

Scales, |A|, and Limburg Tonogenesis

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Central thesis

In this talk we aim to contribute to the understanding of the understanding of sonority. We support a multidimensional view within an Element-based framework. In particular, we argue for the role of the element |A| in determining sonority. We show that assuming that this element can be found also on the sonorants /ŋ/ and /r/ gives a more elegant account of sonority.

1 The theory of sonority

(1) A taxonomy of sonority theories can be built on two parameters:

- Sonority is rooted in the phonetics vs. sonority is derived from the cognitive organisation ([±phonetics])
- Sonority is a uniform scale vs. sonority consists of a number of (possibly conflicting) factors ([±uniform])

(2)

	+uniform	-uniform
+ phonetic	1 phonetic factor (e.g. 'loudness')	several phonetic factors (e.g. enhancing perceptability)
- phonetic	1 representational factor (e.g. complexity)	the present proposal

(3) Traditionally, sonority is represented in terms of a scale:

- low vowels > mid vowels > high vowels > liquids > nasals > obstruents

- (4) **Definition 1 (Contiguity of Reference)** *Phonological generalisations refer to a contiguous substring of the sonority scale.*
- (5) We argue that Contiguity of Reference is undesirable, hence that sonority is not a uniform phenomenon. In particular, we follow Scheer (2004), who claims that sonority is a function of *three* parameters:

1. the constituent dominating the segment (O or N)
2. the presence vs. absence of manner elements $|?$ and $|h|$
3. the role of $|A|$ in the expression (head, operator or absent)

- (6) It has been argued by other authors as well that $|A|$ makes a segment more sonorous (e.g. Ritter (1997), Hermans (2003), van der Torre (2003))

- (7) The assumption that presence vs. absence of $|A|$ can play a role in defining sonority, is almost trivial for vowels:

$$\begin{array}{l}
 [i] = |I| \qquad \qquad \qquad [u] = |U| \quad \text{The higher} \\
 [e] = |I| \bullet |A| \qquad \qquad [o] = |U| \bullet |A| \\
 [a] = |A|
 \end{array}$$

the proportion of $|A|$, the more sonorous

- (8) **Example 1: stress attraction** In Gujarati, if a word contains an $[a]$, this is stressed (else some other vowel is stressed, with extra avoidance of schwa) (de Lacy, 2002). This can be seen as a preference for stress on $|A|$

[utáru]	'passenger'
[sáme]	'in front'
[tádʒetər]	'recently'
[sinemá]	'movie theatre'
[pəhélu]	'first'
[júrop]	'Europe'
[k ^h əmíso]	'shirts'

- (9) **Example 2: reduction** In Bulgarian, we find the following reductions of vowels in unstressed position:

- $i, e \rightarrow i$
- $a \rightarrow \emptyset$
- $o, u \rightarrow u$

This can be understood as loss of the $|A|$ in non-prominent positions. There thus is a one-to-one relation between $|A|$ and prosodic prominence

<i>róguf</i>	'of horn'	<i>rugát</i>	'horned'
<i>sélu</i>	'village'	<i>silá</i>	'villages'
<i>rábutə</i>	'work'	<i>rəbótnik</i>	'worker'

- (10) There are various interpretations of the role of the element |A| in consonants. Here we diverge from Scheer (2004), and follow Smith (2000), Swets & van Oostendorp (2003) and van der Torre (2003) instead. The basic claim is that |A| is part of /r/ and /ɹ/ (in Dutch dialects), but not of other sonorant consonants

- (11) **Nuclear positions favour /ɹ/**

Standard Dutch	Wieringen Dutch	
[hɔnt]	[hɔɹt]	'dog'
[dansə]	[dɑɹsə]	'to dance'
[tɑnt]	[tɑɹt]	'tooth'

- (12) /ɹ/ **shuns non-prominent positions**

[ɹ] avoids onset positions in many languages of the world. This can be seen as an instance of |A| avoiding dependent/consonantal (Onset) positions

- (13) **Nuclear positions favour /r/**

Standard Dutch	The Hague Dutch	
[ɔnder]	[ɔnda]	'under'
[dixtər]	[dixtɑ]	'poet'

- (14) /r/ **shuns non-prominent positions**

Latin	Sestu Campadinian	
[rosa]	[ar:ɔza]	'rose'
[rana]	[ar:ana]	'frog'
[luce]	[luʒi]	'light'

- (15) **Further motivation for |A| on /r, ɹ/**

If /r, ɹ/ indeed contain the element |A| we expect there to be interaction between these segments, and low vowels, e.g. in the form of a lowering effect of these consonants on preceding vowels

- (16) **Lowering effects of /ɹ/**

- (17) An instance of a lowering effect of /ɹ/ can be found in Alabama English (Veatch, 1991): in words like *spring*, *finger*, *thing*, etc. the vowel is realized as [æ]. According to Veatch, Alabama Lowering is "an unnatural, anticoarticulatory effect".

- (18) Similarly, Zhang (2006) introduces the following constraint in his analysis of Shiaoqing:

- *[ɹ][+high]: [ɹ] cannot occur before any [+high] (semi-)vowel

- (19) **Lowering effects of /r/** It is well-known that in Canadian English, the distinction between e.g. *merry* and *marry* is lost, due to lowering of the former. Non-rhotic varieties of English similarly provide evidence for the presence of |A| on /r/: they have intrusive r when the preceding vowel is not high:

- j'étais déjà[r] ici

- UEFA[r] officials

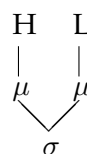
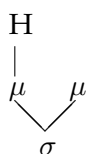
2 Tonogenesis in Limburg



(20) Tonal contrasts in modern Limburg

[wá:tər]	'water'	[pá:tər]	'father (clerical)'
[mó:dər]	'mother'	[mò:də]	'fashion'
[mí:n]	'my, neuter'	[mî:n]	'coal mine'
[ré:t]	'crevice'	[rê:t]	'reed'
[kál]	'nonsense'	[kál]	'to talk'
[mání]	'man'	[pán]	'pan'

(21) Tones: representations



Level high tone ('Schleifton') Falling tone ('Stoßton')

(22) Long low and mid vowels: falling tone

WGM *e: < *e:	[brê:f]	'letter'
WGM *e: < *eo	[lê:f]	'sweet'
WGM *o:	[hó:t]	'hat'
WGM *ε: < *ai	[sníè]	'snow'
WGM *ɔ: < *au	[brúàt]	'bread'
WGM *a:	[drô:t]	'thread'

(Data are from the tonally conservative dialect of Maasbracht.)

(23) Long high vowels and diphthongs: level high tone

WGM *i:	[wí:t]	'far'
WGM *u:	[vú:l]	'dirty'
WGM *ai	[kléit]	'dress'
WGM *au	[bóúm]	'tree'

(24) Short vowel + η or r: falling tone

vá η	'to catch'
bá η	'afraid'
brí η	'to bring'
stó η	'stood'
<hr/>	
bá r	'severe'
vá r	'far'
hó r	'wire gauze'

(25) Short vowel + any other consonant: level high tone

kóp	'head'
vóx	'fluid'
wít	'white'
mán	'man'
mól	'mole'
váel	'skin'

(26) Generalisation

Low and mid vowels : high vowels
 =
 /r, η / : other consonants

(27) Expressing the generalisation This generalisation is easily expressed in our framework:

- A Low tone must be linked to an |A|-bearing element.

(28) This rejects the representation on the left-hand side, but accepts the one on the right-hand side.

wrong		well-formed	
H	L	H	L
μ	μ	μ	μ
			A

(29) It is not possible to express the same generalisation in terms of a scale:

- low vowels > mid vowels > high vowels > \underline{r} > l > $\underline{\eta}$ > m, n > obstruents

- (30) Either we have to give up Contiguity of Reference (which makes the whole enterprise devoid of content) or we have to change the order of the segments on a language-particular basis:
- low vowels > mid vowels > r > > ɨ > high vowels > l > m, n > obstruents
- (31) **Desideratum: A theory of visibility**
- At first sight, this approach makes strange predictions E.g. a language that allows mid and low vowels, /r/, /ɨ/ in the peak, but not high vowels
 - We need a theory of visibility: prosodic heads can only see those place elements that are segmental heads
 - Subsyllabic constituents and segments are able to see further details.
 - A theory of visibility is needed in any case
- (32) Long high vowels and diphthongs do get a falling tone if the next syllable has undergone Schwa Apocope (cf. (22))
- | | | |
|--------|---------|------------|
| lí:n | ‘line’ | < *li:nə |
| prú:m | ‘plum’ | < *pru:mə |
| klé:n | ‘small’ | < *kleinə |
| vró:uw | ‘woman’ | < *vrə:uwə |
- (33) The same is true for short vowels followed by a sonorant consonant. (cf. (25)).
- | | | |
|-------|----------|----------|
| há:l | ‘hall’ | < *halə |
| hé:l | ‘hell’ | < *helə |
| kí:n | ‘chin’ | < *kɪnə |
| spí:n | ‘spider’ | < *spɪnə |
| stý:m | ‘voice’ | < *stɛmə |
| sóm | ‘sum’ | < *sɔmə |
| tróm | ‘drum’ | < *trɔmə |
| vlám | ‘flame’ | < *vlamə |
- (34) Given the relevance of Schwa Apocope an alternative solution seems possible (Boersma p.c.): the sonorants /r/ and /ɨ/ attract a falling tone because they were always followed by a schwa.
- (35) The Alternative solution does not work for /r/
- a. Forms attested in Middle Dutch and Middle High German

bá:r	‘severe’
dá:r	‘male bee’
tá:r	‘tar’

- b. Forms that were non-existent in Middle Dutch and Middle High German

bóɾ (de wolf) (proper name)
 hóɾ 'wire gauze'

- (36) Alternative solution seems to work for /ɪ̯/ since in the Limburg dialects the relevant words were the result of schwa apocope:

sláɪ̯ 'snake' < *slajə
 táɪ̯ '(pair of) tongs' < *tajə
 tóɪ̯ 'tongue' < *tojə
 jóɪ̯ 'boy' < *joɪə

- (37) We still maintain that /ɪ̯/ attracts low tone since in neighbouring German dialects are also velar nasals which are not the result of schwa drop in *-/ngə/*. These are the result of velarisation (as in Wieringen, cf. (11))

- (38) Velarisation of a nasal is always accompanied by a falling tone (Welter, 1933). Some examples from the region to the west of Aachen

fí̯ 'fine' < *fi:n
 wí̯ 'wine' < *wi:n
 brý̯ 'brown' < *bru:n
 bé̯ 'leg' < *bein
 é̯ 'one' < *ein
 klé̯ 'small' < *klein

3 Conclusions

- We have provided evidence for a multidimensional theory of sonority, and implemented this in a representational framework
- In particular, we argue that the sonorants [r, ɪ̯] both carry the element |A|
- This makes them more sonorous
- Certain questions remain, e.g. what explains the asymmetry between |A| on the one hand, and |I|, |U| on the other.

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