprasegmentals of English are binary features, of which the chief grammar-expounding ones and a couple of indexical ones are those in Table I.

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DISCUSSION

TRUTENAU (Legon, Ghana)

My own work on tone-rules for Gã makes me agree emphatically with Dr. Vanderslice's suggestion that rules concerned with tone must occur in various sections of one's grammar rather than all in one neat and tidy batch.

VANDERSLICE

Yes, a word's inherent or canonical accent pattern — and tone, in languages that have it — is clearly lexical or orthoepic information. Then many languages, including Germanic ones, have accentual and intonational choices signalling syntactic and semantic information — e.g. coreferentiality. A third source of pitch variation is low-level phenomena like tone sandhi and the accent-deleting 'rhythm rule'.

Mr. Trutenau' also asked whether this prosodic feature system applies only to American English. It has been worked out especially for American English, but I think it accounts very well for RP British, too. Some grotesque misconceptions about British intonation have come to be regarded as truths, such as that a lot of sense groups have a downsloping prenuclear contour. Mattingly incorporated this in his model with anomalous results — e.g.,

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            bird
   A    in     hand
      the    is    two
           worth    in
                 the  ᵇuₛₕ.
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CATFORD (Ann Arbor, Mich.)

The down-slope of British English intonation referred to by Vanderslice in discussion involves having unstressed syllables on the same line of descent as stressed syllables. Hence the unnaturalness of the synthesized 'British' sentence he referred to in which there was BOTH down-slope AND stressed syllables on higher pitch than succeeding unstressed syllables.

VANDERSLICE

In terms of the model I've described (following Bolinger), heavy syllables that are not obtruded, upward or downward, from the pitch line of surrounding unstressed syllables are by definition unaccented. There would be no difficulty in accommodating

down-slope as another indexical feature. But I'm not persuaded that such an intonation exists. I have yet to hear it from a phonetically naive Briton.

LINDAU (Los Angeles)

I would like to ask you why you need both the features DIP and SCOOP. The feature +EMPH indicates that the contour is non-neutral, and then it can only go two ways, up or down.

VANDERSLICE

An accent can be dipped or scooped — or both — without necessarily being emphatic. Any one of these three independent features marks an accent as non-neutral, though unlike the others, EMPHASIS is sometimes involved in grammatical as opposed to indexical distinctions.