Class 14: Structure below the segment, cont'd
Relation of autosegmental representations to phonetics


To do
- Shona assignment (on last week's material) is due Friday
- Next reading is Steriade 1999 (due Tuesday)

Overview: Last time we took a tour of autosegmental representations. Now let's look at their relation to phonetics.

1   Locality

Some researchers have argued most long-distance assimilations are, articulatorily, local. E.g. Gafos 1999.

For instance, in a rounding-harmony system like this:

$$\text{V} \qquad \text{C}_0 \quad \text{V}$$
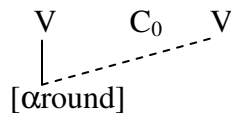
[αround]

we could reasonably claim that (and test instrumentally whether) the *C*s that are skipped by the rule actually take on the lip-rounding value that spreads.

2   Locality: transparent vowels in Hungarian (Benus & Gafos 2007)

Front non-round vowels in Hungarian allow front/back harmony to spread right over them:

Front		Back	
emír-nek [ɛmiːrnɛk]	emir-Dative	papír-nak [pɔpiːrnɔk]	paper-Dative
zefír-ből [zɛfiːrbøːl]	zephyr-Elative	zafír-ból [zɔfiːrboːl]	sapphire-Elative
rövid-nek [røvidnɛk]	short-Dative	gumi-nak [guminɔk]	rubber-Dative
bili-vel [bilivɛl]	pot-Instrumental	buli-val [bulivɔl]	party-Instrumental
művész-nek [myːveːsnɛk]	artist-Dative	kávé-nak [kɑːveːnɔk]	coffee-Dative
vidék-től [videːktøːl]	country-Ablative	bódé-tól [boːdeːtoːl]	hut-Ablative

(p. 274)

o   Let's draw some autosegmental representations.

- B&G argue that the tongue actually remains in front or back(ish) position during the transparent vowel.
- So why does it still sound front? Because, especially for [i] (the most-transparent of the transparent vowels; see Hayes et al. 2009), the tongue has to get fairly back before it makes much acoustic difference.

3   Locality: Kinyarwanda coronal harmony (Walker, Byrd, & Mpiranya 2008)

(3) -sas-+i   → [-ṣaṣi]   'bed maker'
                              cf. [-sasa]   'make the bed (INF STEM)'

      -soːⁿz-+i   → [-ṣoːⁿʐi]   'victim of famine'
                              cf. [-soːⁿza]   'be hungry (INF STEM)'

      -sáːz-+i-e   → [-ṣáːʐe]   'become old (PERF)'

      n-sáːz-+i-e   → [ⁿṣaːʐe]   'I am old (PERF)'
                              cf. [-sáːza]   'become old (INF STEM)'

      -úzuz-+i-e   → [-úʐuʐe]   'fill (PERF)'
                              cf. [-úzuza]   'fill (INF STEM)'

      ßa-n-ziz-i+iʐe → [ßaːⁿʐiʐiʐe]   'they punished me (for sth) (PERF)'
                              cf. [ßaːⁿziza]   'they punish me (for sth) (IMPERF)' (p. 503)

EMA study: receiver pellets attached to tongue tip and blade; magnetometer tracks their position (along with reference receivers on nose and gums).

Result: tongue tip remains angled upward during intervening segments, as in [ßaṣamáːʐe]

4   Non-locality: Guaraní nasal harmony (Walker 1999)

(3)   a.   /ⁿdo-roi-ⁿduˈpã-i/   →   [nõrõĩnũˈpãĩ]

                not + I-you + beat + NEG   'I don't beat you'

        b.   /ro-ᵐbo-poˈrã/   →   [r̃õmõpõˈr̃ã]

                I-you + CAUS + nice   'I embellished you'

        c.   /iᵈjaˌkãraˈku/   →   [ĩɲãˌkãr̃ãˈku]

                                                   'is hot-headed'

        d.   /aˌkãraˈɣʷe/   →   [ãˌkãr̃ãˈɣʷe]

                                                   'hair (of the head)'
                                                                                         (p. 9)

Are the transparent Cs actually nasal?
Acoustic study, but found no evidence for nasal airflow
- if there was any, it wasn't enough to produce detectable turbulence
- the stops did have a release burst, meaning air pressure was building up in the oral cavity, so it's unlikely to have been venting out the nose

o   Let's discuss the theoretical implications.

5   Excrescent vowels
o   Let's discuss the Hall paper, and what kinds of constraints we need to govern gestural timing.

6   Illusory assimilations and deletions

- We saw that Hall argues that a gap between consonants can lead to something that sounds like a vowel even though there's no vowel gesture.
- Similarly, if two consonants are two overlapped, one may be inaudible though it was produced.
    o Let's draw the gestural score for a famous one (Browman & Goldstein 1987), *perfect memory*, with the *t* being inaudible because of overlap by *k* and *m*
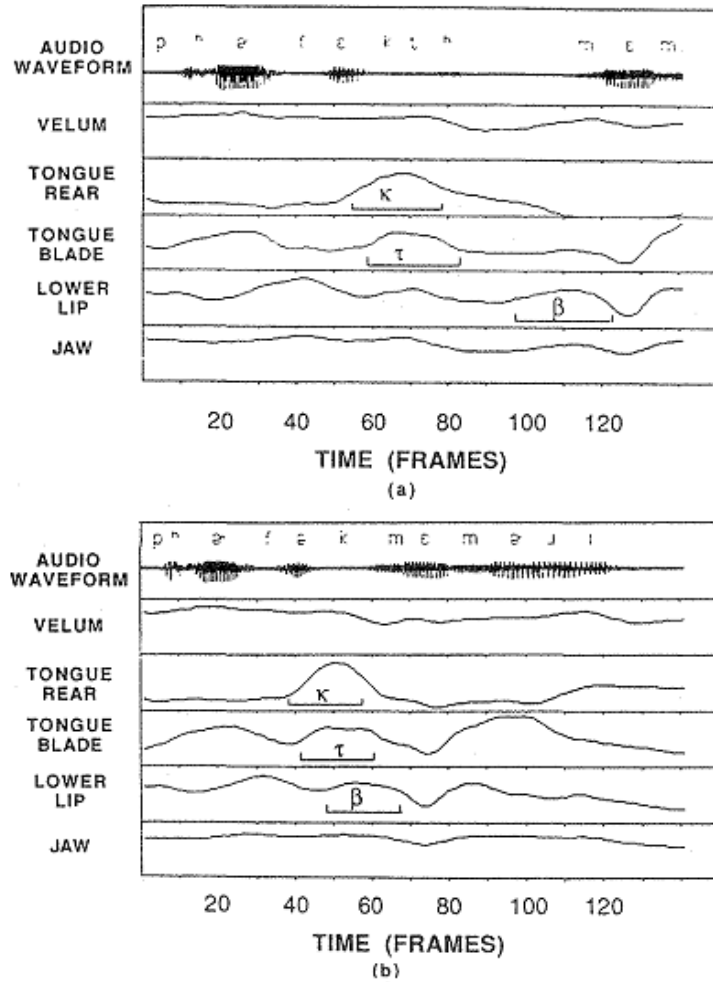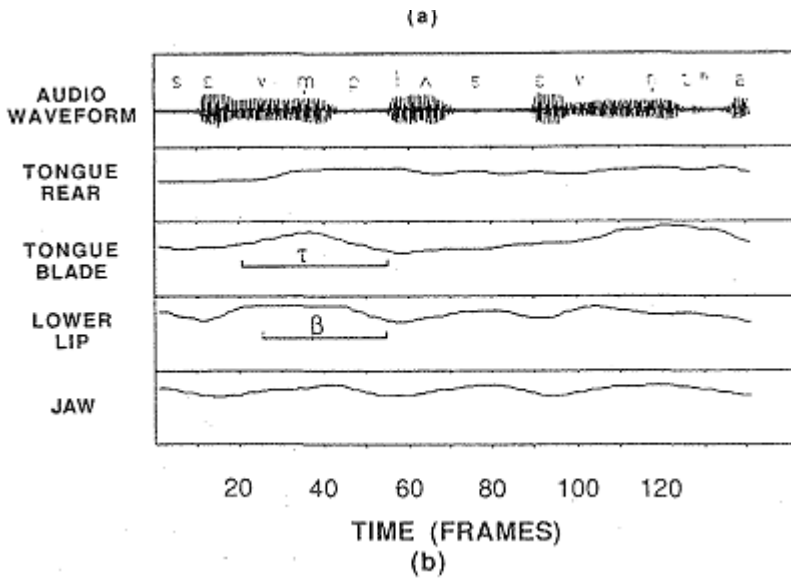   - Here's how the articulatory data looked:

Figure 13. X-ray pellet trajectories for "perfect memory." (a) Spoken in a word list ([pɚfɛkt#'mɛm...]). (b) Spoken in a phrase ([pɚfɛk'mɛm...]).

(p. 20)

- The same thing could happen in place assimilation.
    o Let's draw the autosegmental representation for another one from Browman & Goldstein 1987, *seve[m] plus seven*.
    - Here's how the articulatory data looked:

(p. 22)

Rose & Walker 2004, Zuraw 2002, Hansson 2001

To sum up
- Maybe locality of phonological processes is not just abstract (tier-adjacency), but totally concrete: an autosegment is a phonetic gesture that extends over a continuous span.
- But what about Walker's nasal data from Guaraní? Maybe such cases shouldn't be represented autosegmentally? (See Rose & Walker 2004, Zuraw 2002, Hansson 2001 for an alternative).
- We should think not just about the acoustics (do we hear a vowel between those Cs? do we hear a consonant that is underlying?) but also about the articulation underlying them.

Next time "upward" interfaces: phonology-morphology interface

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