Chapter 8

Transparency and opacity
with rules and constraints

Rules

- Underlying or input form (phonology)
- Surface or output form (phonetics)
- Examples of rules?

- If more rules, then they could be ordered
  - We actually already saw this in English plural (bush+es)
- E.g. <u>handball</u> in English
  - what rules could apply? order?

Rule ordering

- /bush + z/
  - first: i-insertion   [bush + ez]
  - second: voice assimilation d.n.a.
    - opposite order: wrong result

- /hand + ball/
  - first: d-deletion   [han + ball]
  - then: n-assimilation [ham + ball]

Ordering of rules

- Is there a "natural" order of rules?
- sometimes: **special** rule applies before **general** rule (which no longer applies)
  - relevant in phonology and morphology
  - e.g. <u>ox</u>-<u>oxen</u>, "special" rule of plural formation applies instead of (/before) general rule
  - cf. "this morning, this evening", but not "this night". Why?

Canadian English raising

- Canada: special ai and au vowels
        out and about
  raising = clipping

(8) /ai/-raising before voiceless C

aɪ → ʌɪ / ____ [C, –voice]

e.g. in *li<u>f</u>e*, *ri<u>c</u>e*, *righ<u>t</u>*

Canadian English

"… and with its beak loosened the bone, till at last it got it <u>out</u>."
<u>Voxforge-vf30-12</u> (flac file)

"but surely I was <u>right</u> in trying to revenge him;"
<u>Voxforge-vf30-27</u> (flac file)

http://www.voxforge.org

Flapping / tapping

(7) Flapping rule:

t,d → ɾ / V ___ V[-stress]

e.g. *reading*, *letter*
but not in *Hilda*, *pad* or *adore*
note that [ɾ] is [+voice]

Unpredictable rule ordering

- relevant rules:

$$(7) \quad \text{FLAPPING} \quad [\text{t,d}] \rightarrow ɾ / [-\text{cons}] \underline{\quad} \begin{bmatrix} V \\ -\text{stress} \end{bmatrix}$$

$$(8) \quad \text{PRE-FORTIS CLIPPING} \quad [+\text{voice}] \rightarrow [-\text{long}] / \underline{\quad} [-\text{voice}]$$

Two orderings: I

- Raising precedes Flapping

write	*writing*	*ride*	*riding*
/rait/	/raitiŋ/	/raid/	/raidiŋ/
ʌ	ʌ	--	--
--	ɾ	--	ɾ
/rʌit/	/rʌiɾiŋ/	/raid/	/raiɾiŋ/

Two orderings: II

- Flapping precedes Raising

write	*writing*	*ride*	*riding*
/rait/	/raitiŋ/	/raid/	/raidiŋ/
--	ɾ	--	ɾ
ʌ	--	--	--
/rʌit/	/raiɾiŋ/	/raid/	/raiɾiŋ/

Conclusion for ordering

→ if two dialects have the same two rules in opposite orders, then the order obviously cannot *always* be predicted on the basis of general principles

Rule ordering

- Different types

- "Feeding" : Rule A creates forms to which rule B applies

- Example: English   /handbɔl/
  t/d-deletion   0
  nasal assimilation   m

Ordering types

- "Bleeding": Rule A takes away sequences to which rule B *would have* applied

- English plural formation (/z/):
  - epenthesis of schwa after s-sounds *bleeds* voicing assimilation in words like bus+es

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Rule ordering

- Counterfeeding: Rule A *would have* fed rule B *if* they had applied in the opposite order

- Lardil: /ŋaluk/
  - B: Final lowering   --
    - V → [a] at the end of the word
  - A: Non-apical deletion   ø
    - A noncoronal is deleted at the end of the word

    surface   [ŋalu]

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Rule ordering

- Counterbleeding: Rule A *would have* bled rule B *if* they had applied in the opposite order

- Lardil   /papi-uɻ/
  - B: /w/ epenthesis   w
    - w inserted between Vs
  - A: vowel deletion   ---
    - in VV, first one is deleted

    surface form: [papiwuɻ]

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Historical linguistics

- Some researchers in the past thought that languages tended to order their rules in an "efficient" way, for example in a feeding order
  - diachronic phonology, language change

- But this turned out not to be the case ☺

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Homework

- Read chapter carefully and *think about rules*

- Section 8.5 (opacity in OT) is optional

- Exercises: Qs 76 and 77

- Thank you

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