Overview: Sonority in syllable structure

This handout is designed to introduce you to some ideas from some of the papers we're going to have to skip because of time constraints. These ideas might be important for some of your final papers. Also, they will provide background for some of the last papers we'll read and/or discuss.

I. Sonority determines "cut-off points" for what segments can be moraic and for what (moraic) segments can also be syllabic. We saw this in the Zec reading.

II. Sonority determines *preferred* nuclei and *preferred* onsets
(i.e., among the *allowable* nuclei or *allowable* onsets, which are *preferred*?)

A. Imdlawn Tashlhiyt Berber

Syllabification algorithm (based on Dell & Elmedlaoui 1985; slightly simplified)

(a) Set the value of variable Y at the top of the following scale; the value of variable X is unrestricted.

low vowels	[-cons, +low]	
high vowels	[-cons, -low]	*(Note: ITB has no mid vowels.)*
liquids	[+cons, +son, -nas]	
nasals	[+cons, +son, +nas]	
voiced fricatives	[(-son,) +cont, +voi]	
voiceless fricatives	[(-son,) +cont, -voi]	
voiced stops	[(-son), -cont, +voi]	
voiceless stops	[(-son), -cont, -voi]	

(b) From left to right across the string:
- Seek a sequence XY. (X is optional word-initially but required elsewhere.)
- Project a mora and a syllable node from Y and syllabify X as its onset.

(c) Move the value of Y one level down the scale in (a) and repeat step (b).

(d) Adjoin any remaining segments as a coda to the preceding syllable.

▸ Try some words: /t-rgl-t/ /ra-t-kti/ /i-ldi/

▸ Conclusion: Nuclei prefer to be _____ in sonority.

B. Reduplication in Sanskrit perfective verb forms

a.	ka - skand-a	'leap'	d.	ta - stamb^{h}-a	'prop'
b.	pa - prat^{h}-a	'spread'	e.	sa - swar	'sound'
c.	da - d^{h}wans-a	'scatter'	f.	ma - mnaː-u	'note'

▸ Conclusion: Onsets prefer to be _____ in sonority.

▸ Based on ITB and Sanskrit, what does the sonority scale look like?

C. How can we analyze these preferences?

• A rule-based analysis would have to say something like, "Scan the string for a segment of sonority level *x*. If found, syllabify. If not found, scan the string for a segment of the next sonority level." See Dell & Elmedlaoui on ITB, described above.

• OT makes these phenomena easier to analyze. Prince & Smolensky (1993) make the following proposal:

(a) The syllable "peak" is more prominent than the "margins"
- **peak** = nucleus/head/strong mora of syllable
- **margin** = originally, onsets and codas —but: given Zec's findings about moraic codas preferring high sonority, we might want to restrict this to onsets and non-moraic codas...this is an open question
- **prominent** = basically intended to mean "having an affinity for high sonority"

(b) The sonority scale proceeds from high sonortiy to low sonority:
vowel > **liquid** > **nasal** > **obstruent** (with finer divisions of these categories in some cases)

(c) These two scales — peak/margin and the sonority scale — can be combined through a procedure that Prince & Smolensky (1993) call **harmonic alignment**:

▸ How the world is:
- Peak=V is good; Peak=L is less good; Peak=N is worse; Peak=O is pretty bad
- Mar=O is good; Mar=N is less good; Mar=L is worse; Mar=V is pretty bad

▸ How this translates into constraints (the idea is that a constraint against something intrinsically bad needs to be ranked high):
- *PEAK/O >> *PEAK/N >> *PEAK/L >> *PEAK/V
- *MAR/V >> *MAR/L >> *MAR/N >> *MAR/O

These two sets of constraints are each in a universally fixed ranking, the same in all languages; the sonority scale gives us the ranking, which is why it can't be changed.

III. Sonority and clusters

We've already seen that just because a language allows onset clusters and/or coda clusters, that doesn't mean it allows every combination of consonants to form a cluster. The allowable clusters in a language are often determined by sonority.

A. English onset clusters: obstruent + liquid or glide

B. Ancient Greek "Type A" onset clusters: voiceless stop + nasal or liquid
voiced oral stop + [r] only

C. Two proposals for sonority restrictions on clusters:

- **Sonority Sequencing Principle** (goes back to work by Sievers and Jespersen in the late 19th and early 20th centuries; see also Hooper 1976, Selkirk 1984, Clements 1990, etc.)

  Sonority is highest at the syllable peak and becomes progressively lower toward the syllable margins

- **Minimal Sonority Distance Principle** (Selkirk 1984; Clements 1990, etc.)

  The members of a cluster must be *d* distance apart on the sonority scale (where *d* is determined on a language-particular basis)

▸▸ We'll see more about sonority and clusters in Yohei's presentation on Rubach & Booij (1990) and when we read Baertsch (1998).

IV. Sonority and syllable contact

A. A generalization by Hooper (1976), recast by Murray & Vennemann (1983)
(these scholars actually refer to "consonantal strength" instead of sonority; "strong" = low in sonority)

- **Syllable Contact Law** (rephrased from Murray & Vennemann 1983)

  The preference for a structure *A.B*, where *A* and *B* are margin segments and *a* and *b* are their respective sonority levels, increases with the value of *a* minus *b*.

In other words, an onset likes to be much lower in sonority than the preceding coda.

B. Historical change in Spanish (Hooper 1976)

early stage		*middle stage*		*later stage*	
venirá	>	venrá	>	ven.drá	'(it) will come'
ponirá	>	ponrá	>	pon.drá	'(it) will put'
salirá	>	salrá	>	sal.drá	'(it) will leave'

▸ *[.nra.], *[.lra.] by ... ?
▸ *[Vn.ra], *[Vl.ra] by ... ?

C. Typical structure of consonant sequences in Australian languages (Dixon 1980)

- Typical word shape: C1 V C2 C3 V C4
- Possible C2 + C3 combinations:

C2	*C3*	
b/d/g	b/d/g	(Note: most Aus. lgs. have multiple coronal
m/n/N	b/d/g	places of articulation: dental, alveolar,
r/l	b/d/g	postalveolar, retroflex)

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