Lecture 4 – Diachronic Sources of Non-Concatenative Morphology

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MorphologyFest
Morpheme-based Morphology

- Morphemes are homogeneous, indivisible atomic units of linguistic form, each linking some component(s) of meaning with a set of mutually exclusive allomorphs that express it.

- Each morpheme has a determinate semantic content, and each allomorph has a determinate phonological form.

- Words are composed exhaustively by joining such morphemes together in hierarchically organized structures.

- The relation between a base and a derived form with an additional morpheme is incremental, monotonic non-decreasing in the domains both of form and of content.
Problem: Non-concatenative Morphology

- We have seen that in descriptive terms at least, this is incorrect: morphological material in complex words does not always conform to the morphemic picture:
  - relations between form and content are many-to-many
  - elements of content can have no corresponding form (zero morphs), and *vice versa* (empty morphs).
- morphological material can be non-concatenative/ non-monotonic in either the domain of form (subtraction, apophony, metathesis, etc.) or that of content.
- Carstairs-McCarthy: Non-concatenative changes were the origin of morphological structure. “Affixes” came later.
Problem: Non-concatenative Morphology

- Standard responses from those maintaining morpheme-based theories:
  - Denial (with addition of rich phonological mechanisms)
  - Morphologically conditioned lexical allomorphy (no account of systematicity: these don’t behave like suppletion)
  - Morphologically conditioned phonological rules
    - Evacuates notion of phonology as regularities of phonological form; also, these rules have different structural properties – locality of conditioning, disjunction, etc. – than purely phonological rules. [Anderson 1992]
  - Morpheme-specific constraints/rankings (OT variant of rule-based version above)
Problem: Non-concatenative Morphology

- To analyze these alterations in shape as phonological adjustments ‘conditioned’ by (often invisible) morphemes gets things backwards. To the extent some aspect of a word’s shape is a signal for some aspect of its content, it is part of the language’s morphology, not its phonology.

- This is just as true of an account in terms of morpheme-specific constraints or rankings: their effect on word shape is a signal of specific content, just as much as the presence of an affix.

- Instead of weakening the notion of phonology in this way, let us recognize that alteration in shape is a legitimate way a given morphological category can be realized in the relevant forms.
Why do linguists find the morphemic picture so compelling?

Belief that morphology is really just syntax, on a smaller scale.

Belief that admitting anything other than morphemic affixation opens a Pandora’s box of technical possibilities, and thus precludes a restrictive theory.

What is the locus of explanation for cross-linguistic regularities of morphological (and other) structure in language?
Sources of Grammatical Structure

- **Input data**: only systems corresponding to the evidence can be acquired.
- **Learning process**: Only systems accessible through the learning procedure can be acquired.
- **Language Faculty**: only cognitively possible systems can be acquired.
The usual assumption is that restrictiveness is due to strict limitations on the language faculty, in the sense of the space of cognitively possible grammars.

But restrictiveness could also derive from systematic limitations on the properties of the input data to which learners have access.

The input data are determined by the nature of a previously existing grammar and the shaping effects of historical change.

Observed regularities might thus be products of the way change operates (similar to Blevins’ *Evolutionary Phonology*).
We could thus look to linguistic change to see what sort of morphological systems we might expect to emerge.

Where does morphology come from?

“Grammaticalization” of autonomous linguistic elements which become parts of words, and whose content is then analyzed as a property of the word.

Abductive re-analysis of phonological and syntactic modifications whose grounding becomes opaque, and which are re-aligned with coincident morphological properties.
The great majority of morphological markers in most languages are discrete affixes. Doesn’t that mean that non-concatenative morphology is at least un-natural?

The explanation for the predominance of affixation lies in the mechanisms of historical change: a variety of tendencies (commonly united under the name ‘grammaticalization’) have the effect of reducing the independence of words, leading to affixes.

But non-concatenative morphology, too, has its origins in perfectly natural historical developments.
Sources of Non-concatenative Morphology: Apophony

- Non-concatenative morphology with a well-known (if not completely understood) historical source: Umlaut
- OHG gast/gasti > gast/gesti > MHG gast/geste > Gast/Gäste
- OHG: V→[-Back]/__C₀{i,j}
- Reduction of short unstressed vowels to [ə] rendered the environment for Umlaut opaque, but the alternations remained.
- When the phonological basis of the alternation was no longer accessible, new generations of speakers interpreted it as characteristic of the morphological categories with which it was (largely) aligned.
Modern German: \( V \rightarrow [-\text{Back}] / \{ \text{various morphological categories} \} \)

Is Umlaut triggered by \( -ə \) in e.g. Baum/Bäume?

Either \( -ə \) alone, Umlaut alone, or both together can mark PLURAL: *der Druck* ‘pressure, thrust,’ pl. *die Drücke* vs. *der Druck* ‘print, type,’ pl. *die Drucke*; *die Mutter* ‘mother,’ pl. *die Mütter*, etc.

Umlaut differs slightly in scope and effect across categories:

- *Busch/Büsche/buschig* vs. *Tag/Tage/-tägig*
- Comparative Umlaut doesn’t apply to CVC\(ə\)R (cf. *Vater/Väter* vs. *mager/mag(e)rer*) or to *au* (cf. *blau/blauer*).

Morphologization results in the incorporation of a phonological change into the WFRs marking the various categories in which it originally occurred. In some of these, it may now constitute the only marker.
Sources of Non-concatenative Morphology: Apophony

- Icelandic *u*-Umlaut: a→ö /ū/ (barn/börnum)
  - ö generally reduces to u in unstressed syllables (cf. verknaður/verknuðum ‘work’) but not always (akarn/akörnum ‘acorn’)
  - Reduction produces another instance of Umlaut (cf. markaður/mörkuðum ‘market’)

- *u*-Umlaut applies uniformly before endings containing basic /u/ (but not before NSG. -ur, where /u/ is epenthetic).

- Many original instances of short -u were lost historically. *u*-Umlaut now applies in a set of morphological categories originally (but no longer) marked by -u (e.g. Neuter N-APL, strong Feminines N-D-ASG, etc.). The effect is the same in morphological and phonological cases.
Many other cases: e.g., Uralic consonant gradation originally conditioned by syllable structure (e.g. Finnish tt→t, t→d, etc. at the beginning of a short closed syllable: katu/katun ‘street (N/G)’.

Saami languages have lost final nasals, while preserving gradation in the categories originally marked by these: North Saami guolli ‘fish’, GEN/ACC guoli; giehta ‘hand’, GEN/ACC gieđa, etc.

In general, when sound change renders the conditioning factors of a phonological alternation opaque, the surface alternation tends to be preserved but now treated as conditioned by the morphological categories in which it appears. The result is a non-concatenative marker of such a category.
Sources of Non-concatenative Morphology: Truncation

Koasati (Martin 1988, Broadwell 1993):

a. latáf-ka-n ‘to kick something’; PL. lát-ka-n
b. yiḷáp-li-n ‘to tear something down’; PL. yíḷ-ći-n
c. koyóf-fi-n ‘to cut something’; PL. kóy-li-n
d. akocofót-li-n ‘to jump down’; PL. akocóf-fi-n

The final consonants of a great many Muskogean verbs originate as separate suffixes (Haas 1969, Broadwell 1993); Koasati koyof-li reflects earlier /koyo+f=li/

Proto-Muskogean *ho ‘DUAL > NONSG’ infixed as -oh- in Western Muskogean

koyo-oh-f=li > koyoohli > koyooli > koyoli by regular phonology

Coda deletion generalized to rhyme deletion for most verbs (but cf. lobos-li-n ‘extinguish’, PL loboo-li-n)
Why are (Morphological) Metathesis Rules so Rare?

- Morphological metathesis is the type that has been most strongly resisted: accommodating them would seem to require the full power of “the extremely rich transformational notation.” (McCarthy 1981).
- Very few proposed examples have been sustained.
- Janda (1984): historical changes that might lead to them are rare.
- Non-affixal morphology arises when an originally phonological alternation is reanalyzed as morphologically conditioned.
- *Phonological* metathesis processes are quite rare, and thus the opportunity for a language to morphologize such a rule is hardly ever presented.
Why are (Morphological) Metathesis Rules so Rare?

- Phonological metathesis rules are not actually rare. They fall into four general types (Blevins and Garret):
  - **Perceptual** metathesis, in which a phonetic property realized over a multi-segmental span of the utterance becomes mis-allocated and is attributed to a segment other than the one from which it originates in the sequence.
  - **Compensatory** metathesis, in which a foot-peripheral syllable node is lost and the phonetic content originally assigned to it is re-assigned in a way that does not respect the original phonetic sequence.
  - **Coarticulatory** metathesis, in which overlap of gestures in adjacent segments leads to ambiguity with respect to their original order.
  - **Auditory** metathesis, in which fricative noise becomes decoupled from the sequential speech stream and re-assigned to a location other than its original one.

- All of these have in common the fact that there is no conditioning factor external to the segments undergoing the metathesis.
Conclusion: since there is no external conditioning factor for the common types of phonological metathesis, there is no way this factor could become opaque, thus opening the way to its replacement by morphological factors.

Thus, morphologization of a phonological metathesis rule is not a plausible source for morphological metathesis.

What other way is there in which such a rule could arise?

‘Telescoping’ of multiple processes to create a ‘crazy rule’ (Bach & Harms 1972).

A→B, B→C, C→D reanalyzed as A→D
Sources of Non-concatenative Morphology: Metathesis

- Klallam ‘Actual’ (imperfective) forms (Thompson & Thompson 1969):
  a. čkwút ‘shoot’; čúkw’t ‘shooting’
  b. xč’ít ‘scratch’; xích’t ‘scratching’

- Saanich (Montler 1986, 1989):
  a. tkw’ót ‘break it (a stick)’; tákw’tás ‘he’s breaking it’
  b. ƛ’k’w’ót ‘extinguish it’; ƛ’ák’w’t ‘extinguishing it’
  c. ƛ’páx ‘scatter’; ƛ’ápłx ‘scattering’

In Saanich, “[t]he actual is formed by metathesis of the second root consonant and a following vowel in two situations: 1) when the root is CC, i.e. underlyingly vowelless, and it is followed by a suffix beginning with a vowel [...] and 2) when the root has three consonants and the shape CCVC. In both cases C₁C₂VC becomes C₁VC₂C.”
Lummi (Demers 1974):

Only stems with stressed /ə/ show metathesis in the formation of the ‘actual’, and the apparent metathesis in the relevant forms follows from the productive phonology of the language.

The stems involved actually have the underlying shape /'C₁əC₂ə/; a regular process of stress shift moves the stress from the first to the second vowel across a single obstruent, when this vowel is followed by two consonants.

Unstressed schwa is then deleted.
Sources of Non-concatenative Morphology: Metathesis

- 't’sətsən ‘I smashed it’ (non-ACTUAL):
  - Underlying /'t’əsə+tsən/ → t’ə'sə+tsən → 't’sə+tsən
- 't’əst ‘he’s breaking it’ (ACTUAL):
  - Underlying /'t’əsə+t/ with ACTUAL infix /-ʔ-/ = /'t’əʔsə+ +t/
  - Stress shift does not apply; ə-deletion gives 't’əʔs+t
  - ? → Ø / ə [+Obst] gives 't’əs+t
- Apparent metathesis is a product of the phonology, not morphology.
Klallam, Saanich have lost the rules of stress shift and \?-loss, rendering the observed metathesis relation between ACTUAL and non-ACTUAL forms opaque (Montler 1986, 1989).

In Saanich, infixed -ʔ- is the marker of the ACTUAL in other stem classes, but in /CC+VX/ and /CCVCX/ forms, this category is marked by metathesis instead.

Morphological metathesis here does not have its origin in (morphologized) phonological metathesis; it is a ‘crazy rule’ resulting from the re-interpretation of a relation made opaque through the loss of other rules.
Conclusions

- Most morphological markers are affixal, arising through the ‘grammaticalization’ of independent elements.
- When sound change has the effect of rendering the conditions of a phonological alternation opaque, the surface pattern is often preserved by treating it as morphologically conditioned.
- Similarly, when a sequence of sound changes gives rise to systematic differences between one morphological category and another, but where no overt affix appears to mark the distinction, the difference in sound shape alone can come to be treated as the marker of the relevant category.
Conclusions

- While the non-concatenative markers of morphological categories that result from such developments are less common than affixes, they are apparently the regular outcome of normal historical change.

- Speakers show no reluctance to make these re-analyses.

- Differences in shape between morphologically distinct forms, whether they consist in the addition of material (an affix) to one or not, are perfectly valid realizations of morphological content. (as recognized already by de Saussure)

- Theories of morphology that purport to capture the nature of speakers’ knowledge of word structure thus cannot be confined to purely affixal, concatenative models, including those based on the classical morpheme.