

Recent years have witnessed a flurry of interest in grammatical models which do away with the use of constituent structure in phonology. Examples can be found in Harris (1994), Lowenstamm (1996), Scheer (2004), Neeleman & van de Koot (2006), Samuels (2009), who all argue in one way or another that all structure in phonology is linear, not hierarchical. As far as we can see, these proposals have met very little counterarguments, so that one could easily be misled into thinking that they have convinced the phonological community of their central claim. At the same time, the average phonology paper still refers to prosodic constituents, simply ignoring the linearists' arguments. This paper aims to provide counterarguments, supporting probably the best known phonological constituent, the syllable, acknowledging at the same time that the linearist criticism has sharpened our view. We believe to improve the mainstream theory by defending it, and consider both theoretical and empirical arguments.

**1. Theoretical arguments.** Most arguments proposed against the syllable as a constituent seem to be theory-internal, and all are invoking the notion of theoretical elegance in some way. If we are not mistaken, we can roughly distinguish three such arguments: ***T1. Syllables are not like syntactic phrases.*** One class of argument which seems central in all linearist work, is that syllables and syntactic constituents have different properties. Most prominent among those is that phonological structure is not recursive, or at least only so to a very limited extent. Acknowledging this fact, however, does not necessarily lead to the conclusion that therefore there are no constituents in phonology (since it also doesn't lead to the conclusion that there are no constituents in syntax). Even the fact that parallels between  $\bar{X}$  Theory and the syllable (Levin 1985) at some point break down does not mean that there are no such parallels, or that they should not be formally represented. One example of such a parallel is that onset consonants behave more like adjuncts and codas more like complements, which reflects at least some syntactic proposals that the universal way of linearizing  $\bar{X}$  structure is specifier-head-complement (Kayne 1994; Carstairs-McCarthy 1999; Tallerman 2006). ***T2. Certain aspects of syllable structure are unclear.*** This argument is used mostly by Samuels (2009), who points out, for instance, that native speakers do not have very strong intuitions about syllable boundaries or even about the number of syllables a given word may have (Duanmu 2009). The problem with this argument is that we do not expect speakers to have direct access to all categories our theories postulate. There is little evidence that speakers have clear intuitions about (the boundaries of) syntactic constituents (Schütze 1996), and as a matter of fact all linearist proposals include abstract structure which would defy direct psycholinguistic testing. ***T3. Syllables are unnecessary.*** According to Scheer (2004), the "null hypothesis is lateral", and other linearists have expressed similar points: that Occam's razor should apply once we have established that we need a linear order of segments anyway. Notice, however, that this particular point has not been firmly established; e.g. Golston & Hulst (1999); Hulst (2007) have argued that actually syllable structure is underlying and the linear order of segments is a matter of phonetic implementation, due to the fact that human articulators cannot implement all articulatory instructions at the same time. Otherwise, whether or not we need syllable structure, is an empirical matter.

**2. Empirical arguments.** As far as we are aware, only one truly empirical argument has been proposed in favour of a linear account. This is the so-called Coda Mirror of Ségéral & Scheer (2001, 2008) (E1; see also Scheer & Ziková (2009)). Otherwise, we are convinced that all empirical arguments actually point in the direction of a syllabic constituent which is the projection of the vowel. **E1. Coda mirror.** In a series of related papers Ségéral & Scheer (2001, 2008) have argued for the existence of a ‘Coda Mirror’ (CM). The Coda has been introduced into the theory because it would make the contexts {  $\_C$ ,  $\_#$  } (before a consonant or at the end of a word) into a natural class. Ségéral & Scheer show that there are other phonological processes which affect the contexts {  $C\_$ ,  $\#\_$  } (after a consonant or at the beginning of the word, but not intervocalically). This CM is not a natural class in syllable theory. We argue, however, that the evidence established so far is insufficient. For instance, an important type of evidence for codas is the existence of neutralisation patterns such as Final Devoicing or place assimilation. A similar pattern for the CM would involve neutralisation of some contrast in root-initial position as well as post-consonantally (e.g. between aspirated and non-aspirated segments), with the contrast only showing up after attaching a vowel-final prefix. Such patterns are not attested. **E2. Phonological processes skip sequences of consonants.** This argument belonged to the original motivation for introducing the syllable into generative phonology after Chomsky & Halle (1968). Alternative linearist accounts have been proposed for some of these phenomena, such as stress rules (Szigetvári & Scheer 2005) or harmony processes (Neeleman & van de Koot 2006); however, these approaches either are not able to express the uniform asymmetry between vowels and consonants or do establish some level of representations at which vowels are present but consonants are not; this is the core of the idea of projection, which in turn is the basis of the idea that the syllable is a constituent headed by a vowel. **E3. Reduplication.** Samuels (2009) refers to Moravcsik (1978) and McCarthy & Prince (1996) who have pointed out that there are no reduplication processes which refer to the syllable *tout court*; reduplication is either to a heavy syllable (as in Ilokano *pus-pusa* ‘cats’) or to a short syllable (as in Tohono O’odham *ho-hon* ‘bodies’). Notice that only Ilokano type patterns are problematic in OT, since the Tohono O’odham facts may be argued to follow from Emergence of the Unmarked. We could therefore say indeed that there are two templates: one of a syllable, and the other of a heavy syllable. Furthermore, linearist accounts of reduplication would have to answer why there do not seem to be CCV templates (inserting an epenthetic second consonant when it is not there), next to CV templates. **E4. Syllables reflect properties of their vowels.** In many languages, tense vowels occur in open syllables, and lax vowels in closed syllables; and specific vowels also impose restrictions on their onsets (van Oostendorp 2000). We are not aware of any evidence that non-nuclei impose similar requirements on their neighbours. Facts such as these are of course acknowledged in the more worked-out versions of linearist theories such as Scheer (2004). However, such theories, which include notions of government and licensing, are in a strict sense notational variants of theories using constituent structure.

**3. Conclusion.** We believe that there is still sufficient evidence for various asymmetries between nuclei and non-nuclei. On the other hand, the theoretical argument of empirical evidence against syllabic constituency is not very strong. The main arguments in favour of syllables have to do with projection, and with various asymmetries between different syllable positions. Taking the criticism of linearists seriously therefore allows us to get a sharper view of what the syllable is, and why we need it.

## REFERENCES

- Carstairs-McCarthy, Andrew (1999). *The origins of complex language: an inquiry into the evolutionary beginnings of sentences, syllables and truth*. Oxford: Oxford University Press.
- Chomsky, Noam & Morris Halle (1968). *The Sound Pattern of English*. Cambridge, MA: The MIT Press.
- Duanmu, San (2009). *Syllable structure. The limits of variation*. Oxford, UK: Oxford University Press.
- Golston, Christ & Harry van der Hulst (1999). ‘Stricture is structure’. In: Hermans, Ben & Marc van Oostendorp (eds.), *The derivational residue in phonological Optimality Theory*, pp. 193–234. Amsterdam and Philadelphia: John Benjamins.
- Harris, John (1994). *English Sound Structure*. London: Blackwell.
- Hulst, Harry van der (2007). ‘The Phonological Mobile’. Handout CUNY Conference on Precedence Relations in Phonology.
- Kayne, Richard S. (1994). *The Antisymmetry of Syntax*. Cambridge: The MIT Press. Linguistic Inquiry Monograph Twenty-Five.
- Levin, Juliette (1985). *A metrical theory of syllabicity*. Ph.D. thesis, MIT.
- Lowenstamm, Jean (1996). ‘CV as the Only Syllable Type’. In: Durand, Jacques & Bernard Laks (eds.), *Current Trends in Phonology Models and Methods*, pp. 419–442. Salford: European Studies Research Institute. ([http://www.llf.cnrs.fr/Gens/Lowenstamm/CV\\_astheonly.pdf](http://www.llf.cnrs.fr/Gens/Lowenstamm/CV_astheonly.pdf)).
- McCarthy, John & Alan Prince (1996). ‘Prosodic Morphology’. Tech. rep., Rutgers University Center for Cognitive Science.
- Moravcsik, E. A. (1978). ‘Reduplicative constructions’. In: Greenberg, J.H. (ed.), *Universals of human language*, vol. 3, pp. 297–334. Stanford: Stanford University Press.
- Neeleman, Ad & Hans van de Koot (2006). ‘On Syntactic and Phonological Representations’. *Lingua*, 116, 10: 1524–1552. (<http://dx.doi.org/10.1016/j.lingua.2005.08.006>).
- van Oostendorp, Marc (2000). *Phonological Projection*. Berlin/New York: Mouton de Gruyter.
- Samuels, Bridget (2009). *The Structure of Phonological Theory*. Ph.D. thesis, Harvard University.
- Scheer, Tobias (2004). *A Lateral Theory of Phonology. Volume I: What Is CVCV, and Why Should It Be?* Berlin: Mouton de Gruyter.
- Scheer, Tobias & Markéta Ziková (2009). ‘The Coda Mirror v2 (but not exactly 2.0)’. Handout GP Round Table, Budapest.
- Schütze, Carson (1996). *The empirical base of linguistics: Grammaticality judgments and linguistic methodology*. Chicago: University of Chicago Press.
- Ségéral, Philippe & Tobias Scheer (2001). ‘La Coda-Miroir’. *Bulletin de la Société de Linguistique de Paris*, 96: 107–152.
- (2008). ‘The Coda Mirror, stress and positional parameters.’ In: ao de Carvalho, Joaquim Brand Tobias Scheer, & Philippe Ségéral (eds.), *Lenition and Fortition*. Berlin: Mouton de Gruyter.
- Szigetvári, Peter & Tobias Scheer (2005). ‘Unified representations for the syllable and stress’. *Phonology*, 22: 37–75.
- Tallerman, Maggie (2006). ‘Challenging the syllabic model of ‘syntax-as-it-is?’ *Lingua*, 116: 689–709.689–709.