

σ strikes back

marc van oostendorp
meertens instituut & leiden university

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σ strikes back

introduction

theoretical arguments

syllables are not like syntactic phrases
certain aspects of syllable structure are unclear
syllables are not necessary

empirical arguments

coda mirror
phonological processes skip C^0
prosodic phonology
syllables reflect properties of their vowels

conclusion

why it is necessary to defend σ

- ▶ recent years have seen arguments from more or less independent angles against constituency in phonology
- ▶ e.g. harris (1994), lowenstamm (1996), scheer (2004), neeleman & van de koot (2006), samuels (2009)
- ▶ these proposals have met with very few counterarguments
- ▶ at the same time, the average phonology paper still refers to constituency, simply ignoring the arguments of the “linearists”
- ▶ we try to improve the mainstream view by defending it

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t1. syllables are not like syntactic phrases

- ▶ “the most important difference [. . .] is certainly [. . .] [that] there is no recursion in phonology. it is interesting to note that this hard fact, which is a long-standing observation, actually follows from flat structure.” (scheer 2004:xliv)
- ▶ “the alternative is to return to string-based representations structured through boundary symbols. the nonrecursive nature of phonological representations then follows straightforwardly.” (neeleman & van de koot 2006:1530)
- ▶ “one important property immediately differentiates the two structures. the syntactic structure is recursive in a way that the phonological structure is not” (samuels 2009:99)

neeleman & van de koot 2006:1530

“consider the rewrite rules that generate prosodic trees:

$$(13) \quad \begin{aligned} U &\rightarrow I^* \\ I &\rightarrow \Phi^* \\ \Phi &\rightarrow \omega^* \\ \omega &\rightarrow \sigma^* \end{aligned}$$

given that every symbol, except U, can appear as both the input and the output of a rewrite rule, it is a coincidence that no rewrite rule introduces a symbol in its output that is mentioned in the input of a previous rewrite rule. clearly, there is nothing in the format of rewrite rules that can explain this.”

rebuttal

- ▶ note that neeleman and van de koot's argument could be applied as an argument against x-bar theory as well
- ▶ in general, the fact that syntactic structures and phonological structures have different properties, does not mean that the phonological structures are no trees (just like they do not mean that the syntactic structures are no trees)
- ▶ in particular, the non-recursion of phonological trees could also be made to follow from the fact that they are built on the phonology's inherent autosegmental grid

t2. certain aspects of syllable structure are unclear

“it is even more difficult to determine how to divide syllables (already a subject of controversy in the 1970’s . . .). moreover, it is not clear that tests which purport to probe judgments on syllable boundaries actually do so. [. . .] harris (2004) makes similar arguments against tests intended to probe syllabification; harris believes that in such tasks, the fact that certain syllables (e.g., ones which end with short vowels, such as [sɪ] in city) are too small to be phonological words interferes with speakers’ judgments.”

(Samuels 2009:106-7)

rebuttal

- ▶ 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 linearist proposals typically also include abstract structure which would defy direct psycholinguistic testing

t3. syllables are not necessary

- ▶ “arborescence is redundant; the null hypothesis for syllable structure is lateral” (scheer 2004:231)
- ▶ “in standard government phonology [. . .] constituent structure is doubled by government and licensing, to the effect that co-occurrence restrictions are expressed twice: once by the arboreal structure, and once by government” (scheer 2004:235)

rebuttal

- ▶ (aside: there are a few theories which take constituent structure as phonological and linear order as derived; cf. van der hulst and golston 1999; van der hulst 2007)
- ▶ notice that also syntactic theories typically have trees and relations on nodes within those trees (e.g. 'agree')
- ▶ furthermore, including relations between nodes is in a formal sense just a notational variant of tree structure (even if you do not draw the trees), e.g. in cvcv Theory, the segments of a 'complex onset' entertain a special relationship to each other (interconstituent government)

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e1. coda mirror

- ▶ the major empirical argument against syllable constituents, it seems to us, is the so-called ‘coda mirror’ (cm) of ségéral & scheer (2001; 2008); scheer & ziková (2009)
- ▶ the coda has been introduced into the theory because it turns { $_C$, $_#$ } into a natural class
- ▶ s&s show that there are other phonological processes which affect { $C_$, $\#_$ }, the cm

somali stops

	a. #_	b. C_	c. coda _C	d. V_V
	sg indef	pl	sg def	sg indef
b	beer	garb-o	garab ^ɾ -ta dab ^ɾ -ka	garab ^ɾ dab ^ɾ
				daβ-ab ^ɾ

evolution latin to french

	a. #_	b. C_	c. Coda _C	_#	d. V_V
p	porta	talpa	rupta	lup(u)	ripa
	porte	taupe	rouθte	louθ	rive

rebuttal

- ▶ an important argument against the cm phenomena, is that the cm in many cases is diachronic (only)
- ▶ and if it isn't the cm is special because it *does not* undergo a phonological process (importantly, scheer 2004:675 tries to argue that non-undergoers should be natural classes)
- ▶ in the cases at hand, the relevant processes are even different for codas and intervocalic position

evolution latin to french (2: lenition)

	a. #_	b. C_	c. Coda _C _#	d. V_V
j	jocu	sapjam	maj(u)	jejunu
	ʒ∅	saʃ	mɛ∅	ʒ∅∅n

rebuttal

- ▶ this is again a historical process
- ▶ notice that there is interaction with deletion of j, which makes it hard to see that really something happened only to cm position

e2. phonological processes skip sequences of consonants

- ▶ this is a classical argument in favour of syllables: there are many asymmetries between vowels and consonants
- ▶ where in each case the vowels are the more dominant ones
- ▶ stress rules 'skip' consonant (clusters), as does e.g. (possibly) 0vowel harmony and, in particular, stress

linearists and stress

- ▶ the potential relevance of stress is usually admitted by linearists, who provide alternative analyses, e.g. szigetvári and scheer (2005), neeleman and van de koot (2006)
- ▶ e.g. the latter sketch two representational alternatives:

treeless representations

- | | | | | | | | | | |
|----|------|------------|---------|----------|-------|----------|-----|------------|-------|
| | | | | | | | | | X |
| | | | X | | | | | | X |
| | X | | X | | X | | X | | X |
| a. | most | ω | zombies | Φ | don't | ω | eat | ω | fruit |
| b. | most | $\omega >$ | zombies | $\Phi >$ | don't | ω | eat | $\omega >$ | fruit |

- ▶ notice that we need two elements to our representations: projection and domains
- ▶ these could also be represented as trees
- ▶ which would also account for the fact that stress is a property of vowels

e3. prosodic phonology

- ▶ as far as i can see, linearists tend not to comment much on issues of prosodic morphology
- ▶ except that samuels (2009) points out that there are no languages which have a plain syllable as a template (templates are always defined as being light or heavy)
- ▶ this does not take away that the latter are indeed syllabic templates

thao rightward reduplication

- ▶ an interesting case in this connection is thao rightward reduplication (data from chang 1998)
- ▶ fitzpatrick (2009) argues that this provides an argument in favour of a CVCV template, and against syllabic templates

base	reduplicated form	gloss
kikati	kikati-kati	'ask'/'ask around'
patihaul	matihaul-haul	'spell' / 'cast a spell'
ag.qtu	agqtu-qtu	'contemplate' / 'think about'
ar.faz	m-arfa-rfaz	'fly' / 'fly continuously'

thao syllable structure

- ▶ however, raimy (2009) points out that one can understand this pattern precisely if we assume that thao is abstractly strictly cv
- ▶ in other words, it has cv units, i.e. constituents

base	syllabification	reduplicant
kikati	{ ki } { ka } { ti }	{ ka } { ti }
patihaul	{ pa } { ti } { ha } { Øu } <l>	{ ha } { Øu }
ag.qtu	{ Ø a } { gØ } { q Ø } { tu }	{ q Ø } { tu }
ar.faz	{ Ø a } { rØ } { fa } < z >	{ rØ } { fa }

discussion

- ▶ notice that cv units of this type are routinely assumed in scheer (2004)
- ▶ notice also that these are manipulable units
- ▶ i.e. they behave as *constituents*, which can be drawn as trees (there are no similar vc units)

e4. syllables reflect properties of their vowels

- ▶ in many languages (germanic languages, southern french, eastern javanese *e tutti quanti*) tense vowels occur in open syllables and lax vowels in closed syllables
- ▶ similarly, specific vowels may impose strict requirements on their onsets and codas (e.g. schwa in dutch can only occur in a CV syllable)
- ▶ we are not aware of any evidence that non-nuclei impose similar requirements on their neighbours
- ▶ this is strong evidence for constituency and headedness

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- ▶ we need projection and we need relations between elements which project and those that do not
- ▶ one can decide to not draw trees, but these are the defining properties of trees in phonology
- ▶ furthermore, even in CVCV phonology one still needs to stipulate CV 'units' (=constituents)
- ▶ the most important distinction between phonological and syntactic structure is one of recursiveness, which could be attributed to the autosegmental nature of the former