Class 17: Phonology-syntax interface

To do
- Malagasy strata assignment due Friday.
- Next reading? None! Work on your project.
- Project: turn in a 1-page abstract by end of this week

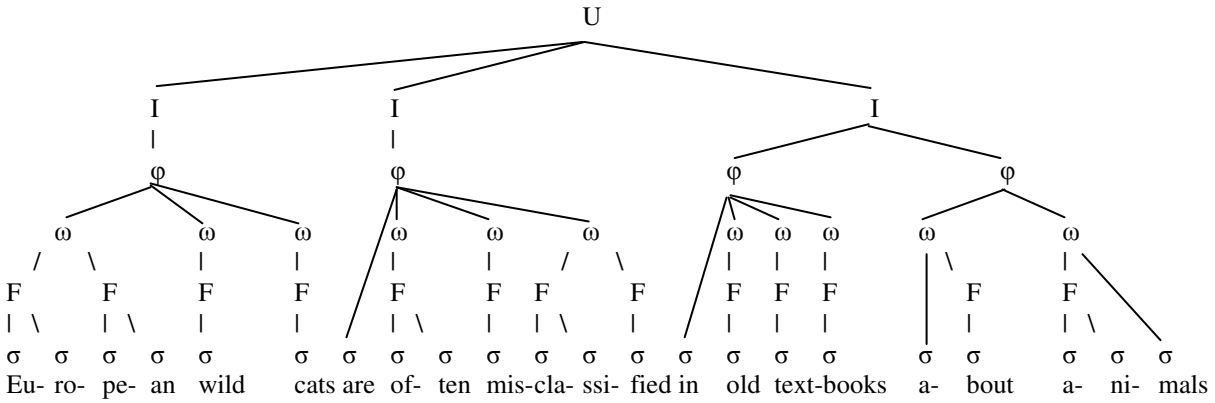
Overview: Last week we talked about the phonology-morphology interface. How about syntax? We'll look in more detail at the Selkirkian model you read about—including how to implement it in OT—and some alternatives.

1 The prosodic hierarchy (Variant proposals exist, of course)

U: utterance
|
I: intonational phrase
|
φ: phonological phrase
|
ω: p-word (aka phonological word, prosodic word)
|
F: foot
|
σ: syllable
|
segment

Bibliographic note
- Papers by Selkirk in the late 1970s and early 1980s first proposed this hierarchy: Selkirk 1978; Selkirk 1980a; Selkirk 1980b; Selkirk 1981.
- These papers defer discussion of certain questions to a forthcoming synthesis$_i$, and by the time it$_i$ came out (Selkirk 1984), Selkirk had decided against the foot, p-word, and p-phrase.
- For a book-length presentation of the idea, see Nespor & Vogel 1986.

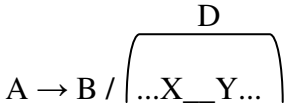
2 Example (loosely adapted from Nespor & Vogel 1986, henceforth N&V)



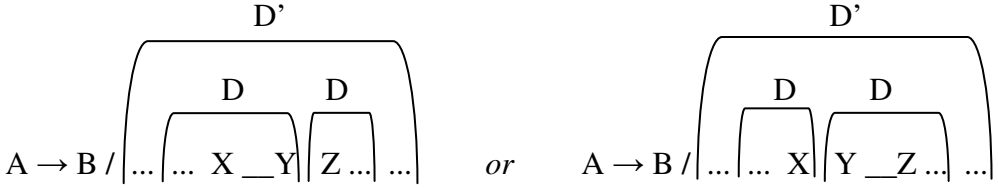
3 How domains work in Selkirk's original model

(not her notation)

- domain span rules: the structural description must be contained within a certain domain



- domain juncture rules: the structural description refers to the boundary between two domains D, and is contained within a domain D' (D' is higher than D, but not necessarily the immediately dominating level)

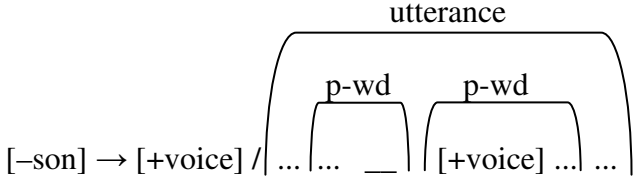


- domain limit rules: the structural description is at the edge of a domain D

4 Case study: Sanskrit p-word (Selkirk 1980a)

- A non-compound N, A, or V constitutes a p-word
- In a compound, the first stem constitutes a p-word, and the second stem plus suffixes constitute another p-word.

Example of word-juncture rule: Final Voicing (p. 115)



$(stem)_\omega(stem)_\omega$ *(compound)*	sa**t** – aha	>	sa**d**-aha	'good day'
	samya**k** uktam	>	samya**g** uktam	'spoken correctly'
$(stem)_\omega(stem)_\omega$	parivra**ṭ** ayam	>	parivra**ḍ** ayam	
	ta**t** namas	>	ta**d** namas	'that homage'
$(stem\ suffix)_\omega$	prāñ**c** + aḥ	>	prāñ**c**aḥ	
	va**c** + ya	>	va**c**ya	
	maru**t** + i	>	maru**t**i	'wind (loc.)'

- How do we know that a p-word juncture must intervene between target and following segment?

Why do we have to specify the superordinate domain of utterance? Selkirk claims that there are rules (in other languages) where the two p-words in question must be in the same p-phrase.

Example of word-<u>limit</u> rule: Final Deaspiration/Devoicing (p. 120)

$$[\text{–son}] \rightarrow \begin{bmatrix}\text{–voice}\\ \text{–s.g.}\end{bmatrix} / \overset{\text{p-wd}}{\overbrace{\text{... C\_\_}}}$$

$(\text{stem})_\omega(\text{stem})_\omega$	la**bh** – sye	>	la**p**-sye	'I shall seize'
	agnima**th**	>	agnima**t**	'producing fire by friction'
	triṣṭu**bh**	>	triṣṭu**p**	
$(\text{stem})_\omega$	vīru**dh**	>	vīru**t**	'plant'
	ta**d**	>	ta**t**	
	suhṛ**d**	>	suhṛ**t**	

Crucially, these changes are supposed to occur regardless of the word's context (e.g., utterance-medial vs. utterance-final).

Example of word-<u>span</u> rule: nati in Classical Sanskrit (p. 123)[1]

$$\text{n} \rightarrow \text{ṇ} / \overset{\text{p-word}}{\overbrace{\text{... \{ṣ, r, ṛ, ṝ\} [–cor]}_0 \text{\_ \{V, n, m, y, v\}...}}}$$

$(\text{stem suffix})_\omega$	kar**m**a**n** + **ā**	>	karma**ṇ**ā
	dū**ṣ** + a**n**am	>	dūṣa**ṇ**am
	b**ṛ**mh + a**n**am	>	bṛmh + a**ṇ**am
	mu**ṣ** + **nā** + ti	>	muṣ**ṇ**āti
$(\text{stem})_\omega(\text{stem})_\omega$	br**a**ḥma**n** - **y**aḥ	>	braḥma**n**yaḥ
	k**ṣ**ip - **nu**ḥ	>	kṣip**n**uḥ

- Putting aside for now the question of where the p-word boundaries come from, how could we express p-word juncture, limit, and span in OT terms? I think there are multiple options...

[1] Fake data: Selkirk gives data from Vedic Sanskrit, where *nati* was a p-phrase-span rule, and mentions that in Classical Sanskrit the rule was p-word-span, though it remained fossilized in some compounds. I've just taken her Vedic data and modified the compound examples, so it's probably wrong in various ways.

5 Counteranalysis I: boundary symbols

Let's use a richer inventory of symbols than SPE:

%: utterance boundary
@: intonational-phrase boundary
$: p-phrase boundary
#: p-word boundary

(assume a set of rules to insert these boundary symbols in the right places)

- Final Voicing (p-word-juncture on utterance domain)

  [–son] → [+voice] / __# ($* @*)* # [+voice]

- Final Deaspiration/Devoicing (p-word-limit)

  $$[\text{–son}] \rightarrow \begin{bmatrix}\text{–voice}\\ \text{–s.g.}\end{bmatrix} \;/\; \_\_\#$$

- Classical *nati* (p-word-span)—if syllable and foot boundaries exist, assume the theory allows them to occur anywhere in string matching the structural description.

  n → ṇ / ... {ṣ, r, ṛ, ṝ} [–cor]$_0$ _ {V, n, m, y, v}...

- Vedic *nati* (p-phrase-span)

  n → ṇ / ... {ṣ, r, ṛ, ṝ}#* ([–cor]$_0$#*)* _ #*{V, n, m, y, v}...

Selkirk on boundary symbols

Selkirk objects to the duplication of boundary symbols that occurs in domain-span rules with long structural descriptions:

Hypothetical intonational-phrase-span rule:

$$\text{(i) } A \rightarrow B \;/\; \overbrace{\text{...XY\_\_WZ ...}}^{\text{int-phrase}}$$

becomes

(ii) A → B / X (#* $*)* Y (#* $*)* __ (#* $*)* W (#* $*)* Z

This is no more valued (by the brevity metric of SPE) than the presumably unattested

(iii) A → B / X (#* $*)* Y (#*)* __ (#* $*)* W ($*)* Z

(In Selkirk's theory this would translate into a messy disjunction of cases, some of which may be uninstantiable by well-formed prosodic trees).

6 Counteranalysis II: lexical phonology

	sat, aha	parivraṭ, ayam	vac	labh, sye	triṣṭubh	karman	braḥman, yaḥ
suffixation	--	--	vac + ya	--	--	karman + ā	--
nati (was word-span)	--	--	--	--	--	karma**ṇ**ā	--
Final Deaspiration/Devoicing (was word-limit)	--	--	--	la**p**, sye	triṣṭu**p**	--	--
compounding	sat + aha	--	--	lap + sye	--	--	braḥman + yaḥ
syntax	--	parivraṭ ayam	--	--	--	--	--
Final Voicing (was word-juncture on utterance domain)	sa**d**aha	parivra**ḍ** ayam	--	--	--	--	--

- Discuss...

7 Italian case study (Nespor & Vogel 1986, spread across various chapters)

Then we'll go into more depth about each level in general.

Utterance-span rule: Gorgia Toscana (Tuscan variety, Vogel 1997 p. 66)[2]

utterance

$$\begin{Bmatrix} p \\ t \\ k \end{Bmatrix} \rightarrow \begin{Bmatrix} \Phi \\ \theta \\ h \end{Bmatrix} / \overbrace{\text{...[–cons] \_\_ [–cons]...}}$$

[((lo 'sai **h**o'm ɛ dif'fiʃile)$_{IP}$ (**h**o'noʃʃe k'kweste '**h**ɔse)$_{IP}$)]

/k/ /k/ /k/

it know how is difficult know these things

'You know how difficult it is to know these things.'

Intonational phrase-span rule: Tuscan intervocalic spirantization (N&V)[3]

((Santo [ʃ]elo)$_{IP}$ ([tʃ]'e un verme in questa [ʃ]ilie[ʒ]a)$_{IP}$)$_{U}$

/tʃ/ /tʃ/ /dʒ/

holy sky there's a worm in this cherry

'Good heavens, there's a worm in this cherry.'

intonational phrase

$$\begin{Bmatrix} tʃ \\ dʒ \end{Bmatrix} \rightarrow \begin{Bmatrix} ʃ \\ ʒ \end{Bmatrix} / \overbrace{\text{...[–cons] \_\_ [–cons]...}}$$

[2] Nespor & Vogel treat Gorgia Toscana as an intonational-phrase-span rule, but say that their data show occasional spirantization across intonational-phrase boundaries, too. Vogel 1997 treats the rule as utterance-span.

[3] ...but Vogel 1997, without mentioning Intervocalic Spirantization, says that "rules that were originally interpreted as IPh rules are more accurately analysed as PU [phonological utterance] rules, and that the IPh only serves as the domain of intonational contours, not phonological rules" (p. 65)

Phonological-phrase-span rule: Northern Italian Stress Retraction

(Sára státa ammazzata)$_{\varphi}$ (la vipera)$_{\varphi}$ < *sará*
will.have been killed the adder
'the adder has probably been killed.'

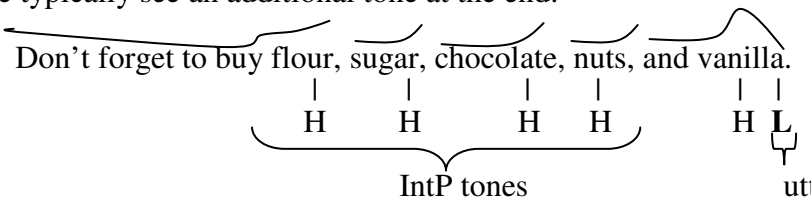
(le cittá)$_{\varphi}$(mólto nórdiche)$_{\varphi}$(non mi piacciono)$_{\varphi}$ *(*cítta)*
the cities very nordic not me please
'I don't like very Nordic cities.'

(le cítta nórdiche)$_{\varphi}$(non mi piacciono)$_{\varphi}$ *(*cítta)*
the cities nordic not me please
'I don't like Nordic cities.'

I'll skip the p-word example (primary stress) since we already did Sanskrit examples

8 Utterances in more depth

- Rules for utterance construction thought to allow lots of variation within language, but in similar ways across languages.
- Utterance ≈ sentence, but sentences can sometimes combine into an utterance.
- We typically see an additional tone at the end:



(there are also some Ls in between associated to the stressed syllables, but we won't worry about them)

Example: American English tapping (Nespor & Vogel 1986). Optional but possible:

((My brother bough**[ɾ]** a parrot last week.)$_{IntP}$) $_{U}$

((Camelo**[ɾ]**)$_{IntP}$, (our pet rabbit)$_{IntP}$, (usually hides when guests come)$_{IntP}$)$_{U}$

((Although that was not the first story he wro**[ɾ]**)$_{IntP}$, (it was certainly the last one)$_{IntP}$)$_{U}$

((Please have a sea**[ɾ]**.)$_{IntP}$ (I'll be right back)$_{IntP}$)$_{U}$

- Let's assume that tapping is impossible in the example below. So where are the U boundaries? Where's Sco**[tˠ]**? Orville, open the window, will you?

It's not well understood what allows some pairs of sentences to be in same U, but it seems (N&V)…

- They have to both be short.
- The speaker can't actually pause in between (lengthening of the end of the first sentence is fine).
- They have to be addressed to the same listener.
- There has to be some syntactic, semantic, or pragmatic relationship between the two, such as
  - Ellipsis: Martha didn't invite Sco**[ɾ]**. I did ___.
  - Anaphora: Where's Pa**[ɾ]**$_{i}$? I need him$_{i}$.
  - *and* is implied: You invite Charlo**[ɾ]**. I'll invite Joan.
  - *therefore* or *because* is implied: It's la**[ɾ]**. I'm leaving. Take your coa**[ɾ]**. It's cold out.

Example 2: r-linking in non-rhotic English (Gussenhoven & Jacobs 1998, Nespor & Vogel 1986)[4]

- [ɹ] is inserted between {ɔ,ɑ,ə}(or other vowels, depending on the dialect) and a following V. Underlying *r* gets pronounced only when followed by a V.

  gnaw[ɹ]ing lu[ɹ]ing
  Anna [ɹ] arrived a fai[ɹ] idea
  Hi Sheila[ɹ]! Everything all right?
  Hide the vodka[ɹ]. Alvin's coming.

- Why not here?

  Hi Lana[ɹ]! *Open the window, Sheila.

Some other alternations whose domain is claimed to be the U

- voicing assimilation in obstruent clusters in Sanskrit (Selkirk 1980a)
- voicing assimilation in obstruent-C clusters in Mexican Spanish (Harris 1969)
- final devoicing in Mexican Spanish

9 Intonational phrase in more depth

- In general, the end of an IntP is marked by a tone of some kind.
- IntPs vary a lot depending on speaking rate and style, but similarly across languages.
  - Caveat: Accentual phrases aren't in the original hierarchy but have been proposed for some languages instread of the phonological phrase. They also vary a lot by rate and style.

'Core' subject-predicate sentence usually forms one IntP. As for the rest...

- Parenthetical remarks, non-restrictive relatives, tag questions, vocatives, interjections, and extraposed adjuncts usually get their own IntPs (Nespor & Vogel 1986).

  (Writers from across Canada gathered,) (appropriately enough,) (at the Arts and Letters Club on Thursday night […])[5]

  (Larry Spinak,) (who goes by the nickname Spi,) (is another of those people who come up with projects that make you desire to stay home from work and carve some wood.)[6]

  (In press reports of the incident,) (his name wasn't mentioned.)
  vs. (His name wasn't mentioned in press reports of the incident.)

- An additional IntP boundary can go after a long subject DP, or after each item in a list (and even at the end of a long list).

  (The most important reason why using tables for layout is bad) (is that they don't degrade gracefully.)[7]
  cf. (The reason is that they don't degrade gracefully)

  (Merck discovers), (develops), (manufactures) (and markets) (a broad range of innovative products to improve human and animal health,) (directly and through its joint ventures.)[8]
  cf. (Merck manufactures and markets a broad range ... health)

[4] see McCarthy 1999 for additional restrictions in one American dialect

[5] From the Toronto *Globe and Mail*. These are just my own guesses at how I might phrase these sentences.

[6] From carvingworld.com, "an online resource for woodcarvers and woodworkers".

[7] From davespicks.com

[8] From merck.com

Example: Dutch adverbial stress retraction (Gussenhoven & Jacobs 1998)[9]
(**bold** marks biggest stresses of sentence)

(Naar de **wá**terstanden luistert ze al**tíjd**)$_{IntP}$
to the water.level.reports listens she always
'To the water level reports, she'll always listen.'

(Waar ze al**tíjd** naar luistert)$_{IntP}$ (zijn de **wá**terstandend)$_{IntP}$
where she always to listen is the water.level.reports
'What she'll always listen to is the water level reports.'

(**Ál**tijd luistert ze naar de **wá**terstanden)$_{IntP}$
always listens she to the water.level.reports
'Always she'll listen to the water level reports.'

(Ze luistert **ál**tijd naar de **wá**terstanden)$_{IntP}$
she listens always to the water.level.reports
'She'll always listen to the water level reports.'

Example: nasal place assimilation in Spanish (from Nespor & Vogel)
/n/ /n/ /n/
(Tenía**[n̪]** diez ca**[ŋ]**guros en u**[m]** parque muy cerca de aquí)
they.have 10 kangaroos in a park very close of here

- Why doesn't assimilation apply in these examples:
/n/ /n/ /n/ /n/
(U**[ŋ]** gra**[m]** balcó[**n**]), (como sabe[**n**]), (puede ofrecer mucho placer)
a large balcony as they.know can offer much pleasure

/n/ /n/ /n/ /n/
(Carme**[n]**), (cá**[n̪]**tanos una nueva ca**[n̪]**ció[**n**]), (por.favor)
Carmen sing-us a new song please

10 P-phrase in more depth (N&V's rules)

- Rules for phonological-phrase construction thought to allow little variation and to differ parametrically across languages
  - chief parameter: direction of p-phrase formation, thought to be derivable from syntax
- Italian: Moving from right to left, start a p-phrase with a constituent containing a lexical head X (prepositions don't count; copulas and auxiliary verbs are iffy) and end it when you hit a constituent containing a lexical head outside of X's maximal projection (or the beginning of a sentence).
  - Optionally, if X's complement forms a non-branching (i.e., single-word) p-phrase to the right of X, join it into X's p-phrase.

English examples (same rule as Italian)
(Jennifer)$_{\varphi}$(discovered)$_{\varphi}$(that her attic)$_{\varphi}$(had been invaded)$_{\varphi}$(last winter)$_{\varphi}$(by a family)$_{\varphi}$(of squirrels)$_{\varphi}$

(My sister)$_{\varphi}$(còmmandéers)$_{\varphi}$(trúcks)$_{\varphi}$(for fun)$_{\varphi}$
or (My sister)$_{\varphi}$(cómmandèers trúcks)$_{\varphi}$(for fun)$_{\varphi}$

English Rhythm Rule is p-phrase-span: *thìrtéen mén* → *thírtèen mén*

[9] For the last three sentences, I'm just guessing at the glosses and translations—maybe Jos can help!

11 How to get prosodic domains in OT? Let's try it for Chi Mwiini (Kisseberth 2000)

Dialect of Swahili formerly w/ 40,000 speakers in Somalia; most emigrated to Kenya.

- Vowel length is contrastive—minimal pairs:

x-ku.la	'to grow'	x-kuu.la	'to extract'
x-pe.le.ka	'to send'	x-pee.le.ka	'to be sweepable'

- LENGTHEN: **within a p-phrase** (i.e., when not phrase-final), word-final vowels lengthen

na	'by'	n**aa** no.ka	'by a snake'
hu.jo	'one who eats'	hu.j**oo** mbe.le	'the one who eats first'

/hujo mbele/	LENGTHEN	DEP-μ
☞ (hu.joo mbe.le)$_{\text{p-phrase}}$		*
(hu.jo mbe.le)$_{\text{p-phrase}}$	*!	

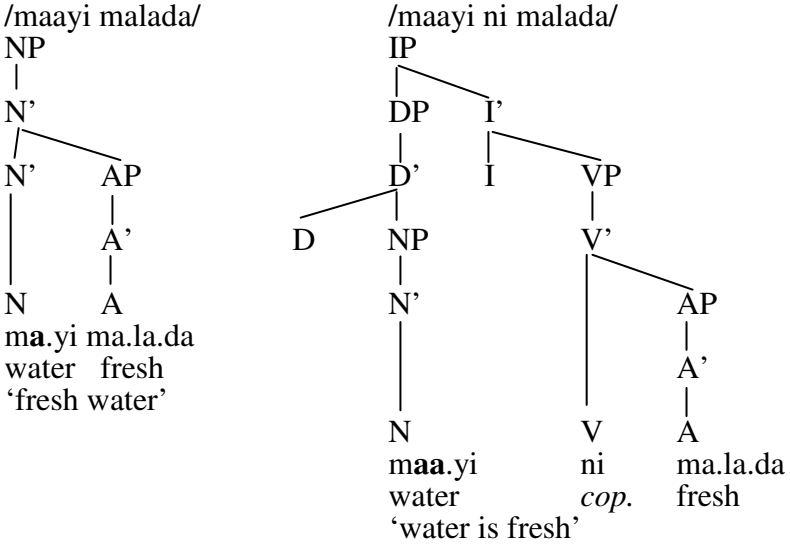
- WINDOW: long vowels allowed only in penult or antepenult **of a p-phrase** (probably conflates a few constraints). Can cause shortening and block lengthening.

x-s**oo**.ma	'to read'	('window' where long Vs are allowed is underlined)
x-s**oo**.m-e.sh-a	'to teach'	
x-s**o**.m-e.sh-a.ña	'to teach each other'	

/x-soom-esh-añ**a**/	WINDOW	MAX-μ
(x-soo.m-e.sh-a.ña)$_{\text{p-phrase}}$	*!	
☞ (x-so.m-e.sh-a.ña)$_{\text{p-phrase}}$		*

(I'm leaving out some interesting stuff like *HEAVYHEAVY)

Kisseberth's rule: end of XP projects end of p-phrase. Old-school trees:



- Where are the p-phrase boundaries?
- Why shortening in the first case but not the second?

Starting with McCarthy & Prince 1993 itself, there have been proposals to do this kind of thing with ALIGN, especially Selkirk 1995.

- What ALIGN constraints will capture the location of P-phrase boundaries in Chi Mwiini?

	$[[maayi]_N\ [malada]_{AP}\ ]_{NP}$	
a	$([[maayi]_N\ [malada]_{AP}\ ]_{NP})$	
b ☞	$([[mayi]_N\ [malada]_{AP}]\ _{NP})$	
c	$([[maayi]_N)\ ([malada]_{AP}\ ]_{NP})$	
d	$([[mayi]_N)\ ([malada]_{AP}]\ _{NP})$	

	$[[maayi]_{DP}\ [[ni]_V\ [malada]_{AP}\ ]_{VP}\ ]_{IP}$	
a ☞	$([[maayi]_{DP})\ ([[ni]_V\ [malada]_{AP}\ ]_{VP}\ ]_{IP})$	
b	$([[mayi]_{DP})\ ([[ni]_V\ [malada]_{AP}\ ]_{VP}\ ]_{IP})$	
c	$([[maayi]_{DP}\ [[ni]_V\ [malada]_{AP}\ ]_{VP}\ ]_{IP})$	
d	$([[mayi]_{DP}\ [[ni]_V\ [malada]_{AP}\ ]_{VP}\ ]_{IP})$	

Challenges to our simple model of last week

- What level must the tableaux above be happening at?
- What about bracket erasure?

Weird predictions (see Blumenfeld 2006): it should be possible to change the phrasing to accommodate segmental constraints.

- What would happen if MAX-μ were ranked between the two ALIGN constraints?

What could work instead?

- Maybe syntax passes just p-phrase-sized chunks to postlexical phonology.
- Then how could we get across-the-utterance rules like Catalan assimilation to apply?

- Maybe, rather than bracket erasure, there is mere bracket impoverishment.
- Same process across languages or have to be learned?

12 Architecture of grammar

- So syntax can influence phonology. That's consistent with a system in which information flows from syntax to phonology only.
- Can information also flow the other way? Can phonology influence syntax?

Embick & Noyer 2001, Latin: the clitic *–que* 'and', attaches after first word of second conjunct:

[bonī puerī] [bonae–**que** puellae]
good boys good–and girls 'good boys and good girls' (p. 575)

But when the second conjunct begins with a preposition, its syllable count matters:

circum–**que** ea loca in rēbus–**que**
around-and those places in things-and

contrā–**que** lēgem dē prōvinciā–**que**
against-and law from province-and (p. 576)

- Does that mean the syntax has to know how many syllables each word has? Let's discuss...

13 A couple of other classic puzzlers

English Heavy-NP shift (see XX Bresnan et al. 2007 for quantitative investigation)

He threw [the letter that he had not decoded] into the wastebasket.
He threw into the wastebasket [the letter that he had not decoded].
He threw [the letter] into the wastebasket.
*He threw into the wastebasket [the letter].

==> apparently an NP/DP needs to be a certain length to get moved (open question: can this length be redefined in purely syntactic terms, e.g. branching structure?)

Serbo-Croatian topicalization (Zec & Inkelas 1991, Schutze 1994, Yu 2008, and many others)
Clitics like the auxiliary *je* normally occur in "second position" (roughly, cliticized to either the first p-word or, sometimes, the first XP of the sentence):

Petar **je** voleo Mariju
Petar AUX loved Mary
('Peter loved Mary.')

Noću **je** ovdje mirnije.
at-night AUX here more-quiet
'At night it is more quiet here.'

In SVO sentences, though, they can follow the V, but only if the subject is phonologically heavy—one proposed explanation is that such heavy subjects are extraposed (outside CP):

Taj čovek [___ voleo **je** Mariju]$_{CP}$ heavy subject
that man loved AUX Mary
'That man loved Mary.'

*Petar [___ voleo **je** Mariju]$_{CP}$ light subject—can't be extraposed
Petar loved AUX Mary
('Peter loved Mary.')
Has to be [Petar **je** voleo Mariju]$_{CP}$

Petar Petrović [___ voleo **je** Mariju]$_{CP}$ heavy subject
Petar Petrović loved AUX Mary

14 If we have time: other jobs of the prosodic hierarchy

Domain of initial strengthening

Fougeron & Keating 1997 (see there too for brief literature review): explicitly compares domain-initial, -medial, and -final positions for utterance, intonational phrase, p-phrase, and p-word.

"Reiterant speech" versions, using the syllable "no", of sentences like "(89+89)*(89+89) = a lot":
$((((\text{eighty-nine})_{\omega})_{\varphi}((\text{plus})_{\omega}(\text{eighty-nine})_{\omega})_{\varphi}((\text{times})_{\omega})_{\varphi}((\text{eighty-nine})_{\omega})_{\varphi}((\text{plus})_{\omega}(\text{eighty-nine})_{\omega})_{\varphi})_{IP}(=\text{a lot})_{IP})_{U}$

Linguopalatal contact for [n] (% electrodes in electropalate contacted) greater in initial position (left-side graphs), for utterance, intonational phrase, and phonological phrase (not so much for p-word).

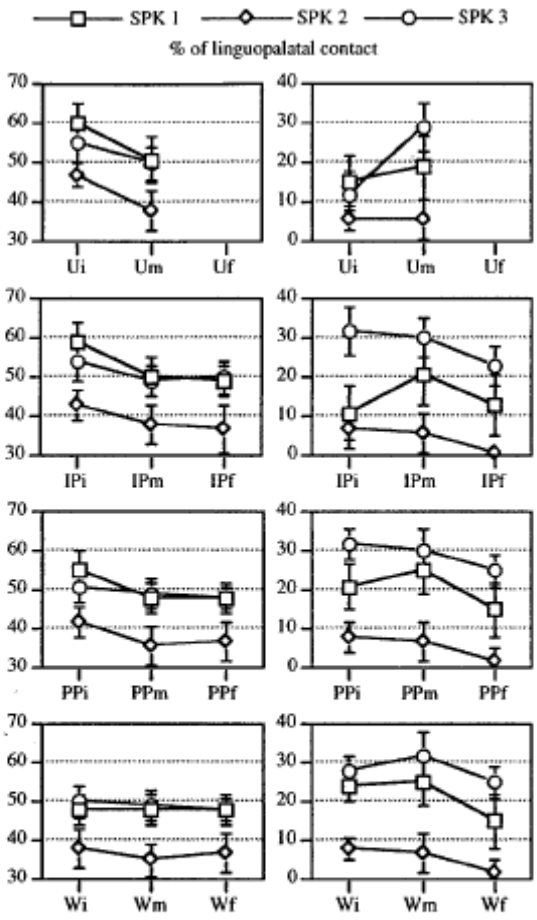


FIG. 3. Maximum linguopalatal contact for /n/'s (left) and minimum linguopalatal contact for /o/'s (right) in three positions (initial, medial, final) in each of the four prosodic domains (utterance, intonational phrase, phonological phrase, word). Speaker results are shown separately within each panel. See Table II for significance of comparisons. All data from all speakers are included here, coded exclusively. A more extreme articulation is more contact for /n/ and less contact for /o/.

(p. 3732)

Domain of final lengthening

Notice in the right-side graphs above that contact is less for [o] in final position of the three measurable domains—i.e., the vowel is lower or backer. Could reflect final lengthening.

A frequently-cited word on final lengthening is Wightman et al. 1992—see next page.

0 ≈ word-clitic boundary
1 ≈ p-word boundary
2 ≈ accentual-phrase boundary
3 ≈ p-phrase or intermediate-phrase boundary
4 ≈ intonational-phrase boundary
5 ≈ "superior major tone group" boundary
6 ≈ utterance boundary

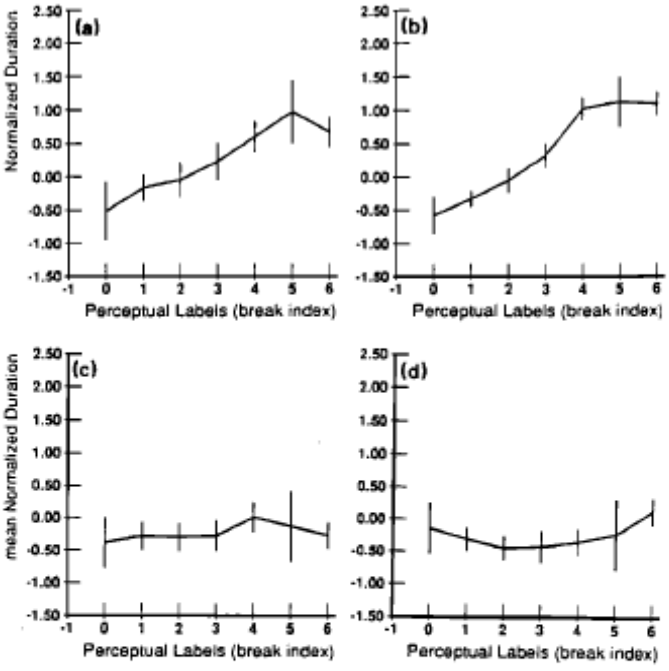
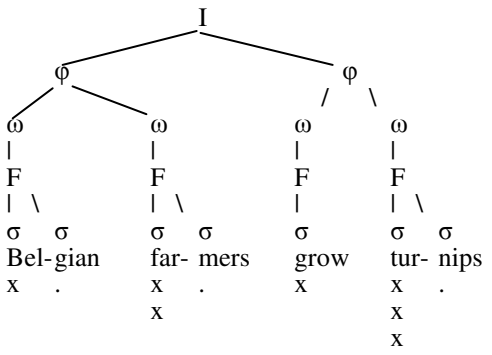


FIG. 4. Mean normalized duration versus the break index of the largest perceived boundary within a foot plotted for four preboundary regions within the foot: (a) The coda consonants of the last syllable before the boundary, (b) the vowel nucleus of the final syllable before the boundary, (c) all segments between the final stressed vowel and the final vowel, and (d) the final stressed vowel before the boundary. Cases (c) and (d) occur only when the word-final vowel is unstressed. The vertical bars correspond to confidence intervals: If the mean at one index is above or below the bar associated with another, the difference in lengthening associated with those two indices is statistically significant (95% protection level).

(p. 1714)

Prominence assignment in stress languages

syllable: may bear stress, but doesn't have to
foot: may bear at most one
p-word: must bear stress
p-phrase: can be domain of stress-adjustment rules (English, Italian examples above)
p-phrase and higher: relative prominence is assigned to the stresses contained within the domain



adapted from Hayes 1995

To sum up this week

- We saw the classic Selkirkian prosodic hierarchy in action.
- We saw how to translated boundary-projection rules into OT using ALIGN constraints.
- We considered challenges this all poses to last week's simple postlexical stratum.
- We looked at effects prosodic structure has on phonetics and possible effects it has on syntax.

Next week (Week 10!)

Having already looked at "downward" (phonetics) and "upward" (morphology and syntax) interfaces with phonology, we consider "sideways" interfaces

- Phonology vs. the lexicon
- Phonology vs. processing

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