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Heinz J. Giegerich, *Metrical phonology and phonological structure: German and English*. Cambridge: Cambridge University Press, 1985. Pp. vii + 301.

The publication of Liberman and Prince (1977) led to a flood of research in metrical stress theory. Publication in the area continues, marked by expansion in the number of formal implementations of the basic idea that stress should be equated with rhythmic structure. These formalisms include 'tree' theories (Kiparsky, 1979; Hayes, 1981), 'grid' theories (Prince, 1983; Selkirk, 1984), and various amalgams of the two (Hammond, 1984; Halle, forthcoming). I find this research program very interesting, but confess to a feeling of unease over the growing lack of consensus concerning the specifics of the theory. One longs for a book that will clarify the central insights of the metrical approach, distinguishing them from the minor and accidental advantages of particular formal implementations.

Giegerich's volume is not such a book; it is another formalism joining the fray. However, taken as such it is a useful contribution. The book treats three areas in detail: German word stress, German compound stress, and English phrasal stress. Its virtue lies in Giegerich's 'nose' for interesting data, his thoroughness, and his novel notion of 'zero syllable', discussed below. The book is weakest in its analyses, most of which are sketchy and tentative. The

two really substantial analyses differ in quality: the account of German compound stress is absorbing and intricate, while the account of stem stress in German is close to inept.

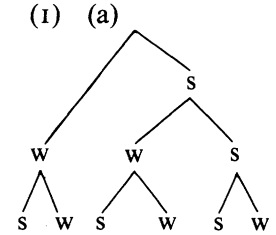
The author's theoretical philosophy is to make do with a minimum of formal devices (1, 9–10). His version of metrical theory lacks metrical 'feet', the feature [stress], metrical grids, a hierarchy of phrasal domains, and many other devices that figure prominently in other versions of metrical theory. The assumption seems to be this: the fewer formal devices we use to account for the facts at hand, the better off we are. Minimal theories are to be preferred for their 'elegance' (2, 119). Giegerich's opinion places him on one side of an old controversy in generative linguistics. (See Postal (1972, 131–138), where Giegerich's viewpoint is presented as an argument for generative semantics; and Chomsky (1972, 67–70) for a rejoinder.) In my view, this is the wrong side. An ideal phonological theory would ground the facts of individual phonologies in universally valid principles. These principles cannot be guaranteed in advance to be simple. In fact, a rich universal theory is to be welcomed, to the extent that it is supported by the facts and makes stronger claims about what is a possible phonology.

From this perspective, the role of 'elegance' in language-particular accounts is diminished. Obviously, our intuitions about elegance form a useful heuristic in the initial stages of developing and exploring a theory. But if everyone in a research program continues to strive for elegance in describing the language they happen to work on, the theory ultimately fragments into multiple versions, each tailored to a particular language. The current state of metrical theory is due in part to this. Giegerich's book illustrates the problem clearly. For example, he proposes to dismiss the prosodic category Foot, simply because it is not needed for German (9–10). German falls into the large class of languages that do not tolerate adjacent stresses within stems; these languages are easily handled in a footless theory. But Giegerich says nothing about the numerous languages like English which do tolerate adjacent stresses. In these languages, the metrical foot (or some equivalent) is a descriptive necessity; he has no constructive proposal to offer. He also adheres to a narrow conception of elegance in faulting Prince's (1983) grid-based account of the Rhythm Rule for its putative complexity. Here he ignores Prince's argument that all known rhythm rules share abstract properties that are directly predicted by his theory, but which must be stipulated rule by rule in a gridless framework. I feel that Prince's proposal, irrespective of its ultimate validity, points out exactly the KIND of result that metrical theory should try to achieve.

My criticism, then, is this: metrical theory has reached the point where we can think seriously about explanatory adequacy; a number of serious candidates for metrical universals have emerged. Given this, it is ostrich-like to keep dealing with questions of 'elegance' in the treatment of one or two languages, as Giegerich has done.

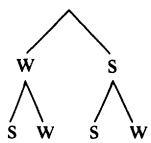
The book examines numerous descriptive areas and theoretical issues. Since a review of this length could not deal with them all, I will discuss just two areas where commentary seems most useful. The author's most salient contribution to metrical theory is the 'zero' syllable. This is a phonological place marker; it serves as a terminal node in a metrical tree, and is phonetically manifested by extra length on the preceding syllable. The distribution of zeros is determined as follows: (a) any lexical category must contain an sw sequence; (b) if possible, a w mate for a word-final s is annexed from the first syllable of the following word; (c) otherwise, a Ø is inserted. These principles dictate representations like the following:

(1) (a)



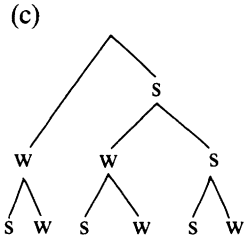
Bill Ø looks Ø mad Ø

(b)



Bill is mad Ø

(c)



Bill appears Ø mad Ø

The prediction here is that lexical words should receive extra duration just in case they form a 'stress clash' with the following syllable. This seems correct; see Lehiste (1973) for experimental evidence. In addition, Giegerich gets for free the difference in stress between lexical and grammatical monosyllables. In Liberman and Prince's theory this difference is stipulated directly in the grid-construction rules, and is unrelated to the durational difference.

Giegerich's best arguments for the zero syllable derive from an analysis of compound stress in German. His crucial rule, called Defooting, removes a stress in the environment

/[main stress]...—...[weak stress].

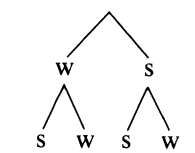
For the rule to apply, the target stress must clash with one of the adjacent stresses. Thus *Hut Ø abnehmen* is reduced to *Hut abnehmen*, since the stress on *ab* clashes with the stress on *nehmen*. But *Haus Ø schön Ø machen* remains as is, because the stress on *schön* is protected from clash by the flanking zeros. This is an interesting contrast, and it is not clear how it could be treated under theories lacking zero syllables or some equivalent.

I think Giegerich is on the right track in introducing a notation for timing in phonological representations. Ultimately, a more flexible representation will probably be needed. In particular, the kind of stress clash just mentioned is only the extreme on a continuum of stress clash severity. For example, his rules implicitly invoke a separate notion of 'weak clash', involving syllables

separated by at most a zero syllable. This can be seen by comparing *Hut Ø abnehmen*, where Defooting applies, with *Jacke anziehen*, where it does not. Apparently the zero syllable following *Hut* is not as effective in separating clashing stresses as the genuine second syllable of *Jacke*. In addition, Giegerich recognizes (249) that syntactic disjuncture intervening between stresses also mitigates clash. Plausibly, phrase-final lengthening introduces additional 'zeros' separating the stresses; cf. Selkirk (1984), who makes this idea explicit in a grid-based account.

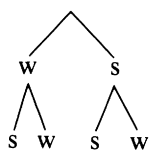
I also doubt the author's claim that stressless word initial syllables are metrically adjoined to a stressed final syllable in the preceding word (cf. (1a), (1b)). While this does provide an elegant way of excluding zeros in this context, it wrongly neutralizes distinct rhythmic structures. In particular, Abercrombie's (1964) examples *take Grey to London* vs. *take Greater London* are given identical rhythmic structures, despite their distinct temporal patterns:

(2) (a)



Grey to London

(b)



Greater London

Moreover, the rebracketed representations would wreak havoc on any attempt to use metrical theory to explicate English or German metrics (Kiparsky, 1977; Bjorklund, 1978). In my judgment, simply writing a rule introducing zero to resolve clashes is the better if less elegant bet.

Giegerich's treatment of word stress in German is fascinating for its data but disappointing in its analysis. Since most native stems are short, the analytical challenge is to determine the rules assigning stress to borrowed polysyllables. Following earlier work (Wurzel, 1970; Benware, 1980), Giegerich tries to make stress completely predictable from the segmental representation. His rules can be summarized as follows. First, Giegerich assumes a basic long-short distinction in the vowels. This distinction is phonetically manifested as both length and tenseness in syllables with main stress (cf. *Ófen* [ó:] vs. *óffen* [ɔ]); elsewhere it surfaces only as tensenesss (e.g. *Disz*[ɪ]*plín* vs. *Med*[i]*zín*). Syllables are classified as heavy vs. light in the normal way, except in word final position, where $C_0\check{V}C$ counts as light rather than heavy. His stress rule is as follows: stress the rightmost heavy syllable of a stem, provided stress falls no further than three syllables from the end:

(3) (a) $X \rightarrow \acute{X} / — \left(\left(\begin{matrix} \text{light} \\ \text{syllable} \end{matrix} \right) \begin{matrix} \text{light} \\ \text{syllable} \end{matrix} \right)]_{\text{stem}}$.

(b) Kámera Franzískus Elemént
Ar[é:]na Magaz[í:]n
Enzykloped[í:].

A number of difficulties are apparent here. First, in order to get a stress-attracting heavy syllable in words like *Met[á]ll*, *Proz[ɛ́]β*, Giegerich must assume abstract geminates in the underlying representation. These contrast underlyingly with the single consonants in *Kónsul*, *Átlas*, but surface identically. This is just the kind of abstract representation that Kiparsky (1973) has provided compelling arguments against: it isn't supported elsewhere in the phonology, but merely encodes exceptions to a single rule. Second, the rules wrongly predict final stress for a number of words having underlying long vowels in their final syllables; e.g. *Ísrael* (/e:/), *Mótor* (/o:/). He tries to remedy this by adding a rule of Stress Shift (66) that removes this final stress from the exceptional words. However, this rule says nothing about where the stress should actually fall. I cannot interpret the rule in any way that generates the data. This is irritating; surely, the least we can expect of a published analysis is that it grind out the facts the author provides. In addition, even if an explicit rule were available, every V:C_0–final word of German would have to be specified to undergo it either obligatorily, optionally, or not at all (67).

There are also exceptions which Stress Shift cannot fix; e.g. *Árbeit*, *Túgend*, *Kíebitz*. The treatment of these words is *ad hoc*; they are assigned a fictional stem boundary so as to receive the normal stressing of suffixed forms like *Fréiheit*. What is embarrassing to Giegerich's theory is that every native stem with the relevant syllable structure falls into this putatively exceptional category. Worse still, it appears that the 'exceptional' category is the one that borrowings drift into as they are nativized. Wurzel (1970) notes the shift of borrowed *Leut(e)nánt* to nativized *Léutnant*. The words to which the author's putative Stress Shift Rule applies plausibly are also borrowings undergoing nativization.

I would like to suggest a tentative solution to these difficulties. First, it seems best to admit that word stress in German is phonemic. There still should be a stress rule, but it would specify only the 'default' stress pattern; i.e. the maximum distance from the right boundary that stress may fall. (Borrowings like *Katínka*, *Bersérker*, which have antepenultimate stress in their source languages, support this.) Words may bear a lexically specified stress that falls to the right of where the stress rule specifies. Lastly, the stress rule checks the weight of the penult only, as in (4):

$$(4)\quad X \rightarrow \acute{X} / — \left(\left(\begin{matrix} \text{light} \\ \text{syllable} \end{matrix} \right) \begin{matrix} \text{any} \\ \text{syllable} \end{matrix} \right)]_{\text{stem}}.$$

The advantages of this are as follows. First, no dubious absolute neutralization is posited; *Métall* etc. simply have lexically listed stress. Second, words in

which a heavy final syllable has been skipped over are now regular. This seems correct, given the pattern of native words and the way borrowings are regularized. The frequent final stressing of loans is better attributed to the donor languages, or (cf. Wurzel, 1970) to a [− native] diacritic. Lastly, this analysis contains no ill-formed rules. The effects of Giegerich's Stress Shift can be attributed to the normal process of loan regularization: borrowed words lose their lexically listed stress and acquire the default pattern.

My proposal moreover is consistent with two proposed universals to which Giegerich's analysis would be a counterexample, First, languages that have phonemic stress along with a 'default' stress rule require the exceptional words to have stress closer to the word boundary than the default position; never farther from it. Second, stress rules that compute maximally antepenultimate stress and are sensitive to syllable quantity check only the quantity of the penult, not the final syllable. Both universals have theoretical grounding; see Kiparsky (1982) for the former and Hayes (1982) for the latter. In this case, I feel that keeping an eye on universal patterns leads to a better language-particular analysis. To conclude: Giegerich's book is unlikely to convert adherents of other versions of metrical theory, as he has by and large not taken on the task of formulating broadly based arguments for his position. For the same reason, I would not recommend the book as a text. But specialists will find the book worth reading, both for its central theoretical idea and for its close examination of some very interesting data.

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