

## Class 4 (Week 2, T): Upwards interfaces IV, phonology-morphology interface

### To do

- Read **Lloret 2004** for this Thursday (Oct. 7)
- For Tuesday (Oct. 13), read **Pierrehumbert 2002**

\_\_\_\_\_ will present Pierrehumbert's arguments and model

\_\_\_\_\_ will discuss how Pierrehumbert's approach would apply (or not!) to some of the cases we're seeing this week (morphological-paradigm effects)

- For next Thursday (Oct. 15), read **Wagner 2012**

\_\_\_\_\_ will present Wagner's arguments and examples

\_\_\_\_\_ will discuss how Wagner's approach would apply (or not!) to some of the cases we saw in weeks 0 and 1 (phrasal phonology and the like)

**Overview:** There are many subtopics that could fall under the heading “phonology-morphology interface”. The ones we'll look at are: morphology → phonological domains, phonology → morpheme shape and order, and, next time, morphological paradigms.

### 1. Edge-driven p-words

I don't want to spend *too* much time on this, because the issues are very similar to those we saw for p-phrases.

#### 1.1 What is a p-word for?

- Domain of footing

- Samoan (Zuraw, Yu & Orfitelli 2014): right-aligned trochees

(móe)	‘sleep’	mo(é-ŋa)	‘bed’	<i>this suffix must be included in the domain</i>
(mái)le	‘dog’			<i>*Aí outranks foot alignment</i>
va(ʔái)	‘look’	(vàʔa)-va(ʔái)-ŋa	‘looking after’	

- What about this suffix, though?

(lòka) ‘arrest’ (lòka)-(ína) ‘arrest-ergative’

- Domain of phonotactic restrictions? (Though there could also be smaller domains—root, foot (Harris 2012))
  - I'm actually not so convinced there are great examples that don't follow from footing or syllabification

- Domain of segmental processes?
  - Selkirk 1980, Classical Sanskrit *nati* rule—brief reminder

p-word

$n \rightarrow \bar{n} / \dots \{s, r, \bar{r}, \bar{r}\} [-cor]_0 \_ \{V, n, m, y, v\} \dots$

(stem suffix) <sub>ω</sub>	karman + ā	>	karmaṅā
	dūṣ + anam	>	dūṣaṅam
(stem) <sub>ω</sub> (stem) <sub>ω</sub>	brahman - yaḥ	>	brahmanyah
	kṣip - nuḥ	>	kṣipnuḥ

- But Raffelsiefen 1999 argues that the good examples in English are all actually just the result of footing/syllabification (aspiration, glottalization, tapping)

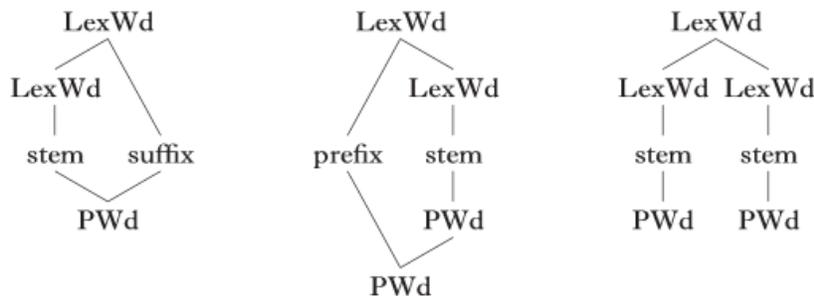
e.g. (im)<sub>ω</sub>([p<sup>h</sup>]recise)<sub>ω</sub> : obligatory place assimilation of *in-* can't depend on p-word structure

- Unit of speech planning (Wheeldon & Lahiri 1997; Wheeldon & Lahiri 2002; Sternberg et al. 1978)
  - Method: prepared sentence production: you see *het water* ('the water'), you hear *Wat zoek je?* ('What do you seek?'). You have a couple of seconds to prepare a full-sentence response, then you respond when you hear the signal. How long does it take you to initiate speech ("production latency")?
  - Result: time to respond depends on *number of p-words* in the sentence

2 p-words: 380 msec	(ik zoek het) <sub>ω</sub> (water) <sub>ω</sub>	'I seek the water'
2 p-words: 380 msec	(ik zoek) <sub>ω</sub> (water) <sub>ω</sub>	'I seek water'
3 p-words: 394 msec	(ik zoek) <sub>ω</sub> (vers) <sub>ω</sub> (water) <sub>ω</sub>	'I seek fresh water'

### 1.2 What determines p-word boundaries?

- Very commonly: left edge of each lexical word initiates a new p-word



(Zuraw, Yu & Orfitelli 2014, p. 273)

- But there can be many wrinkles, e.g....
  - Disyllabic suffix gets to form its own p-word
  - Suffix status depends on whether it's V-initial or C-initial (Raffelsiefen)

**1.3 Against p-words?**

- Worst case would be as in Pak & Friesner (2006) for phrases: contradictory domains for different processes
- Schiering, Bickel & Hildebrandt (2010): a language typically needs to define 2 or 3 domains between the foot and the phonological phrase (though not necessarily contradictory)

**1.4 To find out more about p-words**

- Hall & Kleinhenz 1999: a collection of papers
- Website for a proseminar we did in 2006 on p-words (includes bibliography): [http://www.linguistics.ucla.edu/people/zuraw/courses/prosord\\_2006.html](http://www.linguistics.ucla.edu/people/zuraw/courses/prosord_2006.html)
- May 2008 special issue of *Linguistics*

**2. Allomorphy vs. normal phonology**

- Example for discussion: English *a/an* alternation. What governs it? How should it work?

- Tranel 1996 gives first thorough OT treatment of *allomorphy*, in the sense of alternations between allomorphs that can't be explained by the regular phonology.
  - French final consonants: 3 types

(2)

		liaison contexts		elsewhere re (pause)	type of final-C behavior
		before V	before C		
A. petit	"small"	peti.t V	peti<t> . CV	peti<t> //	latent: (t)
B. net	"clear"	ne.t.V ~ ne.t V	ne.t . CV	ne.t //	fixed: t
C. huit	"eight"	hui.t V	hui<t> . CV	hui //	mixed: (t)-t

(p. 1 of ROA ms.)

- Tranel's solution: /pəti(t)/, /nɛt/, {/qi(t)/, /qit /}
  - Where "(t)" is missing an X slot on the skeletal tier
  - When an underlying representation provides multiple options, the output form can be in correspondence to any of them without faithfulness penalty.

- Instead of getting into the nuts and bolts of how consonants get realized or not in this analysis, let's try applying Tranel's general idea to Korean suffixes.

V__		C__	
k <sup>h</sup> i-ko	'big and'	k <sub>Λ</sub> m-ko	'black and'
k <sup>h</sup> i-n	'big'	k <sub>Λ</sub> m-in	'black'
k <sup>h</sup> i-mni'-ta	'big- <i>formal</i> '	k <sub>Λ</sub> m-simni-ta	'black- <i>formal</i> '
k <sup>h</sup> i-mj <sub>Λ</sub> n	'if big'	k <sub>Λ</sub> m-imj <sub>Λ</sub> n	'if black'
k <sup>h</sup> i-si-ta	'big- <i>honorific</i> '	k <sub>Λ</sub> m-isi-ta	'black- <i>honorific</i> '
k <sup>h</sup> o-ka	'nose- <i>nominative</i> '	pam-i	'night- <i>nominative</i> '
k <sup>h</sup> o-nin	'nose- <i>topic</i> '	pam-in	'night- <i>topic</i> '
k <sup>h</sup> o-wa	'nose and <sub>1</sub> '	pam-kwa	'night and <sub>1</sub> '
k <sup>h</sup> o-raŋ	'nose and <sub>2</sub> '	pam-iraŋ	'night and <sub>2</sub> '

### 3. Can phonology also influence morpheme order?

- Idea in Prince & Smolensky (1993), McCarthy & Prince (1993): the phonological grammar is responsible for morpheme position
  - Input is a bag of morphemes ( $\{/kæt/, /z/\}$ )
    - or maybe there is morphological structure that the surface order should be faithful to (see Ryan 2010 on conflict between syntactic scope and “morphotactics”)
  - ALIGN constraints determine surface order
    - Let’s try it for the simple case of *cats*
- 
- This could lead to some interesting outcomes, especially if the ALIGN constraints are non-binary—that is, they care not just whether a morpheme is at an edge, but how close it is.
    - Kashaya (Buckley 1997, data from Oswald 1961): Pomoan, California, “several dozen” speakers (<http://linguistics.berkeley.edu/~survey/languages/kashaya.php>)

<i>plain verb</i>	<i>pluractional I</i>	
a) ɖahqotol-i	ɖahqotolʔa-i	‘fail (to do)’
b) ɖit’an-i	ɖit’anʔa-i	‘bruise by dropping’
c) ɖuhlun’-i	ɖuhlun’ʔa-i	‘pick (berries)’
d) ɖajetʃ’-i	ɖajetʃ’ʔa-i	‘press hand against’
e) bilaq <sup>h</sup> am-i	bilaq <sup>h</sup> aʔam-i	‘feed’
f) simaq-i	simaʔaq-i	‘go to sleep’
g) qaʃoq <sup>w</sup> -i	qaʃoʔaq <sup>w</sup> -i	‘get well’

<i>plain</i>	<i>pluractional II</i>	
h) ɖatʃa-i	ɖatʃaʔ-i	‘grab’
i) qawa-i	qawaʔ-i	‘chew’
j) sis’a-i	sis’aʔ-i	‘leach’
k) pihmi-i	pihmiʔ-i	‘see in detail’
l) p <sup>h</sup> anem-i	p <sup>h</sup> aneʔm-i	‘punch’
m) p <sup>h</sup> iʔjaq-i	p <sup>h</sup> iʔjaʔq-i	‘recognize’
n) p <sup>h</sup> aʔʃ’oq <sup>w</sup> -i	p <sup>h</sup> aʔʃ’oʔq <sup>w</sup> -i	‘stab’

#### *additional info*

o) /ʔusaq-wa/	[ʔusahwa]	‘did he wash his face?’
p) /sima:q-meʔ/	[sima:hmeʔ]	‘go to sleep!’
q) /qaʃo:q-w-ʔh/	[qaʃo:hʔh]	‘he isn’t getting well’

- Yu (2007a, 2007b): what's wrong with this approach
  - Can't capture a case like Leti (Blevins 1999; Austronesian, Indonesia, endangered), where *-ni-* and *-i-* are infixes, though phonotactically they would make better prefixes
 

kaati	‘carve’	k-ni-aati	‘carving’
dèdma	‘smoke’	d-i-èdma	‘smoking’
  - unless their ALIGN constraints are ranked lower than stems’?
  - Instead, an affix has a phonological subcategorization frame, such as “after a stressed syllable”
    - This could still be captured with ALIGN, but not word-edge-oriented ALIGN
- Paster (2009) goes further: morphology feeds phonology (no backtracking)
  - Morpheme order can be determined by a subcategorization frame like *ni* : [ [C] \_\_ ... ]
  - Morphology can see the underlying phonological content of morphemes, but not the eventual surface forms
- Other good places to look for cases if you want to investigate: Wolf 2008; Myler in review

#### 4. One last thing: phonological influences on how many times a morpheme occurs?

##### 4.1 Multiple exponence

- Caballero 2011: Choguita Rarámuri (Uto-Aztecan, Mexico, 1000 speakers)
- Pluractionals can be marked with prefix, consonant mutation, *or both*

	Singular	Pluractional	Gloss	
(3)	čóni	o-čóni	‘become black’	[AH 05 2:24/EI] <sup>3</sup>
	siríame	i-séríkame	‘governor’	[BF 05 1:156/EI]
(4)	kapórame	kabórame	‘be round’	[BF 05 1:155/EI]
	remarí	témuri	‘young people’	[BF 05 1:155/EI]
(5)	kipá	i-kibá	‘snow’	[SF 05 2:8/EI]
	sitákame	i-sirákame	‘be red’	[BF 05 1:157/EI]
	mukí	o-mugí	‘woman’	[BF 05 1:156/EI]
	ranára	a-tanára	‘offspring’	[BF 05 1:156/EI]

(p. 3)

- Plus similar phenomena in applicatives (vowel mutation + suffix, or suffix + suffix), causatives (suffix + suffix).
- Caballero argues this happens when the output of the Stem 1 level (the part in [...] below) looks “less morphologically segmentable” (p. 8).
  - /bučé, ri/ → (bučé)ri or (bučér), to avoid an unfooted syllable
  - If the post-tonic deletion option is taken, the result undergoes suffixation again at Stem 2 level (which also requires a final V)

Table 2: Stem shape condition on derives stems with ME

Pattern	Prosodic generalization	Examples
Causative doubling	[... ' σ -C]-ti	[bučé- <b>r</b> ]- <b>ti</b> -ma [aka-rá- <b>r</b> ]- <b>ti</b> -ma
Multiple applicatives	[... ' σ -C]-ki	[sú- <b>n</b> ]- <b>ki</b> -ma [pá- <b>s</b> ]- <b>ki</b> -ri

(p. 8)

#### 4.2 Haplology

- Classic example (MacBride 2004, pp. 3-4):

	singular	plural
non-possessive	[dag]	[dag-z]
	[aks]	[aks-in]
possessive	[dag-z]	<b>[dag-z]</b>
	[aks-iz]	[aks-in-z]

- MacBride 2004: Maybe the reason why the same phonological material can do double duty is that plurality and possession are just morphemes that want the word to end in [z].
  - Careful, though: can we still get the plural or possessive of *maze*?
  - MacBride’s constraints can refer to stem boundaries, like so PLURAL : ]<sub>stem</sub> Z
  - Because plural and possessive happen to be phonologically identical (and their constraints don’t stipulate “novelty”), they can share a segment.
- How MacBride gets “subtractive” morphology
  - There are languages that do this more robustly, but I’ll just use a small example from French that could be gaining in generality

<i>singular</i>	<i>plural</i>	
œf	ø	‘egg’
bœf	bø	‘steer, ox’
ananas	anana	‘pineapple’ (not in Canada, probably not all speakers)
byt	by	‘goal’ (maybe some European speakers)

/ananas, PLURAL/	DEP	PLURAL: Segment] <sub>word</sub> where Segment] <sub>word</sub> is novel	MAX-C
ananas		*!	
☞ anana			*
ananasa	*!		

(except that in French the PLURAL constraint applies only to a small set of words)

#### 5. Next time, morphologically related groups of words: paradigm uniformity, paradigm gaps

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