

**Course wrap-up**

(though with still one day to go: 5 Dec. 2017)

## 1 First, a quick look at a topic we didn't get to (Himmelmann 2014)

- Typological observation: there are more suffixes in the world than prefixes

	PREPOSED	POSTPOSED	TOTAL
affixes	426	1,236	1,662
function words	386	316	702
TOTAL	812	1,552	2,364

TABLE 1. The suffixing preference in verbal grammatical elements from seventy-one languages (from the database of Bybee et al. 1990:5).

(p. 927)

	PREFIXING LANGUAGE	SUFFIXING LANGUAGE	TOTAL (LANGUAGES)
CASE MARKERS	38 (7.8%)	452 (92.2%)	490
TENSE-ASPECT	153 (18.6%)	668 (81.4%)	821
PLURAL	126 (19.7%)	513 (80.3%)	639

TABLE 3. Grammatical categories that show a strong suffixing preference (data from Dryer 2011b,c,e).

(p. 929)

- Diachronic observation: affixes often come from function words (grammaticalization)

Latin <i>cant-āre habeo</i>	>	French <i>chanter-ai</i>	
to.sing I.have		sing-1.sg.fut	
'I have to sing'		'(I) will sing'	(p. 930)

- Himmelmann's proposal
  - In order for a function word (*habeo*) to fuse with a content word (*cantāre*) to become an affix (*-ai*), they must be prosodically phrased together
  - Function words tend to phrase with the preceding word, which lets them become suffixes
    - There is a speech-planning reason for this tendency

- Evidences that function words tend to phrase with the preceding content word
  - Pauses, hesitations, and disfluencies tend to come after function words, not before

and the most important ingredient is **the uh** blue cheese

	<i>the/thee</i>	<i>of</i>	<i>in</i>	<i>have</i>	<i>be</i>
TOTAL	984	237	165	29	85
disfluency IN BETWEEN FW and host	82 (8.3%)	22 <sup>a</sup> (9.3%)	25 <sup>b</sup> (15.1%)	6 (20.7%)	17 (20.0%)
disfluency only BEFORE FW and host	36 (3.6%)	4 (1.9%)	5 (3.0%)	1 (3.4%)	5 (5.9%)
FW repeated after disfluency	35 (3.6%)	5 (2.1%)	6 (3.6%)	—	1 (1.2%)

TABLE 4. Frequency of disfluencies involving three preposed function words (FWs) in the English Pear stories (Chafe 1980, appendix).

(p. 938)

and the most important ingredient is **uh the** blue cheese

... is **the uh the** blue cheese

- similar results for German Pear Stories, Santa Barbara Corpus of Spoken American English, a Tagalog narrative corpus

2. There is an asymmetry in how clitics work

	syntax: Word1 [clitic Word2]	syntax: [Word1 clitic] Word2
phonology: Word1 (clitic Content2)	Jean ([l'envoie]) <i>French</i> Jean it sends 'Jean sends it'  syntax and phonology match	<b>unattested</b> (Himmelmann argues against the two purported cases)  syntax and phonology don't match
phonology: (Word1 clitic) Word2	(You' [ll] see]  syntax and phonology don't match	([dí-me-lo]) <i>Spanish</i> tell-me-it now 'Tell me it now'  syntax and phonology match

- the phonological phrasing can just follow the syntax ("match" cells)
  - or, the phonology can defy the syntax by phrasing the clitic with the preceding word— but not with the following word
- Why this tendency? **Lexical access during speech production**
    - It's easy to access function words (*the*), and harder to access lexical words (*blue cheese*)
    - the* has high frequency, high resting activation, high predictability, easy to access
    - you might as well say *the*, even if *blue cheese* isn't ready yet
    - if *blue cheese* still isn't ready by the time you're done with *the*, you'll need to hesitate

## 2 Reminder: the big questions lurking behind this course

- Is there a separate phonological grammar (that feeds into the processing system)?
- Or is the grammar just a different level of description of the processing system?
- If the grammar is a separate module, what kinds of information does it exchange with speech planning?

## 3 What we looked at, as steps towards eventually tackling those questions

(not including the speech-planning basics and speech-error basics that we covered as background)

### 3.1 The Production Planning Hypothesis

- Wagner 2012; Kilbourn-Ceron, Wagner & Clayards 2016; Kilbourn-Ceron & Sonderegger 2018; Kilbourn-Ceron 2017b; Tanner, Sonderegger & Wagner 2015, 2017; Tamminga 2015; Gahl & Garnsey 2004; MacKenzie 2012, ch. 5; MacKenzie 2016; Lamontagne & Torreira 2017
- The problem of domains
  - English tapping rule:  $\{t,d\} \rightarrow \emptyset / V_{(1)} \_ \# V$ 
    - PROBABLY APPLIES: *get over it*
    - COULD APPLY: *a bat, a ball and a glove*
    - PROBABLY DOESN'T APPLY: *Lakewood, Ohio's fifteenth-largest city, is part of the Cleveland metro area*
  - Usual story: we need to say more about the relationship between the two words
    - same phonological word/phrase/utterance?
    - some more-syntactic relationship?
- Production Planning Hypothesis: **no**—apparent prosodic/syntactic effects are the extra-grammatical effect of processing
  - You can't plan a tap until you know that the following word starts with a vowel
    - you probably even need to know which vowel, to get the gestures just right
    - So whenever the next word isn't ready in time, you won't tap
- This makes all kinds of predictions about where you'll see processes applying more and less
  - factors that should make the next word harder to access (low frequency, low predictability) should suppress the process
    - *eat apples* vs. *eat aardvarks*
  - “planning proxies” we can measure—signs that planning is taking a while—should correlate with suppression of the process
    - longer duration for *eating* → following *a* vs. *the* matters less in determining *eating* vs. *eatin'*
  - all these effects should go away when the environment is  $X\_\#Y$  rather than  $X\_\#Y$ 
    - *este amor* → *estamor* sensitive to *amor*'s frequency, etc.
      - $e \rightarrow \emptyset / \_ \# a$  : you need to know that the next word starts with /a/
    - *nuestra escuela* → *nuestrascuela* not sensitive
      - $e \rightarrow \emptyset / a \# \_$  : you already know that the preceding word ended with /a/

## Open questions

- Can we really do without domains?
  - Kilbourn-Ceron 2017b looked at French liaison in two environments
    - Adj+Noun (*ancie[n] ami* ‘old friend’): supposed to be obligatory but actually there are exceptions
    - Noun<sub>plur</sub>+Adj<sub>plural</sub> (*personne[z] importantes* ‘important people’): supposed to be variable
  - But there are differences in application that seem grammatically governed
    - *quan[t] il arrive* ‘when he arrives’ vs. *quan[\*t] arrive-t-il* ‘when does he arrive?’
    - *il[z] arrivent* ‘they arrive’ vs. *sont-il[\*z] arrivés* ‘have they arrived?’
- Is there a phenomenological difference between making a speech error and failing to apply an optional rule because of a planning failure?
  - *th[ʌ] apple* ← this is a speech error for me
  - *ea[t̩] apples* ← this is not a speech error for me, just a rarer option
  - Chinese: would *xiao<sup>3</sup> ma<sup>3</sup>* ‘little horse’ (no 3<sup>rd</sup>-tone sandhi applied) have to be a speech error?
  - If so, should this be reflected in the grammar?
  - See Hall 2008 in the perceptual realm for arguments that we can tell these apart
    - English long-distance /r/-dissimilation is driven by misperception
    - English short-distance /r/-dissimilation is a variety of means deployed to avoid violating a markedness constraint

### 3.2 OCP (repetition avoidance) and anti-OCP as a speech planning effect?

- Berg & Abd-El-Jawad 1996; Frisch 2004; Hansson 2001; Rose & Walker 2004; McAllister Byun & Inkelas 2014; Rose & King 2007; Walker, Hacopian & Taki 2002; Walker 2007
- We saw that there are many parallels between speech errors and normal phonology, when it comes to similarity and its avoidance
  - Similarity
    - already-similar segments tend to interact in speech errors (*subjects show*)..
    - ...and in consonant harmony (/kun+il+a/ → [kunina])
    - and similar segments nearby are penalized by OCP (Arabic /ktb/ is a good verb root, \*/dtb/ would be bad)
  - Exemption for identity
    - speech-production idea: what’s hard about, e.g., *subjects show*, is that the two sounds are similar but not identical
    - OCP sometimes makes exception for perfect identity: Peruvian Aymara \*[t’ank’a], but [k’ink’u] ‘clay’
  - Prosodic position
    - consonant swaps in errors tend to be in same prosodic position (onset-onset, coda-coda, etc)
    - consonant harmony is sometimes restricted to consonants in same prosodic position

- How do these parallels arise?
  - Maybe errors somehow become normalized and become grammatically required
    - maybe this is plausible for language without strong normative pressures or a widely-used phonological writing system (which would keep exposing speakers to conservative forms)
  - Maybe the relevant constraints make it into the universally available constraint inventory because of their strong functional grounding
    - \*f...s is a good constraint because we're likely to make errors saying such sequences
  - Variant: learners can construct all kinds of constraints, but are more likely to pick up on those that have strong functional grounding
  - Berg 1998: maybe speech errors are just a window into what the system favors
    - one of the many factors affecting whether a diachronic change happens is whether the innovative form gets an inherent boost
    - see Martin 2007 for lexical competition (*couch* vs. *sofa*), implemented as resting activation
    - see Yang 2000 and Niyogi 2009 for syntactic change with the possibility that some grammars are just better

### 3.3 Opacity and directionality

- Zhang 2007, Lin 2006, Lin 2008, Hyman & VanBik 2004, Chen 2004
- Tone sandhi was a great testing ground because
  - it applies across word boundaries  $xiao^3 ma^3 \rightarrow xiao^2 ma^3$  'small horse'
  - and the words/morphemes in question are often monosyllabic, so that when one syllable changes, it changes the environment of neighboring syllables

*We saw many tantalizing ideas...*

- Following-environment counterbleeding as a planning failure (or a phonologization of a planning challenge?)
  - $xiao^3 gou^3 pao^3 \rightarrow xiao^3 gou^2 pao^3$  is a transparent (bleeding) way to satisfy \*3 3
  - but it requires you to know, while planning *xiao*'s tone, that *pao* is 3<sup>rd</sup> tone
  - counterbleeding  $xiao^2 gou^2 pao^3$  only requires you to look one syllable ahead
  - Still, how do we implement this in the grammar? Sliding window of evaluation?
- Reasonable planning explanation for why spreading sandhi tends to go left-to-right
  - Shanghai / $\sigma^{MH} \sigma \sigma$ /  $\rightarrow$  [ $\sigma^M \sigma^H \sigma^M \sigma^L$ ] is easier: to plan each syllable, you only need to know how many there are, and the underlying tone of the first one (which you've already accessed)
  - Danyang / $\sigma \sigma \sigma \sigma^{33}$ /  $\rightarrow$  [ $\sigma^{33} \sigma^{33} \sigma^{33} \sigma^{33}$ ] is harder: to plan the first syllable, you need to know the tone of the last one
- The productivity of many of these patterns is unknown
  - We speculated that just as what happens in two-syllable sequences must be memorized (because it's usually pretty arbitrary), so three-syllable sequences might be memorized too
  - Much more work to be done in seeing what speakers do in novel collocations!!

### 3.4 Phonetic and phonological paradigm uniformity

- **Kirov & Wilson 2013, Munson 2007, Bermúdez-Otero 2010, Seyfarth et al. 2017, Braver & Kawahara 2015, Barnes & Kavitskaya 2002, Riehl 2003, Steriade 2000**

*Since we just did this so recently, I won't review everything.*

- Basic question: do related words affect a word's pronunciation at the sub-phonological level (e.g., duration?)
  - Bermúdez-Otero 2010: no! Refutes previous purported cases
  - Seyfarth et al. 2017: yes! When we say *frees*, *free* is also activated, including its final pi-gesture, which makes *frees* longer than *freeze*
  -
- Nutshell version of each of the papers we didn't get to
  - Steriade 2000: French *pas d'rôle* 'no role', lit. 'not of role' is different from both *pas drôle* 'not funny' and *jade rose* 'pink jade'
    - articulatory data from Fougeron & Steriade 1997
    - syllable structure won't help us here: how can we get a three-way distinction?
    - analysis: constraint requiring same duration in corresponding output consonants
      - the [d] in *pas d'rôle* wants to have the same duration as the [d] in *de rôle*
  - Barnes & Kavitskaya 2002: French "schwa" (really something like [œ]) leaves behind rounding even when it deletes
    - ...*plus p'tit que Lannes* [kəla] lots of lip rounding in video
    - ...*plus p'tit qu'la femelle* [k<sup>w</sup>la] medium lip rounding
    - ...*tout p'tit clavecin* [kla] least lip rounding
    - interpretation: we don't need phonetic paradigm uniformity, because this isn't really deletion!
      - it's just gestural overlap: instead of occurring during a break between [k] and [l], the schwa is fully overlapped with them
  - Riehl 2003: no paradigm uniformity in American English tapping
    - This would be phonetic in the sense that there is no /t/ phoneme in English
    - Tapping is variable in context [-stress]\_\_[-stress]
    - Steriade 2000: whether you tap in *nègativístic* should depend on whether you tapped in *négative*
    - Riehl had 6 speakers produce target words multiple times
    - It looks like there's a correlation between number of taps in the base word and number in the suffixed word for each speaker
    - But Riehl argues that it's not strong enough
    - I think a regression model would help here: we can see if, beyond each speaker's tendency to tap, there is still a correlation for that speaker's tapping behavior in each word pair

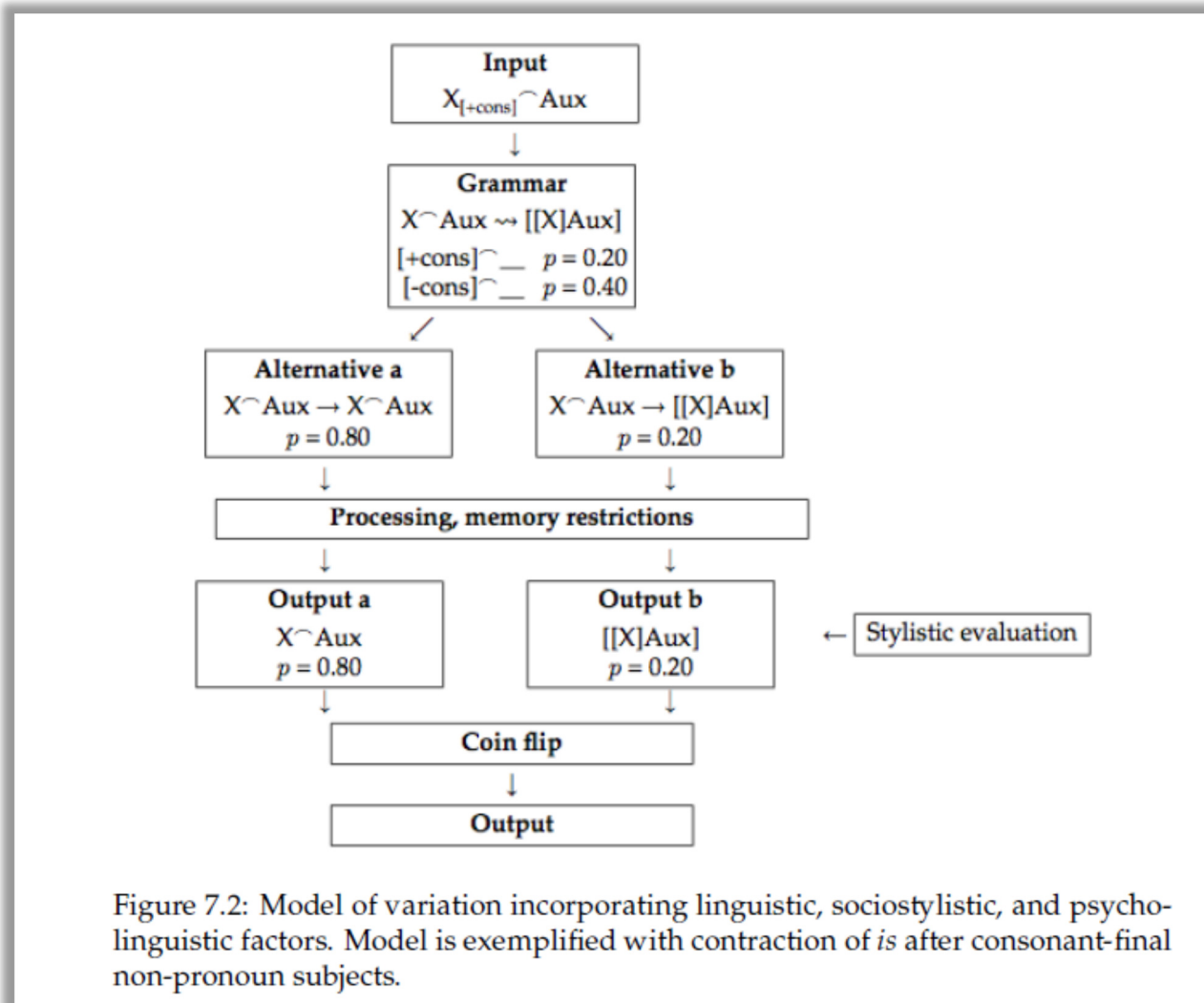
- Braver & Kawahara 2015: incomplete lengthening in Japanese
  - /ki+particle/ ‘tree’ 60 msec (doesn’t need to be lengthened)
  - /ki/ ‘tree’ 125 msec (supposed to be lengthened)
  - /kii/ ‘key’ 157 msec (underlyingly long)
  - analysis: /ki/ wants to be faithful to the duration seen in /ki+particle/
  - i.e., back to Steriade, but with a quantitative implementation: we can’t dismiss the duration difference as resulting from gestural overlap, because nothing is deleted here

#### 4 Theories that try to integrate—or separate!—grammar and speech planning

*Since we haven’t gotten to this yet, again I won’t say much*

- Zuraw 2009: let prosodic structure reflect how lexical access occurred
  - constraints like ALIGN(AccessedUnit, Left; PWord, Left)
    - if you access *dispassionate* as a whole unit, rest of grammar says make it one PWord → no need to aspirate the /p/
    - but if you access is as *dis+passionate*, this constraint says *passionate* should be a separate PWord → its initial /p/ must get aspirated
    - (except it was a Tagalog case study)
  - Allows the grammar to say where a rule must apply and can’t apply
    - only where the constraint ranking allows it can lexical access affect pronunciation
  
- Smolensky & Goldrick 2016 (Allie will present Thursday, and you saw the colloquium last week, so I won’t say much)
  - Isn’t about speech planning per se, but builds gradient “activity” into the input to the grammar
  - Activity could just be a static property of an underlying representation
    - /pəti(0.73\*t)/
  - ...but it could also be affected by all kinds of on-line factors
    - have you recently activated /t/, or is there another one coming up?
    - how strongly activated is the whole word?
    - how sure are you about the word’s phonological representation—have you finished retrieving all of it?

- MacKenzie 2012: some variation is in the grammar, some is in processing, and some is sociostylistic



(p. 283)

- one way to diagnose: if the variation is sensitive to factors that control categorical processes elsewhere (e.g. part of speech), then it's probably grammatical
- Isabelle will present on Thursday another way to diagnose what kind of variation you've got (Tamminga, MacKenzie & Embick 2017)

5 Next time: two last papers!

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