

Class 2, 10/8/20: Ambisyllabicity; Marginal Phonemes I

1. Assignments for this week

- Readings:
 - Carlos Gussenhoven (1982) English plosive allophones and ambisyllabicity. *Gramma* 10:119-141.
 - Timothy Vance (1987) 'Canadian Raising' in some dialects of the northern United States. *American Speech* 63:195-210.
 - Posted on the course website
- Homework #1 (Ambisyllabicity) is also on the course site.
 - Discuss appropriate deadline (one or two weeks) ...

2. For today

- Ambisyllabicity
- Setting up the ambisyllabicity homework
- Starting on strange English phonemes of various kinds

AMBISYLLABICITY

3. Key idea

- Some phonemes, in English (and perhaps some closely-related languages) belong to two syllables at once.
 - Example: the [l] of *color*
- This gives a clear “organizing principle” to multiple surfacy phonological phenomena of English.

4. Some of the literature in this area

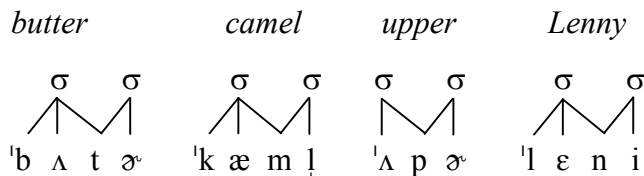
- Kahn, Daniel (1975) Syllable-based generalizations in English phonology. MIT dissertation. On Dspace at MIT.
 - Ur-source for ambisyllabic hypothesis
- J. M. Anderson and C. Jones (1977) *Phonological structure and the history of English*. North-Holland.
 - Ultra-ambisyllabicity: two segments can belong to two syllables [a[st]a]
- Kiparsky, Paul (1979) Metrical structure assignment is cyclic. *Linguistic Inquiry* 10:421-441.
 - the foot theory; see below

- Selkirk, Elizabeth (1982) The syllable. In Harry van der Hulst and Norval Smith (eds.) *The Structure of Phonological Representations II*. Dordrecht: Foris:
 - the prevocalic coda theory; see below
- Gussenhoven (1986; readings)
 - Right Capture instead of Left Capture
- Rubach, Jerzy (1996) Shortening and ambisyllabicity in English. *Phonology* 13:197-237.
 - Part of campaign, continuing Scott Myers's work, to get the "deep" rule of Trisyllabic Shortening using the "shallow" phenomenon of ambisyllabification.
- Jensen, John T. (2000) Against ambisyllabicity. *Phonology* 17:187-235.
 - What it says, and pro-feet
- Gao, H. and Xu, Y., 2010. Ambisyllabicity in English: How real is it. In *Proceedings of The 9th Phonetics Conference of China* (PCC2010).
 - Just the word boundary case; interesting diagnostic: alignment with F0.
- Elzinga, Dirk, and David Eddington. An experimental approach to ambisyllabicity in English. *Topics in Linguistics* 14, no. 1 (2014): 34-47.
 - Ask people to divide, e.g. *habit*, and see what they say.

A SKETCH ANALYSIS OF AMBISYLLABICITY IN RULE-BASED PHONOLOGY

(based in part on Hayes textbook reading)

5. Some examples of ambisyllabicity



- Native intuition often is properly ambivalent about these, especially when the stressed vowel is lax, as above.
- Compare: *total*, *Hyman*, *open*, *Lena*, with (perhaps) a weaker ambisyllabicity intuition.

6. First stages of syllabification in a derivational theory

- = normal, crosslinguistically common syllabification
 - every segment ends up part of one syllable
 - Maximal Onset (but not with the really unusual onsets; *Ed.wardian*—handwaving!)
 - That which cannot be onset usually become a coda ...
 - ... but depending on the constraint rankings there can be repairs (deletion, vocalization of sonorant consonants (*central/center*), epenthesis (*voted*) ...
- With OT we can get rid of the handwaving re. Maximal Onset Principle with ranking:
 - $*[\sigma dw > *d]_\sigma$ means *Ed.wardian*
 - $*[p]_\sigma >> *[\sigma pr]$ means *a.[pɪ]eciate*

➤ ... where these tiny constraints could be generalized using features.

7. Second stage

- Application of ambisyllabification rules

8. Rule-based analysis from Hayes reading

σ Assignment

Assign syllable nodes (σ) to be in one-to-one correspondence with [+syllabic] sounds.

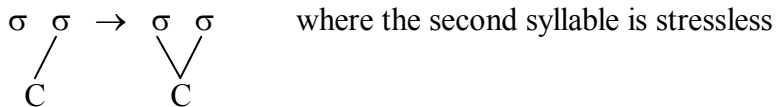
Onset Formation

Join consonants to the following syllable, provided the resulting cluster can occur at the beginning of a word (Maximal Onset Principle/handwaving).

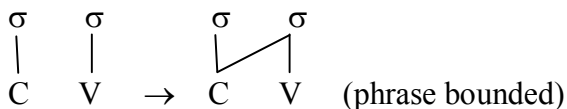
Coda Formation

Join any consonants not yet syllabified to the preceding syllable.

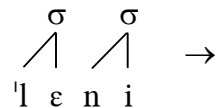
Left Capture¹



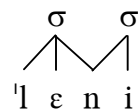
Right Capture



9. Example of Left Capture

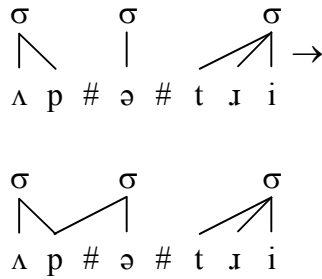


Here, since the second syllable is stressless, Left Capture can apply, and we get:

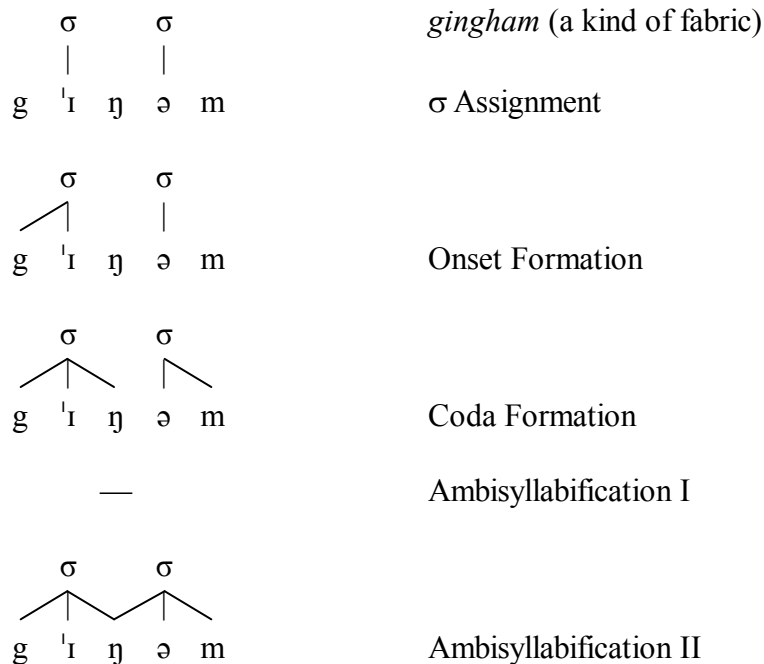


¹ I should give it this name, taken from the literature, not the non-mnemonic one in my text draft.

10. Example of Right Capture (phrasal)



11. Possible example of Right Capture (word internal)



12. Rationalizing the analysis with typology

- Stressed syllables like to gain segments, stressless syllables to lose them.
 - Note: stressed syllables even like to gain *onset* segments:
 - Kelly, Michael. 2004. Word onset patterns and lexical stress in English. *Journal of Memory and Language* 50.231-244.
 - Kevin Ryan (2011) *Gradient weight in phonology*, UCLA diss.; et seq.
 - This is a plausible rationale for the ambisyllabicity in *apple*.
- Syllables like to have onsets.
 - This competes with: syllables like to align with word and morpheme boundaries.

13. Can ambisyllabicity be found in clusters?

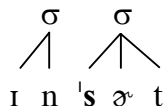
- I think so, e.g. on the strength of the process of S Affrication

S Affrication

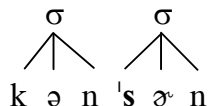
$s \rightarrow \widehat{ts} / n ___$ when /ns/ are tautosyllabic.²

a. Obviously heterosyllabic [s]:

insert

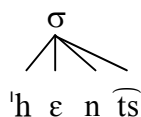


concern



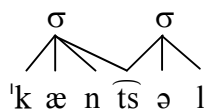
b. Obviously tautosyllabic: [\widehat{ts}]

hence

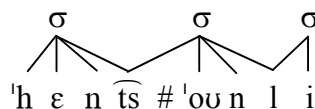


c. Ambisyllabic, [\widehat{ts}]:

cancel

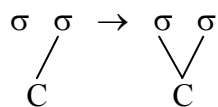


hence only



14. Upshot

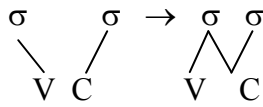
Left Capture is as stated before:



where the second syllable is stressless

² OT: *Tautosyllabic [ns] >> IDENT(continuant)

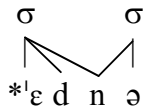
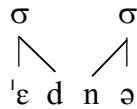
and not this:



where the second syllable is stressless

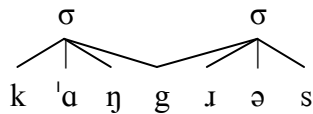
15. The Ambisyllabification rules and structure-preservation

- But now we have to consider *what clusters* Left Capture is allowed to create.
- Surely, not all; *Edna*, *apron*



- And yet this case suggests we want to allow *some* otherwise-illegal clusters to be created by Left Capture:

➤ *Congress*



We really want tautosyllabicity of η and g , to capture:

- There are no words in English like *['kangɪəs]³
- But there are words like *Congressional*, *ingressive*, *engulf*, *engage*, with [n] (But * ηg is illegal word-finally in the majority dialect)

- Tentative view: ambisyllabification creates impossible clusters but not grossly impossible ones.
- This is totally unworked out in detail, to my knowledge.

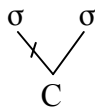
16. A point made in passing

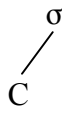
- This is one case where we can argue (from stress-sensitivity) that the *phonotactics* of English — not just allophony — depends on ambisyllabification.

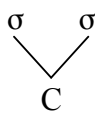
³ CMU dictionary records [n] in *Congolese* and *Tonga*, perhaps typos.

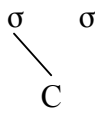
- This helps justify what we are doing on the homework.

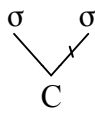
17. The Fivefold Way for using ambisyllabicity to classifying phonological environments

Strictly in onset: 

In (any) onset: 

Ambisyllabic: 

In (any) coda: 

Strictly in coda: 

18. A reasonable prediction to make

- No phonetic or phonological phenomenon of English accesses a *discontinuous* subsequence of (17).

19. Lurking in the background: Interatonic position

- This is different — “less ambisyllabic” — in ways that are not well understood
 - Why is *vanity* /'væntɪ/ “less Tappable” than *pity* /'ptɪ/?
 - Why is *carpenter* /'kɑ.rpəntər/ not Tappable when *center* /'sentər/ is?
- By the analysis above, it should behave just like posttonic-pre-atonic position.
- However, by the principles of “maximize content of stressed syllables” there is no clear impetus for ambisyllabicity here.
- And indeed the data pattern for interatonic often diverges from that for classical ambisyllabic.

SURVEY OF AMBISYLLABICITY PHENOMENA

20. Goal of the survey

- We classify the data according to the Fivefold Way.
- We ponder whether we are right in thinking there is a Grand Plan for English allophones.
- We ponder the various rival theories of this phenomenon.

21. Tapping

- The hallmark phonological process of North American dialects, now being exported to the other dialects.

22. We need to get the segmentals right

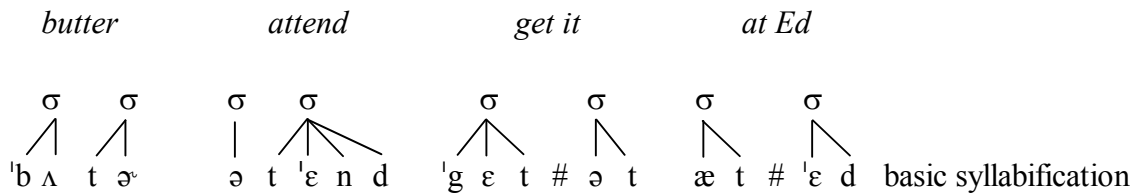
- Tapping is blocked by a preceding stop, affricate, fricative, or [l]
captain, octave, lifted, piston, filter
- The only consonant that allows a following tap is [ɹ]

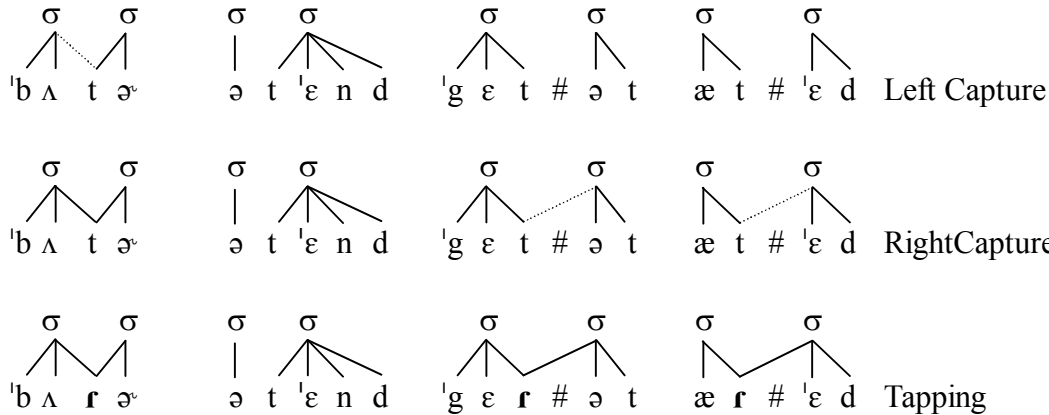
barter, immortal

- Side note: these cases likewise tell us that Ambisyllabification can also occur when the first syllable ends in a consonant

- So, the basic environment is **post-vowel/glide, ambisyllabic** (where English /ɹ/ is sensibly counted as a glide)
- And the standard feature [–consonantal] suffices to group vowels and glides together;
 - hence the segmental part of the environment is, [–consonantal] ____ [+syllabic]
- Typology:
 - Lenition environments are typically composed of highly sonorous segments; (e.g. Kirchner, Robert. 1998. *An effort-based approach to consonant lenition*. UCLA dissertation)

23. Some full derivations for Tapping





24. Nuances of Tapping

- The claims above concern **only** /t/; /d/ tapping exists but is hard to hear, and I suspect it is much more broadly distributed.

compare:

a tomato *[ə rə] [☞ Why are these predicted to have [t]?]

a toboggan *[ə rə]

a delicious sandwich ?[...ə rə ...]

This is a natural consequence of P-map theory (Steriade, Zuraw, etc.).

25. Yet another Tapping process

- Common Word Tapping** affects strict-onset /t/ in three common words: *to*, *tomorrow*, and *today*.

Go to the store for tomorrow's milk. Whatever you buy today will still be useful.

[r]

[r]

[r]

- We should keep these examples in our heads, because the writing is now on the wall (Pierrehumbert, Bybee, Zuraw, Moore-Cantwell, Zymet, etc.) that many phonological processes (all??) are sensitive to individual word identity; this is a particularly simple case.

26. To what extent does Tapping apply in inter-atomic position?

- This is a big mess! I made a digital search for candidates and found great variation, perhaps even lexical listing.
- Many such words end in *-ity*, *-ative*, *-meter*; I find I can tap them without much trouble.
- Also ok: *theater*, *capital*, *catheter*, *circuitous*, *competence*, *(in)competent*, *competi tor*
- Not really tappable for me: *adjutant*, *militant*, *bulletin*, *charlatan*. Some effect of the following [n]?

- The judgments are murky and I don't think armchair work would suffice to get good data here.
- Again, I suspect word-specific phonology ...

27. Aspiration

- I'm reluctant to touch this one; since aspiration is hard to hear and gradient — measured, systematic data are needed.
- The standard story is: *aspirate in strict syllable-initial position*
 - [p^h]at, [p^h]etunia, a[p^h]art
 - but not: u[p], o[p]en, si[p] each.
 - Interatonic: *principle, multiple, therapy, Juniper*. Need to measure!

28. The blocking effect of /s/ on Aspiration

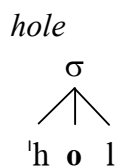
- This is *not*, I think, syllable based: *domesticity* [ˌdouˌmɛsˈtɪsəri] must be syllabified [ˌdouˌmɛsˈtɪsəri] or the ε would be illegal (“*diabeticity*”)
 - Reason: nonlow short vowels may not occur in truly open syllables.
- Rather, there seems to be some sort of dissimilation effect on laryngeal spreading, needed for /s/.

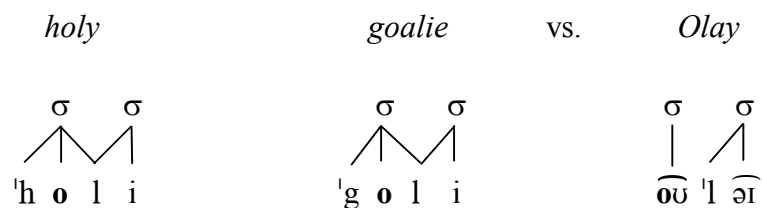
29. Voicing of [b d dʒ g]

- Perhaps a VOT dispersion effect: these are fully voiced just where /p t tʃ k/ are unaspirated.
 - [b]at, [b]elieve, a[b]out
 - but tu[b], trou[b]le, ru[b] each one
- Dispersion is a notable, knotty topic in contemporary phonology; see e.g. work of Edward Flemming, Ania Lubowicz

30. [o] allophone of /ou/ (readings)

Here, strict coda /l/ and ambisyllabic /l/ pattern together.

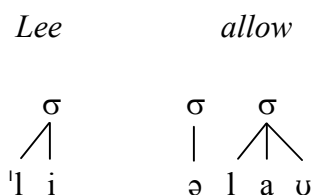




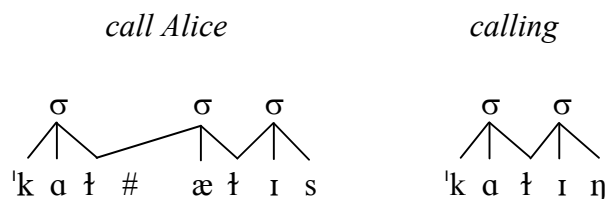
I believe that in the RP dialect of English, only strict coda /l/ triggers [o].

31. /l/ darkness (readings)

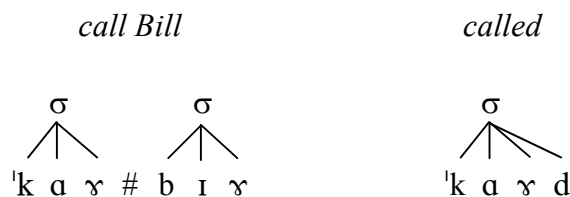
a. Light [l]. Found in strict onset position:



b. A fairly dark (velarized; i.e. [+back]) [ɫ]. Found ambisyllabically:



c. A really dark l. In casual speech this even loses its alveolarity, and becomes a vowel-like sound I will transcribe with IPA [ɣ]; featurally both [+back] and [−coronal]. Found strictly in codas.



More precisely: strict coda /l/ can be either [ɣ] or [ɫ], but ambisyllabic /l/ can only be [ɫ]:

*[ˈkayˈæɾɪs].

32. What of /l/ in intertonic position?

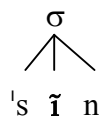
- A few machine-located words: *megalomania*, *parabola*, *gondola*, *pergola*, *nebula*, *fibula*, *formula*, *scapula*, *peninsula*, *spatula*, *tarantula*

- I think the analysis is probably ok — behaves like posttonic pretonic.

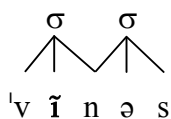
33. $V \rightarrow [+nasal] / __ [+nasal]$ (readings)

- This happens either between strict coda nasals or ambisyllabic nasals, but not before strict onset nasals.

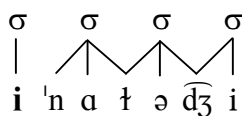
a. Same syllable (nasal in strict coda): *seen*



b. Same syllable (nasal is ambisyllabic): *Venus*



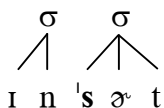
c. Separate syllable (nasal is onset): *enology*



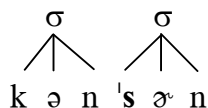
34. $s \rightarrow \widehat{ts} / n __$

a. Strict onset, [s]:

insert

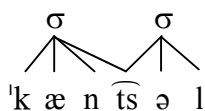


concern

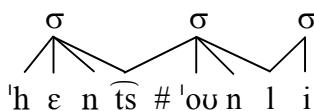


b. Ambisyllabic, [\widehat{ts}]:

cancel

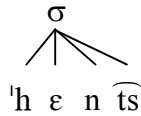


hence only



c. Strict coda, $[\widehat{ts}]$:

hence



d. Interatonic? cf. *agency* and many others ending in *ncy*

Again, we have evidence that ambisyllabicity must augment even a closed syllable.

35. /r/ rounding

- Intuitions hard; video experiment needed, but my impression is that /ɹ/ is
 - most often rounded in strict onset $[\text{r}^{\text{w}}\text{il}]$ *real*
 - less often/thoroughly rounded in ambisyllabic $[\text{æ}\text{r}^{(\text{w})}\text{o}\text{u}]$ *arrow*
 - not rounded in strict coda $[\text{k}\text{a}\text{ɹ}]$ *car*
- See work of Delattre and Freeman, *Lingua* 1968

36. British (Pre)Glottalization — Gussenhoven

- Americans only preglottalize voiceless stops in strict coda.
- Lower-prestige British varieties also preglottalize ambisyllabic stops, or even reduce them to $[\text{ʔ}]$

All: *cat* $[\text{'kæ}\text{ʔt}]$, $[\text{'kæ}\text{ʔ}]$

Lower prestige Brits: *butter* $[\text{'bʌ}\text{ʔə}]$

37. Distribution of ʒ

- Basically, only ambisyllabic (*vision*), with
- Not-too-fancy borrowing with strict coda: *garage*, *rouge*
- Fancy borrowings with strict coda: *Arpège*, *cortège*, *trialoge*, etc.
- Fancier borrowings with strict onset: *'protégé*, *re'gime*, *soup du 'jour*, *Zhi 'vago*

Again, a phonotactic generalization that relies on ambisyllabicity.

38. $\text{l} \rightarrow \text{ɫ} / \text{s} ______$

Here, the /s/ has to be in the same onset, but can be ambisyllabic.

slam, *Islip* vs. the [s] variant of *Islam*

39. $n \rightarrow \emptyset / __ t$

The /t/ can be either ambisyllabic or strict coda.

cent /¹sɛnt/ → [¹sɛt̚]

center /¹sɛntə/ → [¹sɛt̚ə] → [¹sɛ̃rə]

centaur /¹sɛn.tɔɪ/ → [¹sɛ̃n.t^hɔɪ]

40. Phonotactic constraint: *short vowel / ___ ɪ when fully tautosyllabic

- Wells notes that this pattern came in fairly early in the history of contemporary English.
- Only dialects of Ireland and Scotland preserve distinctions like *burn* ['burn] vs. *yearn* ['jɛrn].
- When we look at regional American varieties (last time), we see the ban extended: it covers not just strict coda /r/, but also ambisyllabic /r/.
- East Coast-ish conservative dialects:

[¹ mɛɪ]	<i>merry</i>	compare:	[¹ mɛɪ]	<i>Mary</i>
[¹ mæɪ]	<i>marry</i>			
[¹ mʌɪ]	<i>Murray</i>			

but *[mɛɪ], *[mæɪ],⁴ *[mʌɪ]⁵

- Innovating dialects generalize this to before ambisyllabic /ɪ/, thus merging the three *Marys* and merging *Murray* with *furry*

41. Short vowels before /l/

- Quite a few GenAm speakers have no [ʌ] or [ʊ] when /l/ occurs in strict coda
 - strict coda: *full* [fʌ], *dull* [dʌ]; where conservative speakers have [fʊl] and [dʊl].
 - I am a non-authentic native speaker, having contaminated myself with efforts to reacquire the distinction.
- What about ambisyllabic /l/? I find that I split:
 - [ʌ] survives: *color* ['kʌlə], *Tully* ['tʌli], *Cullen* ['kʌlə]

⁴ The asterisk is modulo paradigm uniformity effects in truncated forms; e.g. *Harold*, [hæɪ], *Larry* ['læɪ] for consultant PK.

⁵ Consultant PK hates *[mʌɪ] even as a truncation of *Murray*.

- No words with /ʊ/: search utility give *pulley*, *bully*, *bullock*, *bulletin*, *woolly*, *woolen*, all with (I think) [ɪ].
- Remaining short vowels appear to be stable: *fill*, *sell*, *call*, *Saul*

42. Coda and semicoda glides

- The strict coda case:
 - /j/ and /w/ are utterly illegal here.
 - This is obscured by the wicked old Americanist transcription that uses /w/ and /y/ for diphthongs (/ay/, /ey/, /ɔy/, /aw/, /ow/).
 - But these are not phonetically consonants.
 - *GLIDE IN CODA gives us: *[iɰ], *[ɪɰ], *[eɪɰ], *[ɛɰ] / *[uɰ], *[oʊɰ], *[aʊɰ] etc.
- The ambisyllabic case. Database yielded:
 - Errors in transcription
 - Forms suffixed with *-ward*: *afterward* ['æftəwərd], *seaward*, *skyward*, *wayward*⁶
 - Forms suffixed with *-yer*: *lawyer* ['lɔjə], ['lɔɪə], *sawyer* ['sɔjə], ['sɔɪə].
Paradigm Uniformity conflicting with phonotactics, yielding variation.
 - Other: *hallelujah* [ˌhæləˈluːjə], *Malawi* [məˈlɑːwi], *kiwi* ['kiwi], *Chihuahua* [tʃəˈwɑːwə, tʃəˈwɑːwə⁷]
 - Some loan adaptations replacing the glide with part of a diphthong: *ayatollah* [ˌɑɪ.əˈtɒlə], *Maui* ['mæʊ.i]

⁶ The historical pronunciation of *leeward* is ['luəd], suggesting phonological integration.

⁷ Perhaps Aggressive Reduplication? Zuraw (*Phonology*, 2007)

43. Class exercise: Ambisyllabicity in child speech

Data gathered by Prof. Sharon Inkelas, UC Berkeley, from her younger son, from about 1+ to 2 years old. Use the theory of syllable structure given in this chapter to syllabify these forms, and write a rule that correctly predicts when alveolars are substituted for velars.

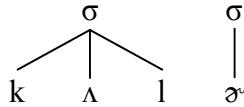
[t ^h ʌp]	‘cup’
[do:]	‘go’
[^l tuwə:]	‘cool’
[ə ^l dɪn]	‘again’
[ta ^l dɛrə]	‘together’
[^l hɛʊtəptɛə]	‘helicopter’
[^l æwə ₁ dɛrə ²]	‘alligator’
[^l hɛksə ₁ dən]	‘hexagon’
[dʊ ^l dʊ]	‘Gügü’ ⁸
[^l tʊk]	‘cook’
[^l takfɪ ₁ mɛɪkə ²]	‘coffee maker’
[^l toko ₁ nʌt]	‘coconut’
[tʌn ^l dʌktə]	‘conductor’
[^l mʌŋki]	‘monkey’
[^l bɛɪgu]	‘bagel’
[^l bʌkɪt]	‘bucket’
[^l æktʃwi]	‘actually’
[^l aktə ₁ pʊs]	‘octopus’
[^l aktə ₁ ɡʌn]	‘octogon’
[^l bɪɡ]	‘big’
[^l bʊk ^h]	‘book’
[^l pæd ₁ jɔk]	‘padlock’

⁸ A Turkish word

NON-AMBISYLLABICITY THEORIES OF THE SAME FACTUAL DOMAIN

44. Selkirk's prevocalic strict coda theory

- Selkirk (1982), "The Syllable", cited earlier
- What we were calling Ambisyllabification is full resyllabification.

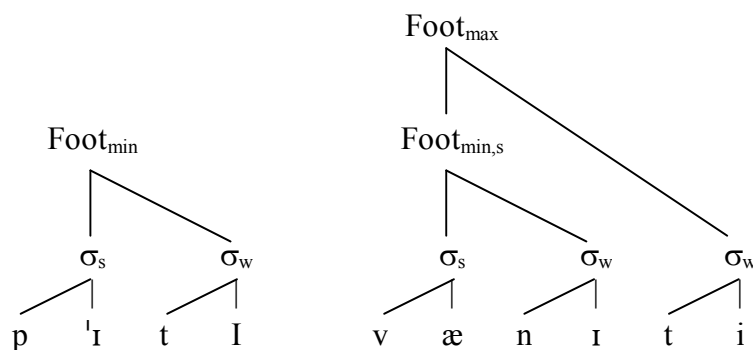


45. Assessment

- I think this will be non-insightful for *any rule that uses the strict coda environment* in the ambisyllabicity theory.
- E.g. */ʌ/ before coda /l/ in some dialects of American English (above)
 - How to avoid *[kʌlʌ]?
 - Or, in East Coast English, why should *banner* ['bæn.ʌ] be legal at all?
- One possibility is to say "tautosyllabic ʌ l are merged to [l] *before a consonant or pause*"
- But, argh, this was the very sort of disjunction that motivated the introduction of syllables in the first place! (McCawley 1973 *IJAL*, review of *SPE*)
- Obviously, with patience we could describe anything in this manner, but the original goals was to achieve some insight into the pattern ...

46. Foot theory (Kiparsky 1979)

- We need feet that are strictly left-headed.
- We are tempted to *layer* the feet into inner and outer layers
 - since this would get us the difference between post-tonic and post-atonic



47. Deploying the foot theory

- The fivefold way is still with us, and is thus translated:
 - Strict onset Foot-initial

- | | |
|----------------------|-------------|
| b. Onset of any kind | Onset |
| c. Ambisyllabic | Foot medial |
| d. Coda of any kind | Coda |
| e. Strict coda | Foot-final |

- Examples

- a = aspiration [p^hæɾæ] *patter* ə[p^hil] *appeal* vs. [ʔpæ] *upper*, [ʔp] *up*
- b = r rounding [ɹ^wil] *real*, ə[ɹ^waʊnd] *around*, [nɔɹ^wə] *nora* vs. [bɔɹ] *bore*
- c. = environment of /ɜ/ for people with small vocabularies [ˈvɪɜn] *vision*
- d. = liberal distribution of glides [ˈwɔɾæ] *water*, [hælə][ˈlujə] *hallelujah*
- e. = British dark l? [ˈkɔl] *call*

48. Problems with foot theory

- Initial atonic syllables are often thought to be not footed; yet their initial consonants behave like syllable-initials.
 - Hence we must weaken metrical theory with “stressless feet”.
 - [p^hə][ˈt^hʊnjə] *Petunia*
- “Foot-final” won’t handle the dark /l/ of *milk* — you need the concept of coda for this.

49. Phonetically-based phonology/cue theory?

- This is speculation; and I don’t know if anyone has published anything in this area.
- For cue theory in general see Hayes, Kirchner, and Steriade (2004, *Phonetically Based Phonology*, CUP) and references cited there; esp. the chapter by Richard Wright
- Languages in general:
 - place consonants where they have good external cues, since their internal cues are poor
 - vowel-adjacent is good
 - prevocalic best of all (perceptual system asymmetry)
- English is special because it is a *strong-stress language with vowel reduction*
 - Pre-atic may be not all that good...
 - Post-tonic might be good for cues on the left side of the consonant
- General principles:
 - Lots of intervocalic lenition and compression.
 - But pre-tonic consonants are exempt.
 - For consonants with good “left side” cues, favor allophones that emphasize these cues in posttonic position.
 - dark /l/ (body gesture comes first; Sproat and Fujimura
Sproat, Richard, and Osamu Fujimura. "Allophonic variation in English /l/ and its implications for phonetic implementation." *Journal of phonetics* 21, no. 3 (1993): 291-311.
 - Preglottalization (much coarticulation)

DISCUSSION OF THE HOMEWORK ON AMBISYLLABICITY

50. Demo

- Corpus
- Searching
- Reduction to types and counts
- Provision of “GEN” — the zero count items.
- Construction of a table to permit visual intuitive analysis.
- Construction of a MaxEnt grammar to form an evolving analysis.
- Testing of individual constraints for significance with the Likelihood Ratio Test.
- Testing of the need for reference to syllabification with the Likelihood Ratio Test.

CRUMMY PHONEMES OF ENGLISH

51. Defining a crummy phoneme

- One where minimal or near-minimal pairs exist, but pairs involving the crummy phoneme are highly limited (often in their distribution).
 - In other words, a dialect identical in every respect except lacking the crummy phoneme would sound extremely similar.

52. Where do crummy phonemes come from?

- Opaque phonology or sound change
 - We’ve seen this in the origin of the phonemes /v, ð, z/ in English; originally allophones (keyword: *breathe*)
 - This is much more controversial when the sound change is still active as a phonological process, as in *writer* [ˈɹɪɪtɹə]
- Sound changes arrested in midcourse
 - English /ʊ/ is exceedingly rare, perhaps just 60 or so morphemes:

boogie, book, bosom, boulevard, brook, bull, bullet, bulletin, bullion, bully, bulwark, bush, bushel, butch, butcher, chinook, cook, crook, cushion, foot, fulcrum, full, fulminate, fulsome, gobbledygook, good, hood, hook, look, nook, pudding, pull, pulley, pulmonary, pulpit, pulsar, push, puss, put, putsch, rook, rookie, should, snooker, soot, sugar, tush, wolf, woman, wood, wool, worcester, would

- It (mostly) represents the tokens of historical [ʊ] that stayed behind when the sound change $ʊ \rightarrow \Lambda$ petered out.
- The class was “replenished” with other forms that had [o] before [k] or [d]

- Foreign influence

- Japanese is a canonical example of a language that has packed its lexicon with semi-ensconced phonemes, from English and other foreign languages.
- A key reference: Itô, J. and Mester, A., 1995. Japanese Phonology. The Handbook of Phonological Theory, edited by John Goldsmith, 816-838.
- Their point: *it is much more likely that a language will promote an allophone to phoneme status, than to acquire an altogether novel phoneme.*
- Thus Japanese promotes [ɸ], formerly the allophone of /h/ before /u/, in:

before /a/: [ɸaito] ‘fight’, [ɸaŋ] ‘fan’ (vs. [haiku] ‘type of poetry’)

before /e/: [ɸesutibaru] ‘festival’, [ɸeruto] ‘felt’ (vs. [hema] ‘blunder’)

before /o/: [ɸiɸoŋ] ‘chiffon’, [ɸo:ku] ‘fork’ (vs. [hoŋ] ‘book’)

PHONEMES FROM FOREIGN INFLUENCE

53. Not so common in English, but

My undergraduate text cites:

[fæ də si'eklə] ‘end of the century’ already present as allophone: *fan*

[ˈbax] ‘Bach’

[tsuˈnami] ‘earthquake tidal wave’ already present as allophone: *fancy*

54. Exercise: Phonemic Expansion in Bruce English

[a] [ɑ] [ɔ] [æ]

a. Simple examples with non-difficult consonants

(none)	cot	caught	cat
	chiffon	faun	fan
	cos	toss	Cass
	Tom	shawm	sham

b. Quadruplets with -i

Mali	Molly	—	O'Malley
Pali	Polly	Pauley	pally
Ali	Olly	—	alley
Bali	(bollix)	—	—
Bengali	golly	Gaul-y	galley
Svengali			
Kigali			

Dalai Lama	dolly	—	dally
Cali	collie	McCawley	Callie
Denali	—	—	McNally

c. with -ə

Mahler	(collar)	mauler	(mallard)
--------	----------	--------	-----------

d. with [ou]

mahalo	hollow	—	hallow
--------	--------	---	--------

e. with [ə]

Sinhala	hallah	Paula	hallelujah
Kerala	Guatemala (!)	—	—

f. Some words in languages that I have studied in school

[ma'dam]	'madame' — French
[za:]	'sah' 'saw' — German
[ʃara:b]	'wine' — 'Persian'

- What sort of expansion of the phoneme inventory is this?
- Why is it limited to the position before [l] (listen!)
- Which phoneme is being split, /a/ or /l/?
- Is Bruce the only speaker of this dialect on earth?