Ternarity and Extrametricality: Macedonian Revisited

A subclass of languages, of which Macedonian (Slavic; Lunt 1952, Comrie 1976, Franks 1987, 1989, Beasley & Crosswhite 2003, inter alia) is one example, assigns default main stress to the antepenultimate syllable of a word. At least two logically possible analyses exist. Hayes 1995, for example, contends that stress assignment is determined by a conjunction of final extrametricality with a right-edge oriented syllabic trochee (1). The alternative is to allow a ternary constituent at the right edge (2).

Hayes provides a number of arguments favoring the extrametricality view in general. Beasley & Crosswhite 2003, however, convincingly argue that Macedonian requires a ternary constituent, which they represent as a flat ternary foot (3), using an Idsardi (1992) style grid. The resulting analytical ambiguity leads to an undesirable proliferation of devices. This paper supports the Beasley & Crosswhite 2003 view that antepenultimate stress reflects the presence of a word-final ternary element, but argues that the required constituent is not flat. Rather, it is the independently necessary, hierarchical, “Loose Minimal Word” (Ito & Mester 1992, Hewitt 1992) consisting of a bisyllabic (trochaic) foot plus a syllable appendix (4). Besides resolving the potentially troublesome ambiguity in the analysis of Macedonian, this proposal has two important implications. First, it provides a strong argument against the Idsardi 1992 stress algorithm, which cannot generate the requisite hierarchical ternary constituent. More generally, it challenges the ostensible formal parallelism between final-syllable and final-consonant extrametricality, ultimately providing a new way of understanding the substantial empirical differences between the two.

The necessity of a ternary constituent becomes when clear when considering the behavior of words with exceptional final (5a) or penultimate (5b) stress. Exceptional lexical stress overrides the default, except when it would place stress more than three syllables from the end of the word, as in talentirânt-i-te (5f). The window effect follows straightforwardly from an analysis that includes a maximally ternary constituent aligned at the right edge (6-7). The set of constraints that derive the ternary constituent are not shown, but are clearly ranked below the two constraints shown in the tableau. Stress shift, however, is not predicted by an account based on final extrametricality—formalized in (8-9) as the constraint NONFINAL (Prince & Smolensky 1993). Since neither candidate has a word-final foot, it is predicted that the lexical stress will persist.

To this point, the proposed hierarchical constituent could be seen as a notational variant of the Beasley & Crosswhite 2003 flat-footed analysis. However, other data from Macedonian show the necessity of the domain-internal structure. The main argument comes from the behavior of the so-called “Enlarged Stress Domains” (ESD), shown in (10). ESDs act as a single stress domain, exhibiting the antepenultimate default in most cases (10a). However, when the second word is monosyllabic, stress falls on the penult (10b). This effect follows from a constraint on the proposed hierarchical constituent LEX[F]FOOT (cf. Prince & Smolensky 1993) which requires every word to be parsed into some foot. Only when stress falls on the penult is this constraint satisfied (11a). Antepenultimate stress leaves the final word in an unfooted, and thus unlicensed, appendix (11b), and is disfavored. A flat ternary foot, like the one proposed by Beasley & Crosswhite 2003, on the other hand, makes no distinction between the two unstressed syllables. Indeed, the kind of bracketed grid central to the Idsardi 1992 stress system is not compatible with hierarchical constituents of this type. One possibility would be to augment the representation with final invisibility of some kind, and to invoke the Non-Exhaustivity principle to block extrametricality in a monosyllable (12). This proliferation of devices (final ternarity PLUS final invisibility) is clearly undesirable, and forces Beasley & Crosswhite 2003 instead to posit an ad hoc symbol-counting algorithm in order to derive the basic pattern.

In sum, the correct account of antepenultimate stress in Macedonian involves the presence of a hierarchical ternary constituent at the right edge of a stress domain. Final syllable invisibility is neither necessary nor sufficient. The proposal has obvious implications for other languages exhibiting final ternarity. Moreover, it imposes a formal distinction between languages with default antepenultimate stress vs. those with final consonant invisibility/extrametricality. The non-parallelism of the representations entailed by this proposal provides new insight into their distinct properties.
(1) Final [] unavailable for footing: tat(kóvsi)<te>

(2) Final [] included in ternary constituent: tat(kóvsite)

(3) Beasley & Crosswhite 2003 representation of flat final ternary constituent: 

\[
\begin{array}{c}
\text{\texttt{x}} \\
\text{\texttt{x \ (x \ x}} \\
\text{\texttt{tat kov si te}}
\end{array}
\]

(4) Proposed hierarchical representation of final ternary constituent:

\[
\begin{array}{c}
\text{\texttt{foot}} \\
\text{\texttt{tat kov si te}}
\end{array}
\]

(5) Words with exceptional final and penultimate stress (Beasley & Crosswhite 2003)

\begin{tabular}{|l|}
\hline
\textbf{a.} advokát ‘lawyer’ \textbf{d.} talentíran \textbf{‘talented’} \\
\textbf{b.} advokát-i ‘lawyers’ \textbf{e.} talentíran-i \textbf{‘talented (pl)’} \\
\textbf{c.} advokát-ite ‘the lawyers’ \textbf{f.} talentíran-ite \textbf{‘the talented ones’} \\
\hline
\end{tabular}

Proposed final ternary constituent creates a stress window: Align-Right (Wd, PWd) \( \Rightarrow \) IO-Faith \( \Rightarrow [\text{be ternary}] \)

\[
\begin{array}{|c|c|c|}
\hline
\text{\texttt{/talentíran/}} & \text{ALIGN-R} & \text{IO-FAITH} \\
\text{a. } \texttt{talen(tíran)} & \texttt{*} & \texttt{!} \\
\text{b. } \texttt{*ta(léntíran)} & \texttt{!*} & \texttt{b. } \texttt{talenti(rán-ite)} & \texttt{!} \\
\hline
\end{array}
\]

\text{NON-FINAL} as determinant of final ternarity predicts no stress shift:

\[
\begin{array}{|c|c|c|}
\hline
\text{\texttt{/talentíran/}} & \text{IO-FAITH} & \text{NON-FINAL} \\
\text{a. } \texttt{talen(tíran)} & \texttt{*} & \texttt{a. } \texttt{*talen(tíran-i)te} & \texttt{!*} \\
\text{b. } \texttt{*ta(léntíran)} & \texttt{!*} & \texttt{b. } \texttt{talenti(rán-ite)} & \texttt{!*} \\
\hline
\end{array}
\]

(10) Enlarged Stress Domains (ESD) (Beasley & Crosswhite 2003)

\begin{tabular}{|l|}
\hline
\textbf{a.} Antepenultimate stress kiseló mleko ‘yogurt’ \\
\textbf{b.} Final monosyllable [] penult stress okolú rid ‘around a hill’ \\
\hline
\end{tabular}

(11) Hierarchical constituent with ESD

\[
\begin{array}{c}
\text{\texttt{\textit{LEX FOOT OK}}} \\
\text{MinWd} \\
\text{\texttt{\textit{LEX FOOT violated:}}} \\
\text{\texttt{\textit{Ft}}} \\
\text{\texttt{\textit{Ft}}} \\
\text{\texttt{o ko lú # rid}} \\
\text{\texttt{o kó lu # rid}}
\end{array}
\]

(12) Flat foot plus final invisibility 

\[
\begin{array}{c}
\text{\texttt{x}} \\
\text{\texttt{x \ (x \ x \ <\chi>}} \\
\text{\texttt{\texttt{o ko lú # rid}}}
\end{array}
\]

\textit{violates Non-Exhaustivity}