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ABSTRACT

Metrical phonology, a linguistic process of phonological stress assessment and diagrammatic simplification of sentence and word stress, is discussed as it is found in the English and German languages. The objective is to promote use of metrical phonology as a tool for enhancing instruction in stress patterns in words and sentences, particularly in English and German first and second language instruction. Stress is defined by its physical and acoustical correlates, and basic principles of metrical phonology are outlined, using examples from English and drawing on relevant research. Word stress is then further defined within this context. Finally, application of metrical phonology principles to German is illustrated. (MSE)

Metrical Phonology: German Sound System

By

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Introduction

The lecture will discuss the use of metrical phonology as a linguistic process of phonological stress assessment and diagramatic simplification of sentence and word stress as found in the English and German language. This is only a general overview and should not be considered a complete view of metrical phonology as it is more involved and complicated than will be presented for this session. The first major work on metrical phonology is by Liberman and Prince (1977) and is a result of the weaknesses inherent in the individual segmental analysis of stress coming from Chomsky and Halle (1968). The goal of this lecture is to promote the use of metrical phonology as a tool for enhancing English and German stress patterns in words and sentences in both first and second language acquisition students.

Stress

Stress is an isolatable phonological phenomenon defined by both physical and acoustic correlates as represented in the following example (1.0).

(1.0) The goal of the descriptive study of a language is the construction of a grammar.

If we mark the stresses by a using a ' sign, the following will result as given in example (1.1).

(1.1) The 'goal of the des'criptive 'study of a 'language is the con'struction of a 'grammar.

Another stress pattern can be obtained by using stressed (/) and unstressed (x) syllables as a sequence as shown in example (1.2).

(1.2) x/xxx/x/xxx/xxxx/xxx/x

Notice how regular the pattern is and can be generalized as occuring every fourth or fifth syllable. Stress is a property of a string of segments rather than individual segments(Hogg and McCully, 1987:2). Stress is regarded as a suprasegmental phenomenon and is hierarchical in nature as based on the syllable.

Basis of Metrical Phonology

Metrical trees should reflect the syntactic structure of the sentence. Example (2.0) a. and b. illustrates the metrical tree diagrams of the phrases black board and John left

(2.0) a.  black board b.  John left

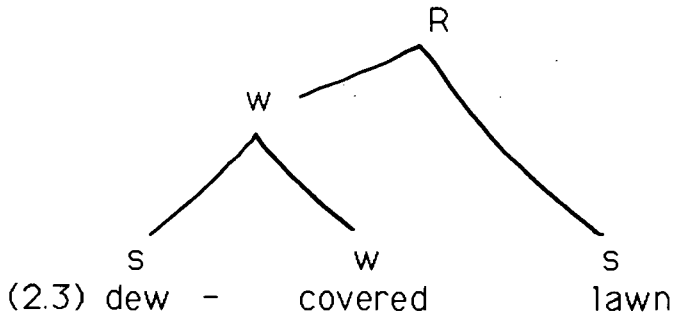
Similar trees can be made for compound words such as stress-shift as in example (2.1).

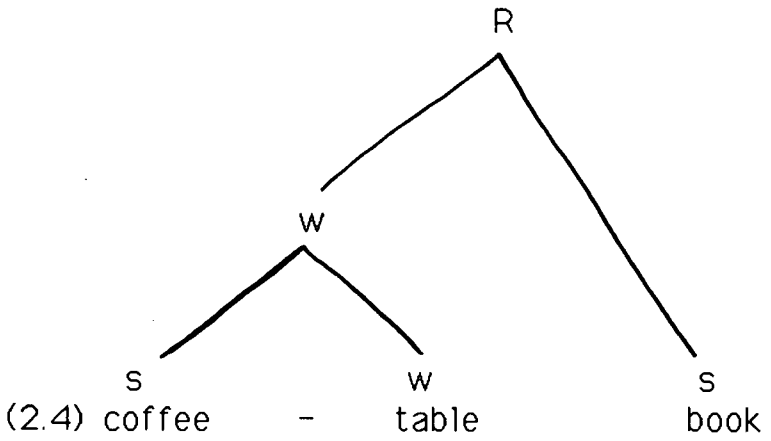
(2.1)  stress-shift

To show the relative prominence of each constituent in a metrical tree we label each node either s or w, where s means 'stronger than' and w means 'weaker than' as represented in example (2.2) a., b. and c.

(2.2) a.  w s black board b.  w s John left c.  s w stress-shift

These metrical trees are intended to express the relative strength of constituents and is just a matter of denoting the relative prominence of sister constituents(Hogg and McCully, 1987: 65). Metrical trees are always and only binary-branching. Metrical trees follows syntactic structure as depicted in examples (2.3) and (2.4). The symbol R is to denote the root or topmost node of the tree and dominates a constituent, in this case a phrase.





The syntactic structure of example (2.3) can be represented by bracketing [[[dew][covered]][lawn]] as can example (2.4) [[[coffee][table]][book]]. A simple rule to keep in mind is that if one node is marked strong then it follows that the other is weak(Hogg and McCully, 1987: 68).

Word Stress

Word stress in metrical phonology is treated as a binary feature. The internal metrical structure of words is organized syllabically so that monosyllabic words such as bad have one metrical constituent, bisyllabic words such as honest have two metrical constituents and so on. An example of metrical trees for word stress in simple bisyllable words are in example (3.0) a. and b.(Hoggs and McCully, 1987: 76).

(3.0) a. s w
english
\+ –

b. w s
baroque
– +

The relative prominence of the two syllables (vowels) are preserved in the metrical tree structure. Another rule that can be used in metrical phonology is that if a vowel is s (strong), then it is +stress and if a vowel is w (weak), then it is -stress (Hogg and McCully, 1987:77). An example is elephant as depicted in example (3.1).

(3.1) s w w
elephant
\+ – –

Metrical Phonology and German

Giegerich has modified the original metrical system from Liberman and Prince (1977) and has the following constraints.

A general condition of prominence structure: Let there be no branching of prominence trees that is not binary branching and let pairs of sister nodes always be labelled [sw] or [ws] (Giegerich, 1985: 3).

No segmental stress features [+-] are used in German as the trees are sufficinet enough to describe structure.

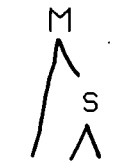
The use of M (mot) on top of every word tree rather than an R (root) as it is "insensitive to word-internal metrical structure" (Giegerich, 1985: 9).

The only way to maintain the observed prominence between the two syllables is that the word must be followed by a 'zero' syllable.

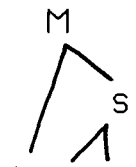
Zero Syllable Constraint: Of two adjacent terminal W nodes, neither occupies a zero syllable (Giegerich, 1985: 14). This well-formedness condition has the automatic effect of cliticisation. Whenever a non-zero terminal W node follows a termianl S, it will form an enclitic; only in the absence of such a syllable can we get zero syllables (Giegerich, 1985: 14). The zero syllable represents the pause, or the lengthening of the stressed syllable, characteristic of monosyllable feet.

Both English and German are said to be stressed-timed languages in that stressed syllables tend to recur in connected speech, at roughly isochronous intervals. Speech is then divided into 'feet', where each foot begins at the onset of a stressed syllable and ends just before the onset of the next one. Foot boundaries are prosodic boundaries (Giegerich, 1985: 15).

Examples



Dekane



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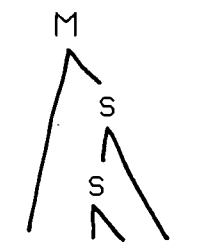

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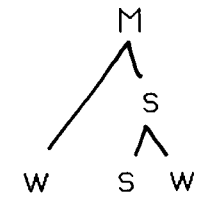

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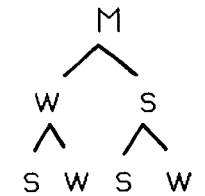

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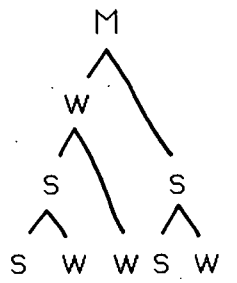

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Summary

Although this is only a general overview of metrical phonology and does not take into account rhythm and the metrical grid or advanced metrical tree, it is clear that the diagramic use of metrical trees does simplify the explanation of English and German stress patterns and the corresponding syntactic foundation underlying these patterns and can be used as a simple device to enhance the understanding and acquisition of both sentence and phonological aspects of both the English and German language.

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