Chapter 13A: Syllabification in English

Bruce Hayes
Department of Linguistics
UCLA

This is a chapter that I decided not to include in my textbook *Introductory Phonology* (2009, Malden, MA: Blackwell). I'm fond of the data, but ambisyllabicity seems to be a sufficiently controversial hypothesis in phonology that the chapter may not be suitable for use in a broadly-distributed text.

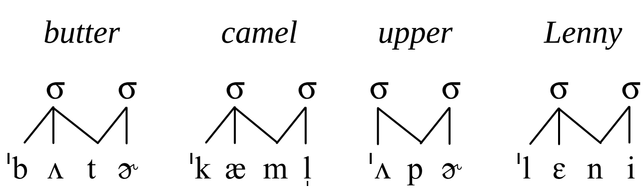
Comments and corrections welcome: bhayes@humnet.ucla.edu.

1. Ambisyllabicity

English has some puzzling cases with regard to syllabification. Consider words like *butter*, *camel*, *upper*, *Lenny*, etc. Native intuition seems to waver on whether these should divide as /bʌ.tɚ/ or as /bʌt.ɚ/. This is different from what we see in many other languages, where intuitions on how to divide syllables are clearer.

The phonological treatment of the English "blurred syllabification" is a long-standing issue in phonology, and various analyses have been proposed. The one I will describe here seems to work fairly well.

The basic idea is that some consonants can belong to more than one syllable at a time; in standard terminology they are called **ambisyllabic**. Ambisyllabic consonants can most easily be depicted using the tree notation for syllable structure: they are consonants that are dominated by more than one σ:



Such a representation would account for the ambiguous intuitions speakers have concerning the syllabification of such words.

English syllable division is not blurry in every instance. When a stressed vowel follows the consonant sequence at issue, syllabification seems pretty clear: *balloon* /bə.ˈlun/, *proclaim* /pro͡ʊ.ˈfe͡ɪn/, *approach* /ə.ˈpɹo͡ʊt͡ʃ/, *insane* /ɪn.ˈse͡ɪn/, *attract* /ə.ˈtrækt/, etc. It is only where the second vowel is stressless, as in the cases shown above, that we get ambisyllabicity. Our analysis of syllabification should take account of this difference.

2. Rules for ambisyllabicity

We can derive English ambisyllabification if we augment the rules for syllabification seen in the chapter 13. The first three are repeated from before.

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).[1]

Coda Formation

Join any consonants not yet syllabified to the preceding syllable.

Ambisyllabification I

```
σ  σ  →  σ  σ        where the second syllable is stressless
  /       \ /
 C         C
```

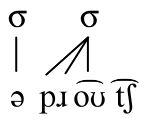
The idea is that the first three rules assign the sort of syllabification that most languages have, then the last rule, Ambisyllabification I, blurs the syllabification of the initial consonant of a stressless syllable.

For example: the word *approach* would get two syllables, one each for its two syllabic sounds:

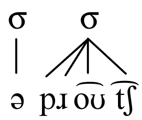
```
σ    σ
|    |
ə  pɹ o͡ʊ t͡ʃ
```

[1] As we saw in the last chapter, English needs limitations: for instance, /tw/ and /dw/ are treated as onsets only when they are word-initial.

The consonants work like this: first we take as many consonants as can to become onsets:

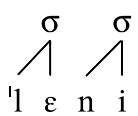


And then we make the remaining consonants into codas:

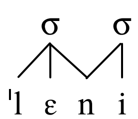


The rule of Ambisyllabification I can't apply here, since the vowel of the second syllable isn't stressed.

A word like *Lenny* would first be syllabified like this:



Here, since the second syllable is stressless, Ambisyllabification I *can* apply, and we get:



Why does ambisyllabification exist? One conjecture is that it represents a compromise between two contradictory "goals," as follows:

- Stressed syllables want to have more segments, while stressless syllables want fewer.
- All syllables want to have onsets.

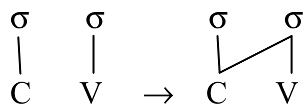
The ambisyllabification seen in *Lenny* lets the first syllables be a relatively beefy /lɛn/, while still letting the second syllable have an onset.

3. More blurred syllables in English

We've seen earlier that languages differ in how they treat /...C]$_{\text{word}}$ [$_{\text{word}}$V... / (word ending in consonant, followed by word beginning in vowel). German syllabification respects word boundaries, so the first syllable of the second word cannot acquire an onset by "stealing" a consonant from the preceding word. Spanish works the opposite way, with word-final consonants transferring fairly freely to the following syllable.

English is a peculiar intermediate case: the word-final consonants seem to be blurred in their syllabification, for example the /t/ in *bite a (melon)*, or the /p/ in *up a tree*. Plausibly, these represent another case of ambisyllabification, and we can posit the following rule:

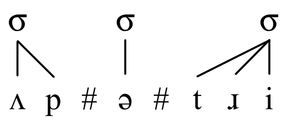
Ambisyllabification II



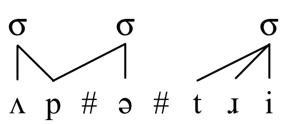
(phrase bounded)

This rule assumes that words are first syllabified by themselves, then together. I haven't put any]word expressions into the rule, because they are not needed—in the usual case, it is only when words have first been syllabified separately that we ever get a consonant that doesn't belong to the same syllable as the following vowel.

Let us look at an example. A brief preliminary: since the expression $]_{\text{word}}[_{\text{word}}$, which designates the break between words, is a little bit verbose, I will use a conventional (fairly commonly used) symbol "#" instead. The basic syllabification rules for *up a tree* would give the following:



Ambisyllabification II lets the /p/ belong to two syllables, as follows:



Like Ambisyllabification I, Ambisyllabification II can be seen as a compromise between conflicting ends. Here, these are: (a) The break between syllables should agree with the break between words (recall that this holds absolutely in German); (b) The first syllable of the second word wants to have an onset.

Ambisyllabification across word boundaries may not be unique to English; various Spanish speakers I have consulted feel that the consonants at the ends of the prevocalic words in *Los otros estaβan en el aβion* (discussed in chapter 13) are likewise ambisyllabic.

In just a very small number of English words, Ambisyllabification II applies even when there is no word boundary present. These are the words (not found in all English dialects) that have medial /ŋ/ before a vowel. Below is the syllabification for the word *gingham*:

σ σ g ˈɪ ŋ ə m	σ Assignment
σ σ g ˈɪ ŋ ə m	Onset Formation
σ σ g ˈɪ ŋ ə m	Coda Formation
—	Ambisyllabification I
σ σ g ˈɪ ŋ ə m	Ambisyllabification II

Here, /ŋ/ does *not* become an onset by the regular process of Onset Formation (we need to say this, since there are no words like *[ŋɑp]). But later on, it becomes a “semionset” as the result of Ambisyllabification II. We will see a consequence of this later on.

4. Ambisyllabification and Tapping

So far, I have appealed only to intuition in establishing English syllabification. One can go further: there are general patterns in the language that make better sense when one considers them as the result of ambisyllabification.

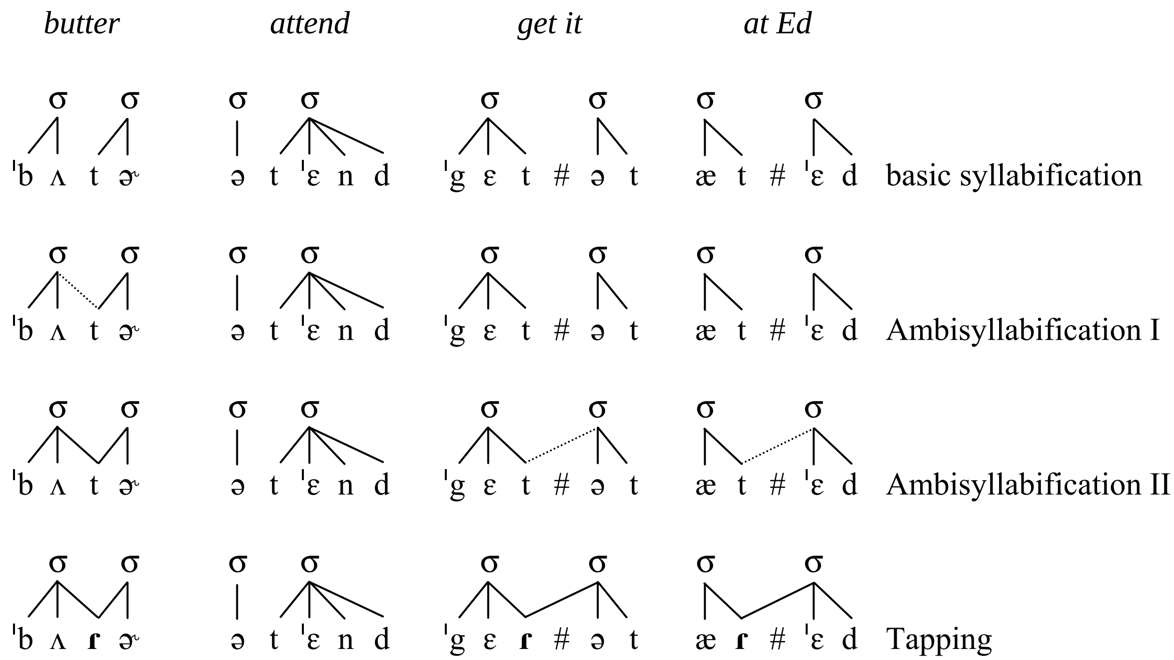
Tapping is one such case. There are two environments for tapping in English: word-internally, as in *butter*, and across word boundaries, as in the following cases:

at a frantic pace	[æ**ɾ** ə ˈfɹæntɪk ˈpe͡ɪs]
get away	[ˈgɛ**ɾ** əˈwe͡ɪ]
not again	[ˈnɑ**ɾ** əˈgɛn]

While these two cases look similar, there is in fact an interesting asymmetry. Within a word, Tapping can apply only when the /t/ is followed by a stressless vowel, as in *shouting* [ˈʃa͡ʊ**ɾ**ɪŋ]. A stressed vowel will block the rule (and also induce Aspiration); this is shown by examples like: *flotation* [flo͡ʊˈ**tʰ**e͡ɪʃən]. However, in the cross-word-boundary case, the following vowel does *not* have to be stressless:

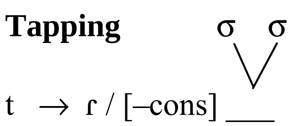
at Ed	[æ**ɾ** ˈɛd]
get all of them	[ˌgɛ**ɾ** ˈɔl əv ðəm]

We can make sense of this, and also unify the two Tapping rules, if we hypothesize that /t/ is tapped when it is ambisyllabic. The various cases will work like this:

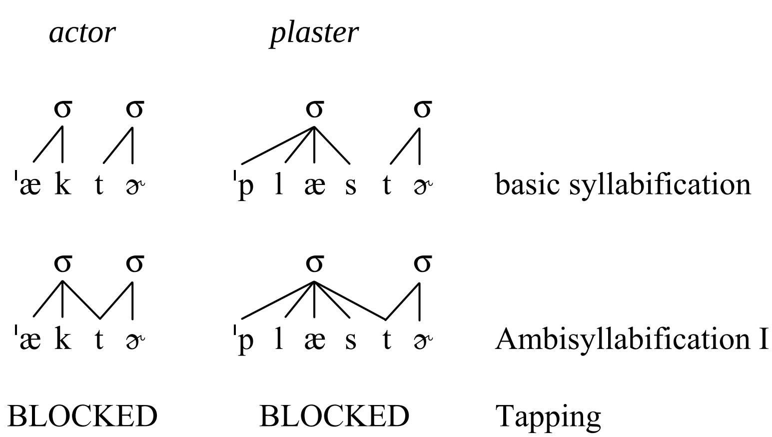


The Tapping rule itself still requires reference to a bit of segmental environment, namely the presence of a [–consonantal] segment (a vowel, glide, or /r/) on the left:

Tapping



That is, /t/ is tapped when it is affiliated with two syllables and is preceded by [–consonantal]. The [–consonantal] part of the rule is still needed for cases like *actor* [ˈæk**t**ɚ] or *plaster* [ˈplæs**t**ɚ], where a preceding [+consonantal] sound (/k/, /s/) blocks tapping.



Note that the very same restriction holds for the cross-word-boundary cases of Tapping: *act alarmed* [ˈæk**t**#əˈlɑɹmd], *last opportunity* [ˈlæs**t#**ɑpɚˈtunɪɾi].

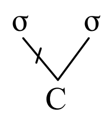
5. Some additional consequences of ambisyllabification

As far as I can tell, English allophones are largely organized around the basic schemes permitted under the view of (ambi)syllabification given here. There are five logically possible syllabic environments for consonants.

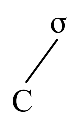
1. Strictly in an onset (i.e. in an onset, and not ambisyllabic)
2. In an onset (either strictly so, or ambisyllabic)
3. Ambisyllabic
4. In a coda (either strictly so, or ambisyllabic)
5. Strictly in a coda (i.e. in a coda, and not ambisyllabic)

Here are the same five environments stated in notation. When a line has slashes through it, that means, “is not linked to a syllable in this direction”.

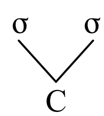
Strictly in onset:



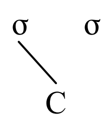
In (any) onset:



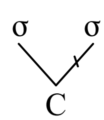
Ambisyllabic:



In (any) coda:



Strictly in coda:



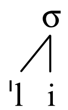
Below, I will review a number of English allophones, showing how they fit into this scheme.

5.1 /l/ allophones

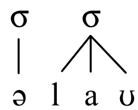
Consider for instance /l/, whose basic allophones are:

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

Lee

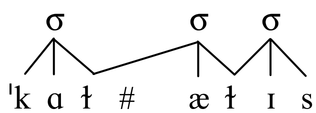


allow

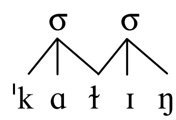


b. A fairly dark (velarized; i.e. [+back]) [ɫ]. Found ambisyllabically:

call Alice

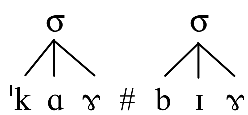


calling

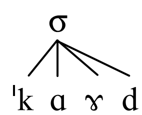


c. A really dark l. In casual speech this even loses its alveolarity, and becomes a vowel-like sound I will transcribe with IPA [ɤ]; featurally both [+back] and [–coronal]. Found strictly in codas.

call Bill



called



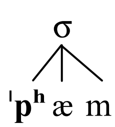
More precisely: strict coda /l/ can be either [ɤ] or [ɫ], but ambisyllabic /l/ can only be [ɫ]: *[ˈkaɤˈæɤɪs].

5.2 Stop Aspiration

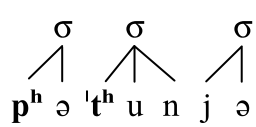
Voiceless stops are aspirated in the strict-onset context and unaspirated elsewhere. When in codas and preceded by [–consonantal], they may be preglottalized.

a. Strict onset: aspirated (in features: [+spread glottis])

Pam

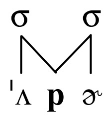


petunia

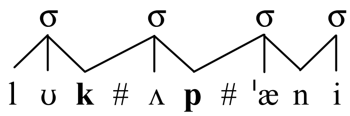


b. Ambisyllabic, unaspirated:

upper

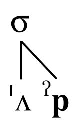


look up Annie

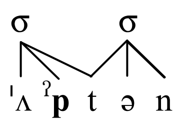


c. Strict codas preceded by [–consonantal], optionally preglottalized (features: [+constricted glottis]):

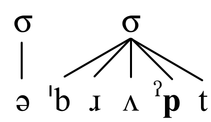
up



Upton



abrupt



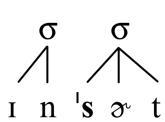
The voiced stops /b,d,g/ parallel the voiceless stops, in the following way: in strict onset position, where the voiceless stops are aspirated, the voiced are optionally rendered voiceless. Otherwise, the phonemic voiced stops must be voiced.

5.3 *Affrication of /s/ after /n/*

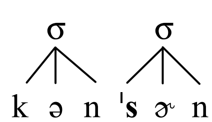
The phoneme /s/ has an affricate allophone /t͡s/ when it is in a coda (not necessarily strictly in a coda) and follows /n/.

a. Strict onset, [s]:

insert

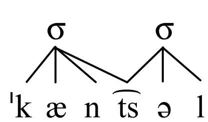


concern

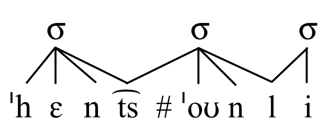


b. Ambisyllabic, [t͡s]:

cancel

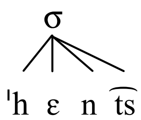


hence only



c. Strict coda, [t͡s]:

hence

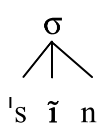


The form *cancel* is significant here: it suggests that Ambisyllabification I can apply even to consonants (in this case, the phoneme /s/) that occur following consonants, at least in some cases.[2]

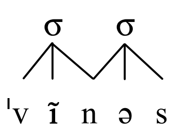
5.4 Vowel nasalization

The influence of consonants on vowels also seems to depend on syllabification. For example, at least in my speech a vowel will become nasal before a nasal consonant only when the consonant is in the same syllable:

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



b. Same syllable (nasal is ambisyllabic): *Venus*[3]



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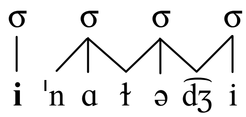
[2] It is not clear how far we would want to take this—if we don't add *any* segmental conditions to Ambisyllabification I, then it will derive ambisyllabicity in *Petunia*, given above. Presumably, there are limits to how much the coda cluster created by Ambisyllabification I can violate the principles of sonority sequencing. I will leave the rule in its present, underformalized state here.

[3] The /n/ in *Venus* is actually a nasalized tap, [ɾ̃]. More on this below.

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



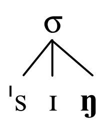
5.5 Distributional patterns

Besides allophonic rules, there are a number of distributional limitations that English phonemes obey that seem to be based on the syllabic principles given above.

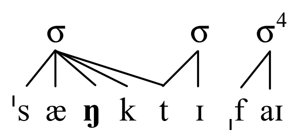
The phoneme /ŋ/ may only occur in codas. In the great majority of cases, these codas are strict codas. However, a small number of relatively uncommon words permit ambisyllabic /ŋ/.

a. Strict codas: /ŋ/ is ok:

sing

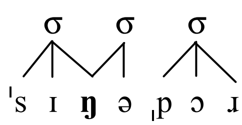


sanctify

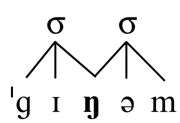


b. Ambisyllabic coda: /ŋ/ is ok, but found only in uncommon words. For how these syllabifications are derived, see above.

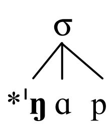
Singapore

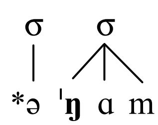


gingham



c. Onset position: /ŋ/ is impossible (hypothetical forms given here):





For dialects that have [ˈsɪŋgəpɔɹ] and [ˈgɪŋgəm], the restriction on /ŋ/ should be stated as follows: /ŋ/ is legal only in strict coda position.

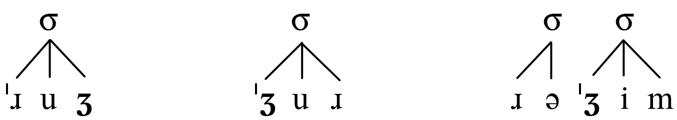
[4] On the lack of ambisyllabicity in the last syllable of *sanctify*, see below.

The phoneme /ʒ/ is limited in just the opposite way: in some dialects, /ʒ/ occurs *only* in ambisyllabic position, as in the following forms:

vision *pleasure*

The speakers of these dialects use /d͡ʒ/ at the ends of words like *garage* and *rouge*, where other dialects permit strict-coda /ʒ/ ([gəˈɹɑʒ], [ˈɹuʒ]). The /ʒ/ phoneme seems to be impossible in strict onset position for all English dialects. This is assuming that words like *genre*, (*soupe du*) *jour*, *régime*, and *Zhirinovsky* are taken to be unassimilated borrowings; that is, not entirely English.

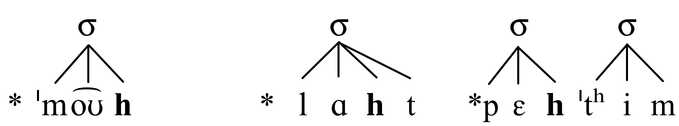
rouge *jour* *regime*



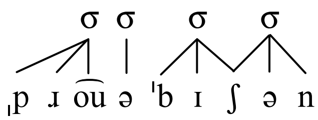
The phoneme /h/ is permissible only in strict onset position:

heel *apprehend*

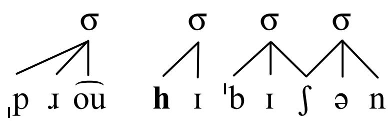
It is completely impossible in strict-coda position, so that there are no words at all like:



What about ambisyllabic position? My opinion is that there are no genuine cases; that is, that ambisyllabic /h/ is disallowed. There do exist cases in which the rules for English stress would result in placing an underlying /h/ in ambisyllabic position, as in *prohibition* or *inhibition*. (We can tell there is an underlying /h/ because of *prohibit* [pro͡ʊˈ**h**ɪbɪt] and *inhibit* [ɪnˈ**h**ɪbɪt].) In these cases, there seem to be two outcomes. One is simply to delete the /h/, so it won't have to be ambisyllabic:



Another possibility, which may seem a bit artificial, is to say the word as if it were two words (*pro hibition*). Since Ambisyllabification I applies only within words, this permits the /h/ to remain as a strict onset:



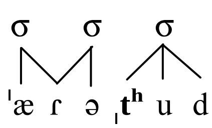
Summing up this section: the syllabification principles seem to act as an "organizing principle" for both allophonic rules and for constraints on the distribution of phonemes. If we were to express all the rules above simply as sequences of segments and word boundaries, they would be quite complicated, and the connection between all the various rules could not be made.

6. Secondary stress and syllabification

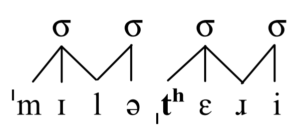
Ambisyllabification is stated to apply only when the second vowel is not stressed. A question we haven't resolved is: when a vowel bears a *secondary* stress, does it count as stressed for purposes of the rule? Some evidence given below suggests that the answer is "yes":

Aspiration:

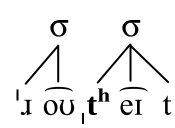
attitude



military

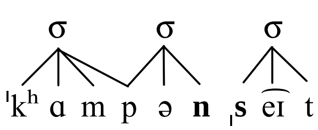


rotate

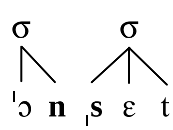


/s/ Affrication:

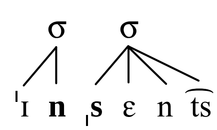
compensate



onset



incense



As can be seen, before a secondary stressed vowel, there is aspiration, and there is no /s/ Affrication. Therefore, it appears that secondary stress blocks Ambisyllabification; only fully stressless vowels allow it.

This makes things more difficult, since secondary stress is hard to hear. Fortunately, one can usually make a diagnosis for secondary stress on the basis of vowel quality. In particular, most of the vowels of English can occur only in stressed syllables, or only in stressless ones, but not both. The following chart illustrates this:

Vowels that are Never Stressed

/ə/	data	[ˈdeɪ**ɾ**ə]
/l̩/	bottle	[ˈbɑ**ɾ**l̩]

Vowels that Always have at least Secondary Stress

/e͡ɪ/	irritate	[ˈɪɹəˌ**tʰ**e͡ɪt]
/a͡ɪ/	motile	[ˈmo͡ʊˌ**tʰ**a͡ɪl]
/ɛ/	vertex	[ˈvɚˌ**tʰ**ɛks]
/a͡ʊ/	kowtow	[ˈka͡ʊˌ**tʰ**a͡ʊ]
/æ/	Hartack	[ˈhɑɹˌ**tʰ**æk]
/ɔɪ/	planetoid	[ˈpʰlænəˌ**tʰ**ɔ͡ɪd]
/u/	attitude	[ˈæɾəˌ**tʰ**ud]
/ʊ/	Lilleput (?)	[ˈlɪləˌ**pʰ**ʊt]
/ʌ/	Naugatuck	[ˈnɔgəˌ**tʰ**ʌk]
/ɑ/	proton	[ˈpɹoʊˌ**tʰ**ɑn]

Vowels that can be either stressed or stressless

/ɪ/	attic	[ˈæ**ɾ**ɪk]	vs.	politics	[ˈpɑləˌ**tʰ**ɪks]
/i/	pity	[ˈpʰɪ**ɾ**i]	vs.	tea	[ˈ**tʰ**i]
/o͡ʊ/	motto	[ˈmɑ**ɾ**o͡ʊ]	vs.	tow	[ˈ**tʰ**o͡ʊ]
/ɚ/	butter	[ˈbʌɾɚ]	vs.	purr	[ˈpʰɚ]

It is only in the third class of vowels that you have to use your ear and judge.

7. Returning to the /oʊl/ Data, with syllables

Chapter 10, section 5 presented data involving the [o] allophone of /o͡ʊ/, which occurs before /l/. We are now in a position to understand the data somewhat better and treat them with greater accuracy.

The basic observation made earlier is that the basic phoneme /oʊ/ shows up as monophthongal [o] when it precedes /l/ in the same morpheme. This implies the following data:

a. /oʊ/ *Not Before* /l/

Poe	[ˈp**o͡ʊ**]
propane	[ˈpr**o͡ʊ**ˌpeɪn]
hope	[ˈh**o͡ʊ**p]
toad	[ˈt**o͡ʊ**d]
moat	[ˈm**o͡ʊ**t]
phone	[ˈf**o͡ʊ**n]
Oakley	[ˈ**o͡ʊ**kli]
most	[ˈm**o͡ʊ**st]

b. /oʊ/ *Before* /l/ *in the Same Morpheme*

i. *Monomorphemic*

pole	[ˈp**o**l]
Coltrane	[ˈk**o**lˌtreɪn]
hole	[ˈh**o**l]
told	[ˈt**o**ld]
mole	[ˈm**o**l]
fold	[ˈf**o**ld]
poultry	[ˈp**o**ltri]
mold	[ˈm**o**ld]
Roland	[ˈɹ**o**lənd]
holy	[ˈh**o**li]
polio	[ˈp**o**lio͡ʊ]

ii. Bimorphemic

[[goal]$_{\text{stem}}$ ie]$_{\text{word}}$	[ˈg**o**li]	
[[hole]$_{\text{stem}}$ y]$_{\text{word}}$	[ˈh**o**li]	
[[roll]$_{\text{stem}}$ ing]$_{\text{word}}$	[ˈɹ**o**lɪŋ]	
[[Pol]$_{\text{stem}}$ess]$_{\text{word}}$	[ˈp**o**ləs]	‘a female Pole’

c. /oʊ/ *Before* /l/ *in a Separate Morpheme*

[[low]$_{\text{stem}}$ly]$_{\text{word}}$	[ˈl**o͡ʊ**li]
[[slow]$_{\text{stem}}$ly]$_{\text{word}}$	[ˈsl**o͡ʊ**li]
[[low]$_{\text{stem}}$[land]$_{\text{stem}}$s]$_{\text{word}}$	[ˈl**o͡ʊ**ləndz]
[[toe]$_{\text{stem}}$less]$_{\text{word}}$	[ˈt**o͡ʊ**ləs]

The analysis given earlier works as a rough approximation. But there are further data that indicate that it is not really correct. What follows is an attempt to devise a better account.

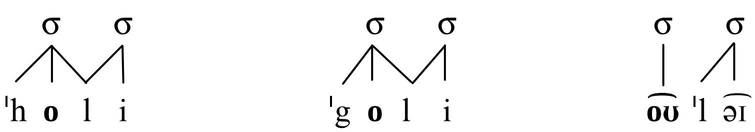
The problem is that there are words in which the /o͡ʊ/ precedes an /l/ within the same morpheme, but remains [o͡ʊ] phonetically:[5]

prolixity	[pɹ**o͡ʊ**ˈlɪksɪti]
olé	[**o͡ʊ**ˈle͡ɪ]
Olay	[**o͡ʊ**ˈle͡ɪ]
volition	[v**o͡ʊ**ˈlɪʃən]
oleic	[**o͡ʊ**ˈle͡iɪk]

A clue to what's going on is to compare (for example) *Roland* ([ˈɹ**o**lənd]) with *Olay* [**o͡ʊ**ˈleɪ]. The crucial difference lies in the location of the stress. Since stress is relevant to ambisyllabification, perhaps the real conditioning environment for /o͡ʊ/ → [o] should be based on syllables.

Putting some characteristic examples into syllables by our rules, we get:

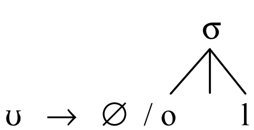
holy *goalie* vs. *Olay*



There is a clear pattern at work here: /o͡ʊ/ is replaced by [o] when it is in the same syllable as the following /l/. Intuitively, one might say that two segments in the same syllable are "phonologically closer" than two segments in separate syllables, and would be more likely to interact.

The actual rule taking /oʊ/ to [o] before same-syllable /l/ can be formalized as follows:

/o͡ʊ/ **Monophthongization**



You will have noticed that one problem still remains: the cases like *lowly* or *toeless*, where there is a morpheme boundary before the /l/ and we get [oʊ], not [o]. To handle these, it is useful

[5] Some caution in interpreting the data. In some of these words, the initial /oʊ/ can lose its stress and tend towards [ə]. On the way to [ə], it may pass through variants that are similar to [o]. The crucial point is that if the words given are pronounced with full secondary stress on the initial syllable, we get [o͡ʊ] and not [o].

to remember the discussion earlier (Chapter 10) of bounding in phonology: various rules apply only if all the segments in their structural description belong to the same specified domain. For Ambisyllabification I, it looks like that domain is the stem. If this is the case, *lo͡ʊly* etc. will be syllabified as follows:

σ σ

[[ˈl o͡ʊ]$_{\text{stem}}$ l i]$_{\text{word}}$

Under this syllabification, the diphthongal [o͡ʊ] is what we would expect.

What independent evidence might justify our crucial assumption, that is, Ambisyllabification? Recall that Tapping applies to ambisyllabic consonants. Although we are used to thinking of Tapping as only affecting /t/ and /d/, in fact it also applies to /n/. The tap that emerges is a nasal one, transcribable as [ɾ̃].

The prediction that we make goes like this: since the suffix -*ness* is a separate morpheme, Ambisyllabification I should not apply to the /n/ that begins it; so the /n/ in -*ness* should not undergo Tapping.

The prediction is correct, at least in my speech. Compare derivations below for *Venus* vs. *freeness* ‘the quality of being free’; the first example shows the normal ambisyllabicity, whereas the second shows Ambisyllabicity blocked by the morpheme boundary:

Venus	*freeness*	
σ σ [[ˈv i n ə s]$_{\text{stem}}$]$_{\text{word}}$	σ σ [[ˈf ɹ i]$_{\text{stem}}$ n ə s]$_{\text{word}}$	basic syllabification
σ σ [[ˈv i n ə s]$_{\text{stem}}$]$_{\text{word}}$	BLOCKED BY BOUNDARY	Ambisyllabification I
σ σ [[ˈv i **ɾ̃** ə s]$_{\text{stem}}$]$_{\text{word}}$	——	Tapping
σ σ [[ˈv i **ɾ̃** ə s]$_{\text{stem}}$]$_{\text{word}}$	σ σ [[ˈf ɹ i]$_{\text{stem}}$ n ə s]$_{\text{word}}$	Output

The facts of vowel nasalization also support the idea that morpheme breaks block Ambisyllabification I. If include nasality in the transcription, these forms would be [ˈvĩɾ̃əs] vs.

[ˈfrinəs]. This is what we expect, since as noted above vowels become nasalized only if they precede a nasal consonant in the same syllable.

8. Summary

One goal of this chapter has been to show that English allophones are not an arbitrary collection of rules, but to some extent an **organized system**: they all refer to the kinds of syllabification we have have been working with here. Two overall trends seen in this interaction are:

(a) Vowels seem to be more heavily influenced by following consonants when they are in the same syllable as those consonants. We see this both in Nasalization and the /o͡ʊ/ → [o] rule.

(b) Ambisyllabic position seems to be a position where lenition takes place. Thus ambisyllabic /t,d,n/ become taps, the voiceless stops fail to get aspiration, and the /l/'s are darkened.

9. 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.

[tʰʌp]	‘cup’
[doː]	‘go’
[ˈtuwɔː]	‘cool’
[əˈdɪn]	‘again’
[taˈdɛɾə]	‘together’
[ˈhɛʊˌtɔpteə]	‘helicopter’
[ˈæwəˌdɛɾɚ]	‘alligator’
[ˈhɛksəˌdɔn]	‘hexagon’
[dʊˈdʊ]	‘Gügü’ [6]
[ˈtʊk]	‘cook’
[ˈtɑkfiˌmeɪkə]	‘coffee maker’
[ˈtokoˌnʌt]	‘coconut’
[tʌnˈdʌktə]	‘conductor’
[ˈmɑŋki]	‘monkey’
[ˈbeɪgu]	‘bagel’
[ˈbʌkɨt]	‘bucket’
[ˈæktʃwi]	‘actually’
[ˈɑktəˌpʊs]	‘octopus’
[ˈɑktəˌgɑn]	‘octogon’
[ˈbɪg]	‘big’
[ˈbʊkʰ]	‘book’
[ˈpædˌjɔk]	‘padlock’

[6] A Turkish word

For Further Reading

The basic ideas of the ambisyllabicity analysis of English given here are from Daniel Kahn (1976) *Syllable-based generalizations in English phonology* (New York: Garland); see also Carlos Gussenhoven (1986) "English plosive allophones and ambisyllabicity," in *Gramma* **10**. 119-141.