

CLS 25

Papers from the 25th Annual Regional Meeting of the Chicago Linguistic Society

Part One: The General Session

Chicago Linguistic Society
1989

edited by
Caroline Wiltshire
Randolph Graczyk
Bradley Music

On Stress Placement and Metrical Structure

Morris Halle 1
MIT

1. Stress as a Reflex of Metrical Constituency

Research conducted in the last fifteen years has led to a major reconceptualization of the nature of stress. As a result many problems connected with stress now appear in a radically different light from that in which they have been traditionally viewed. In what follows I describe the new conception of stress, sketch a formal framework for dealing with stress and then illustrate how this framework illuminates certain accentual phenomena that have been discussed in the Indo-European literature.

The change in views on the nature of stress arose from the recognition of the fact that sequences of linguistic units of all kinds are not just simple concatenations of entities like beads on a string. Rather, in sequences of linguistic units we find that one unit is promoted to play a more prominent role than the rest, that of head, while the rest of the units -- those not so promoted -- constitute its (the head's) domain. We find this type of organization in syntax, where a sentence such as

- (1) many arrows hit the explorers

is composed of the noun phrase many arrows, whose head is the noun arrows, and of the verb phrase hit the explorers, whose head is the verb hit. It is worth noting that what the two constituents have in common is that their heads are next to the constituent boundary: the noun phrase in the sentence above is right-headed, whereas the verb phrase is left-headed. We owe to Mark Liberman (1975) the suggestion that stresses be viewed as heads of metrical constituents. Under this proposal an English word such as autobiographic would be composed of the three left-headed metrical constituents shown in (2).

Just like Russian Lithuanian has two major classes of stems: I, II, which are inherently stressed, vs. III, IV, which are inherently unstressed. And just like in Russian, there are in Lithuanian two classes of suffixes: d. sg. and n. pl., which are inherently stressless, vs. loc. sg. and instr. pl., which are inherently inherently stressed. The same rule as in Russian -- i.e., (9a) -- assigns the correct surface stress in the cases under discussion.

There are two basic differences between Lithuanian and Russian. In Russian only syllable heads can bear stress, in Lithuanian there is a special class of long syllables where nonheads, rather than heads, are stress-bearing -- these are called circumflex in the literature and are marked by a special diacritic. In all other syllables of the language the syllable head is stress bearing. This distinction is exemplified in the stem stress of the words *vašarai* vs. *dėovanai* in (10).

This prosodic distinction between syllables lies at the base of de Saussure's Law, which accounts for the different stress paradigms between classes I and II, on the one hand, and III and IV, on the other (Saussure 1896). In classes II and IV the last or only stem syllable is either short or circumflex. When by the basic Indo-European stress rule (9a) stress would be assigned to this syllable -- i.e., to a stem final syllable that is circumflex, or short -- and the following syllable is long but not circumflex, the stress is advanced to the latter syllable by de Saussure's Law.

Once we abstract away these special Lithuanian developments -- i.e., the distinction between circumflex and other syllables and the effects of de Saussure's Law -- the Lithuanian stress pattern is literally identical with that of Russian.

The Sanskrit nominal accentuation parallels that of Russian and Lithuanian, as illustrated in (11).

(11)		/	//	#	#	/	/	#
loc. sg.	marut-i	/	asv-e < asv-a-i	/	duhitr-i	/	dev-e < dev-a-i	#
acc. sg.	marut-am	//	asv-a-m	//	duhitr-am	/	dev-a-m	
voc. sg.	marut	//	asv-a	//	duhitr	/	dev-a	
	'wind'		'horse'		'daughter'		'god'	

Here again we find the familiar contrast between stressed and

stressless stems -- *marut*, *asva* vs. *duhitr*, *deva* -- and between stressed and stressless suffixes. The special features of Sanskrit are the following. In the Sanskrit noun declension, stressless case suffixes assign stress to the preceding syllable: we therefore get *duhitra-ram* in place of the expected *duhitaram*. Secondly, in the vocative, noun stems lose their inherent stress; as a consequence we find initial stress in all four examples cited in (11).

In Russian, Lithuanian, and Sanskrit stress is thus assigned by the same means, i.e. by rule (9a) operating on sequences of morphemes with lexically supplied stresses. The same is true of several other IE languages -- e.g., Pashto, Serbo-Croatian, Slovenian. Moreover, when cognate morphemes in these languages are compared, a significant proportion also agree in the presence or absence of lexically assigned stress. These facts provide the basic evidence for the proposition that in the IE proto-language, stress was governed by rule (9a) and that morphemes were lexically marked for stress.

We now inquire what happens if a language subject to the Indo-European stress rule (9a) suppresses all stress indications in its lexical representation of morphemes. It is obvious that when no stresses are supplied in the lexicon there will also be no stressed syllables in underlying representations; all words will have metrical grids like the Russian word *oblako* in (9b).

Moreover, as pointed out to me by Donca Steriade, if the Indo-European stress rule (9a) were still operative at this point, stress would invariably be assigned to the initial syllable of the word. In view of this it is worth noting that in many Indo-European languages that have lost the historical contrast between stressed and stressless morphemes, initial stress is the rule. This is true of Germanic, it is true of Czech and Slovak, and was at one time also true of Polish, it is true of Latvian as well as of the Zemaitian dialects of Lithuanian (see Laciute 1979). Initial stress was also the rule in Old Irish and supposedly also in early Latin.

While initial stress is, of course, not the only direction in which Indo-European stress has evolved, initial stress is the one that the greatest number of daughter languages have opted for. What is especially interesting is that initial stress developed in Indo-European languages that are widely separated both geographically and temporally. Thus, this development could not plausibly be attributed to a single source; rather what we have here is several independent developments each of which has resulted in initial stress. In the light of the theory that has been presented here this is perfectly plausible. We are

witnessing here the loss of lexically supplied stress in a number of languages where stress is governed by the Indo-European stress rule (9a). This loss happened at different times in the different languages. The theory we have developed here predicts that if nothing else changes at this point the result will be initial stress on all words. And this prediction is well supported by the evidence.

3. Stress and Cyclic Rule Application

Unlike in Macedonian words, stress in English words does not invariably fall on the antepenult. Instead in a large fraction of the English vocabulary stress falls on the penult when this is "heavy"; i.e., has a branching rime; and only when the penult is not "heavy", does stress fall on the antepenult. Examples are given in (12).

(12) javelin / American / original /
 agenda / utensil / parental / Arizona museum / anecdotal /

In order to capture formally both the similarities and the differences between English and Macedonian we can assume as a first approximation that English has the same stress rules as Macedonian -- i.e., those in (6) -- but that these are supplemented by the addition of the rule (13).

(13) Assign stress -- line, asterisks -- to syllables with "heavy" rimes"

This rule is ordered between rules (6-1) and (6-11). Hence at the point where (6-11) applies the representations are of the form illustrated in (14a), and the effects of applying the stress rules (6-11, 111) to the representations (14a) are shown in (14b).

(14) a. line 1 * * * <*> # * * <*> # * * <*>
 line 0 * * * <*> # * * <*> # * * <*>
 America utensil Arizona

b. line 2 * * * * *
 line 1 (* *) (* *) (* *) (* *) (* *)
 line 0 (* *) (* *) (* *) (* *) (* *)
 A meri ca u tensil Ari zo na

This procedure places main stress correctly. Additional rules eliminate the extra secondary stresses generated by this procedure. Significant for the present discussion is the manner in which constituents were constructed by rule (6-11) in the words utensil, Arizona. Although rule (6-11) ordinarily constructs binary left-headed constituents, in these cases the first -- i.e., the right-most -- constituent constructed is unary. The reason for this is that all rules of constituent construction respect previously assigned stresses and metrical structure. (See the Faithfulness Condition in Halle and Vergnaud 1987). Because of this convention, rule (6-11) had to construct a constituent so that its head would be the stressed penultimate syllable of the word. Since the construction proceeds from right to left and since the last syllable is excluded because it is marked extra-metrical, rule (6-11) has no alternative but to construct a unary constituent. Once such a constituent has been constructed, rule (6-11) moves to the rest of the string and constructs constituents there. Since in the case of utensil the rest of the string consists of a single syllable, a second unary constituent is constructed. In the word Arizona the rest of the string is bi-syllabic; hence a bi-syllabic constituent is constructed by rule (6-11).

Consider next the different locations of main stress in the words in (15a) and (15b).

(15) a. origin-al-ity / univers-al-ity / organ-iz-at-ion-al

b. un-reason-able-ness / mean-ing-less-ness / express-ion-less-ness

In (15a) placement of the main stress is determined by outermost suffix; whereas in (15b) stress falls on the innermost stem. It is generally accepted that the basis for this difference are the suffixes. Suffixes such as -ness, -able, ful are said to be "stress-neutral", whereas suffixes such -al, -ity, -ion are "stress-sensitive". Our next task is to spell out how these classes of suffixes generate the different placements of main stress illustrated in (15). The account presented below is a somewhat modified version of the one given in Halle and Vergnaud

Notes

1. Because of prior publishing commitments the text of my presentation at the 25th meeting of the GLS cannot be printed here. In its stead I am offering the text of a lecture given at the Eighth East Coast Indo-European Conference at Harvard University on June 16, 1989, which dealt with many of the same issues as my Chicago talk. I am grateful to Donca Steriade for advice in the preparation of this lecture.
2. For example, in Winnebago long vowels consist of two stress-bearing units. Winnebago thus is, in Trubetzkoy's terminology mora-counting, whereas the majority of languages are syllable-counting. Even more interesting is the situation in the Baltic languages -- Latvian and Lithuanian -- where a given syllable can have only one stress bearing element, but this element need not be the head: in the so-called circumflex syllables it is the non-head rather than the head that is stress-bearing. Some brief remarks about Lithuanian are to be found in sec. 2 below.
3. In the Winnebago examples stress on certain syllables is removed by rules not discussed here, these nonsurfacng stressses are enclosed in braces. The Winnebago data are from Hale and White Eagle (1980) and from K. Hale p.c.

Bibliography

- Allen, W. Sidney: 1973, Accent and Rhythm Cambridge : Cambridge University Press.
- Dybo, Vladimír A.: 1981, Slavjanskaja akcentologija Moscow : Nauka.
- Hale, Kenneth and J. White Eagle: 1980, "A Preliminary Account of Winnebago Accent," International Journal of American Linguistics 46, 117-132.
- Halle, Morris : In press "Respecting Metrical Structure," Natural Language and Linguistic Theory.
- Halle, Morris and K. P. Mohanan : 1985 "Segmental Phonology of Modern English," Linguistic Inquiry 16, 57-116.
- Halle, Morris and Jean-Roger Vergnaud: 1987, An Essay on Stress Cambridge : MIT Press.
- Illich-Svitch, Vladislav M. : 1979 Nominal Accentuation in Baltic and Slavic Cambridge : MIT Press.
- Kiparsky, Paul : 1982 "The Lexical Phonology of Vedic Accent," ms. MIT, Cambridge, Massachusetts.
- Kiparsky, Paul and Morris Halle : 1978 "Towards a Reconstruction of the Indo-European Accent," Southern California Occasional Papers in Linguistics 4, 209-238.
- Łacjute, IU. A. : 1979 "Akcentuacionnye osobennosti imen sussestvitel'nyx v žemajtskom dialekte litovskogo jazyka," in S. D. Kacnel'son, ed., Issledovanija v oblasti sravnitel'noj akcentologii indo-evropejskix jazykov Leningrad : Nauka, pp. 143-191.
- Lieberman, Mark Y. : 1975 The Intonational System of English PhD dissertation, Cambridge : MIT.
- Lunt, Horace G. : 1952 A Grammar of the Macedonian Language Skopje.
- Saussure, Ferdinand de : 1896 "L'accentuation lituanienne" Indogermanische Forschungen 6 Anzeiger, 157-165.
- Stang, G. : 1957 Slavonic Accentuation Oslo.
- Steriade, Donca : 1988 "Greek Accent: A Case for Preserving Structure" Linguistic Inquiry 19, 271-314.