

## Beyond the segment

**Background.** The phonological segment as a locus of independent phonological difference has played a central role in the last century of phonological theorising (Anderson 1985, Halliday 2000). Dissenting voices have been there throughout: Twaddell (1935) criticised the phoneme (more broadly, any type of segment) as pure fiction. Both Firth (1948) and Z. Harris (1944) argue that there are phonological phenomena larger than the segment, an idea taken up in Autosegmental Phonology (Goldsmith 1976) in the generative framework.

**Claim.** My talk discusses the Estonian length system, which (i) is seen as rather unusual (Hint 1973, Lehiste 1960, 1965, Posti 1950, Prince 1980, Tauli 1973 etc.), and (ii) illustrates why phonology must go *beyond* the segment. My theoretical framework is a further development of Government Phonology (GP; Kaye, Lowenstamm & Vergnaud 1985, 1990, Kaye 1995) as presented in Pöchtrager (2006). GP subscribes to the non-arbitrariness principle, requiring a direct connection between a phonological event and its context.

**Analysis.** While English or Italian make do with a distinction between short and long (1–2), Estonian (3) displays three degrees of length (short, long, over-long). Two comments are in order, though. Firstly, bisyllabic words (3a) are claimed to establish a three-way segmental ("phonemic") contrast. Such claims disregard differences in the final nucleus, which is longer in (3ai) and (3aii) than in (3aiii): Differences between individual words are *not* located in one single point. (They also disregard morphological structure, as forms of type (3aiii) *always* involve analytic (stem-level) morphology.) Secondly, monosyllabic words (3b) show a trade-off similar to Italian: the more room is taken up by the consonant (C), the less remains for the preceding vowel (V) and vice versa. Such trade-offs again show that phonological differences can have multiple exponence, unlike what the notion of segment suggests.

Close inspection of English reveals parallels to Estonian: (4) illustrates "pre-fortis clipping", known from the literature (cf. pioneering work by Peterson & Lehiste 1960), though usually disregarded as phonologically irrelevant because of its predictability (for arguments against such a position cf. Chomsky 1964 or Harris 1999, who I side with). Before voiceless consonants (*bit*, *beat*) the vowel is shorter than before neutral ("voiced") ones (*bid*, *bead*). Such a seemingly arbitrary interaction fails the non-arbitrariness principle, suggesting that the difference between English voiceless and neutral consonants should not be seen as melodic (qualitative), but rather as structural (quantitative): *d*, say, is the short version of *t* (5). As a result, the trade-off in (5) parallels (2) and (3b): The more room is needed by the consonant, the less remains for the preceding vowel (and vice versa). This shift in perspective allows for a non-arbitrary analysis: English does not display an arbitrary interaction of vowel length and consonant quality, but rather a length trade-off like other languages, such as Italian or Estonian: For example, Estonian [li::v] 'sand' and English *leave* [li::v] are identical, both with an over-long [i::] (cf. (6); space restrictions preclude discussion of the representational format here). The behaviour of length in the two languages is strikingly similar, in distribution and alternations, and the few areas where we do find differences are easily delimited (e.g. English does not have over-long consonants, while Estonian does, cf. (3biii)).

My talk contributes to our understanding of Universal Grammar by arguing for the essential identity of two phonological systems usually seen as quite different, thus delimiting the range of linguistic variation. It also shows that segments are not sufficient to understand the nature of recurrent phonological patterns: The aforementioned trade-offs illustrate that differences can be lodged in more than one place simultaneously.

(1) English: *fit* ≠ *feet*, *full* ≠ *fool*, *bet* ≠ *bait* etc.

(2) Italian: *fato* ['fa:to] 'fate' *casa* ['ka:za] 'house' V V C  
*fatto* ['fat:o] 'done' *cassa* ['kas:a] 'till' V C C

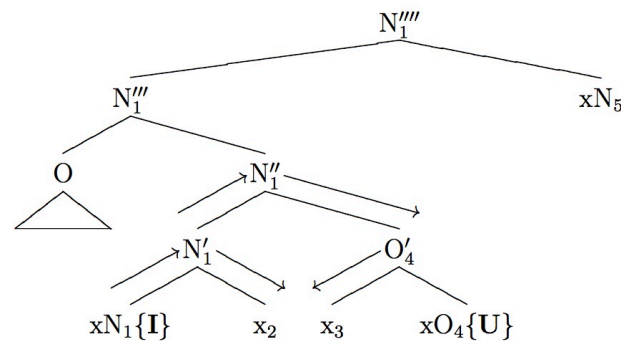
(3a) Estonian: i. [lina(˘)] 'linen (nom.sg.)' [sada(˘)] 'hundred (nom.sg.)'  
 ii. [lin:a(˘)] 'city (gen.sg.)' [sa:da(˘)] 'send! (imper.)'  
 iii. [lin::a] 'city (par.sg.)' [sa::da] 'to receive (inf.)'

(3b) Estonian: i. [ge::b] 'it boils' [si::d] 'silk (nom.sg.)' V V V C  
 ii. [ge:b:] 'cape (nom.sg.)' [gi:d:] 'thanks (nom.sg.)' V V C C  
 iii. [geb::] 'stick (nom.sg.)' [jud::] 'story (nom.sg.)' V C C C

(4) English: *bid* [bi:d] *bead* [bi::d]  
*bit* [bit] *beat* [bi:t]

(5) English *bid* [bI:d] V V C *bead* [bi::d] V V V C  
 (reinterpreted): *bit* [bId:] V C C *beat* [bi:d:] V V C C

(6)



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