## Class 13: Process interaction—intrinsic ordering? Part II

**To do**
- Think about your project!!
- Next reading is Goldsmith, for Nov. 13

**Overview of class: Extrinsic vs. intrinsic ordering, continued**
We'll consider a proposal from Anderson to eliminate (or at least reduce) extrinsic ordering.

### 1.   Anderson ch. 10: natural order

Example from Icelandic (Indo-European language from Iceland with 250,000 speakers)

**umlaut and syncope**

*syncope, roughly*: certain unstressed  Vs → Ø / C __ {l,r,n,ð,s}+V
u-*umlaut*:        a → ö / __ $C_0$ u

| barn | 'child' | börn+um | 'child-dat.pl.' |
| svangt | 'hungry-neut.nom.sg.' | svöng+u | 'hungry-neut.dat.sg.' |
| kalla | '[I] call' | köll+um | '[we] call' |

*(lax, unstressed vowels delete before another vowel)*

| hamar | 'hammer' | hamr+i | 'hammer-dat.sg.' |
| fífill | 'dandelion' | fífl+i | 'dandelion-dat.sg.' |
| morgunn | 'morning' | morgn+i | 'morning-dat.sg.' |

- o   If syncope precedes umlaut, what kind of process interaction results for the UR /katil+um/ 'kettle-dat.pl'?
- o   For /jak+ul+e/ 'glacier-dat.sg.'?
- o   What about umlaut before syncope for /katil+um/?
- o   For /jak+ul+e/?

➔ Whether a rule ordering is feeding, bleeding, etc. depends on the particular forms involved!

|  | *+r/Ø* |  | *+um* |  |
|---|---|---|---|---|
| /katil/ | ketill | 'kettle' | kötl+um | 'kettle-dat.pl' |
| /ragin/ | regin | 'gods' | rögn+um | 'gods-dat.pl' |
| /alen/ | alin | 'ell of cloth' | öln+um | 'ell of cloth-dat.pl' |

|  | *+ul+r* |  | *+ul+e* |  |
|---|---|---|---|---|
| /bagg/ | böggull | 'parcel' | böggli | 'parcel-dat.sg.' |
| /jak/ | jökull | 'glacier' | jökli | 'glacier-dat.sg.' |
| /jat/ | jötunn | 'giant' | jötni | 'giant-dat.sg.' |
|  |  |  | *+ul+an* |  |
| /þag/ | þögull | 'taciturn' | þöglan | 'taciturn-masc.acc.sg.' |

If the rules are right, we have an ordering paradox! Here's how Anderson resolves it...

Anderson's definition of *natural order*:

> "where only one of the two possible orders for a given pair of rules is <u>feeding</u>, the feeding order is the natural one; and that where only one of the two possible orders is bleeding, the other order [i.e. <u>counterbleeding</u>] is the natural one. In all other cases […] no natural order is (yet) defined." (p. 147)

Anderson proposes that <u>at least some pairs of rules</u> are left unordered by a language's grammar and so apply in their natural order in each case. Other rules are ordered, but only pairwise (so ordering is not transitive, for instance).

o   Is this different from the Koutsoudas & al. proposal? (Let's apply their theory to the crucial forms.)

o   So if a grammar consists of a list of rules and some statements about their orderings, what does a change of the type observed by Kiparsky involve? (Notice the extension of the evaluation metric to rule orderings, and not just the rules themselves.)

o   Can you think of other ways to deal with Icelandic—in particular, can we imagine a cyclic or lexical-phonology analysis?

## 2.  **More Icelandic** (from Kiparsky 1984[1])

Additional fact: syncope applies before case and derivational endings, but not before the enclitic articles *–inn* and *–ið*.

| | | | | | |
|---|---|---|---|---|---|
| hamar | 'hammer *nom.sg.*' | **akur**[2] | 'acne *nom.sg.*' | höfuð | 'head *nom.sg.*' |
| hamr+i | 'hammer *dat.sg.*' | akr+i | 'acne *dat.sg.*' | höfð+i | 'head *dat.sg.*' |
| hamr+a | 'to hammer' | | | | |
| hamar#inn | 'the hammer *nom.sg.*' | akur#inn | 'the acne *nom.sg.*' | höfuð#ið | 'the head *nom.sg.*' |
| | | **ökr+um** | 'acne *dat.pl.*' | | |

o   First, why no *u*-umlaut in *akur*? Note also no syncope in *Nikulas* 'Nicholas'

o   Do the facts above help us decide between analyses?

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[1] Kiparsky, Paul. 1984. On the Lexical Phonology of Icelandic. In C.-C. Elert, I. Johnson, and Eva Stangert (eds.), *Nordic Prosody III*, Stockholm: Almquist & Wiksell.
[2] Anderson treats this [u] as epenthesized (see below), which would be another reason why no umlaut.

### 3. Another Icelandic ordering paradox (Anderson ch. 11)

Icelandic has initial stress. When umlaut applies to unstressed vowels, the result is not *ö* but *u*:

| dómari | 'judge *nom.sg.*' | | dómur+um | 'judge *dat.pl.*' |
|--------|-------------------|--|----------|-------------------|
| hérað | 'region *nom.sg.*' | | héruð + um | 'region *dat.pl.*' |

Iterativity:

| | bakari | 'baker *nom.sg.*' | | bökur+um | 'baker *dat.pl.*' |
|--|--------|-------------------|--|----------|-------------------|
| | fatnað | 'suit of clothes *nom.sg.*' | | fötnuð+um | 'suit of clothes *dat.pl.*' |
| *cf.* | akkeri | 'anchor *nom.sg.*' | | akker+um | 'anchor *dat.pl.*' |

Normally *ö* (and certain other vowels) can occur only in stressed syllables. There are some exceptions to this restriction, and they show that only *u* triggers umlaut:

| akarn | 'acorn *nom.sg.*' | | akörn+um | 'acorn *dat.pl.*' |
|-------|-------------------|--|----------|-------------------|
| japani | 'Japanese *nom.sg.*' | | japön+um | 'Japanese *dat.pl.*' |
| almanak | 'calendar *nom.sg.*' | | almanök+um | 'calendar *dat.pl.*' |
| fargan | 'racket *nom.sg.*' | | fargön+um | 'racket *dat.pl.*' |
| | | *or* | förgun+um | |
| | | *but not* | *förgön+um | |

o   What's the ordering paradox? How do you think Anderson resolves it?

### 4. Two more Icelandic rules (still from Kiparsky 1984)

*u-epenthesis*: Ø → u / C __ r#

| dag+**u**r | 'day *m.nom.sg.*' | bæ+r | 'farm *m.nom.sg.*' |
|------------|-------------------|------|--------------------|
| tek+**u**r | 'take *2/3sg.pres.ind.*' | næ+r(ð) | 'reach *2/3sg.pres.ind.*' |

o   How should *u*-epenthesis be ordered with respect to *j*-deletion (j → Ø / C __ #):

| bylj+ar | 'snowstorm *gen.sg.*' | krefj+i | 'request *2pl.*' |
|---------|----------------------|---------|------------------|
| bylj+ir | 'snowstorm *nom.pl.*' | krefj+a | 'request *3pl.*' |
| bylj+i | 'snowstorm *acc.pl.*' | krefj+um | 'request *1pl.*' |
| bylj+a | 'snowstorm *dat.pl.*' | kref | 'request *1sg.*' |
| bylj+um | 'snowstorm *dat.pl.*' | **kref+ur** | 'request *2/3sg.*' |
| byl | 'snowstorm *acc.sg.*' | | |
| byl+s | 'snowstorm *gen.sg.*' | | |
| **byl+ur** | 'snowstrom *nom.sg.*' | | |

o   How does this fare under an Andersonian analysis? A Kiparskyan?

[In Lexical Phonology, in order to prevent *j*-deletion in /bylj+ar/, we could say that /bylj/ has no lexical category, so not until we add an inflectional ending (including Ø for the accusative singular) does it enter the lexical phonology.]

**5. Is *u*-umlaut just an 'anywhere' rule?** (from Anderson ch. 12, with additional data from Kiparsky)

From what we've seen so far, we might think that *u*-umlaut just applies wherever it can. Not so, says Anderson:

|  |  |  |  |  |  |
|---|---|---|---|---|---|
|  |  |  | /harð+um/ | hörðum | 'hard *dat.pl.*' |
|  |  |  | /saga+ur/ | sögur | 'sagas *nom.pl.*' |
|  |  |  | /kalla+um/ | köllum | 'call *1sg.*' |
| /kalla+ð+r / | kalla+ð+ur | 'called *m. nom.sg.*' | / kalla+ð+um / | köllu+ð+um | 'called *m.*' |
| /dag+r/ | dag+ur | 'day *nom.sg.*' |  |  |  |
| /hatt+r/ | hatt+ur | 'hat *nom.sg.*' | /hatt+um/ | hött+um | 'hat *dat.pl.*' |
| /stað+r / | stað + ur | 'place *nom.sg.*' | /stað+um/ | stöð+um | 'place *dat.pl.*' |
| /snarp+r/ | snarp+ur | 'rough *m. nom.sg.*' | /snarp+um/ | snörp+um | 'rough *m. dat.pl.*' |
| /ryðga+ð+r / | ryðga+ð+ur | 'rusted *m. nom.sg.*' | /ryðga+ð+um/ | ryð**u**+ð + um | 'rusted *m. dat.pl.*' |

*[See Anderson for the arguments that these are the right underlying forms.]*

o So what ordering(s) would be needed?

o Kiparsky: Another distinction between inflection/derivation and enclitic determiners—your thoughts?

| fóður | 'lining *nom.sg.*' | dag+ur (/dag+r/) | 'day *nom.sg.*' |
|---|---|---|---|
| fóðr+i | 'lining *dat.sg.*' | dag+r+i | 'day *dat.sg.*' |
| fóðr+a | 'to line' |  |  |
| fóður#ið | 'the lining *nom.sg.*' | dag+ur#inn | 'the day *nom.sg.*' |

o While we're on the subject of *u*-epenthesis, one last Derived Environment effect

| /dag+r#inn/ | dagurinn | 'the day *nom.sg.*' |
|---|---|---|
| /lifr#inn/ | lifrin | 'the liver? *nom.sg.*' |

If you find this stuff fun and want to find a paper topic along these lines, things to check out besides Anderson are

- Wallace L. Chafe. 1968. The Ordering of Phonological Rules. International Journal of American Linguistics 34: 115-136. (a theory of "rule depths")
- the works discussed in this history article: Victor M. Longa. 2001. The Abandonment of Extrinsic Rule Ordering in Generative Grammar. Historiographia Linguistica 28: 187-198.

**Icelandic spelling cheat sheet—very rough! not meant to be authoritative**

From Eiríkur Rögnvaldsson's "Guideline for Icelandic transcription"
(http://www3.hi.is/~eirikur/ptg_ice.pdf), found through Wikipedia. See there for more details.

- <k>, <g> represent palatal stops before front vowels (cf. Björk's accent in English!); they are velar fricatives when preceded by a vowel and not followed by a consonant
- <ng> = [ɲ] or [ŋ], depending on vowel context
- <þ> = [θ]
- <hj> = [ç]
- <u> = [ʏ]
- <ú> = [u]
- <á> = [au]
- <ó> = [ou]
- <æ> = [ai]
- <au> = [œy]
- <é> = [jɛ]
- <ll> = [tl], usually
- <nn> = [tn], usually
- <kk>, <tt>, <pp> are preaspirated