

Phonology II: Syllables

February 6th, 2023

What's above Segments?

- Some time ago...
 - I talked about the fact that there are some strings of (English) sounds which don't sound like they could possibly be English words.
- Possible English words:
 - plab forch beeg shump staz hibber crong trab
- Impossible English words:
 - fmort glsik rmak msile vlash zpin ngotch ptud
- The impossible English words violate what are called the **phonotactic** rules of the language.

Syllable Structure

- In order to understand phonotactics, it is necessary to first take a look at syllables and syllable structure.
- Syllables are suprasegmental units;
 - they organize segments into minimal-sized utterances in a language.
- Syllables have three sub-parts:
 1. the onset
 2. the nucleus
 3. the coda
- Together, the nucleus and coda form the **rhyme**.

How many syllables are there in your name?

Syllable Pyramid

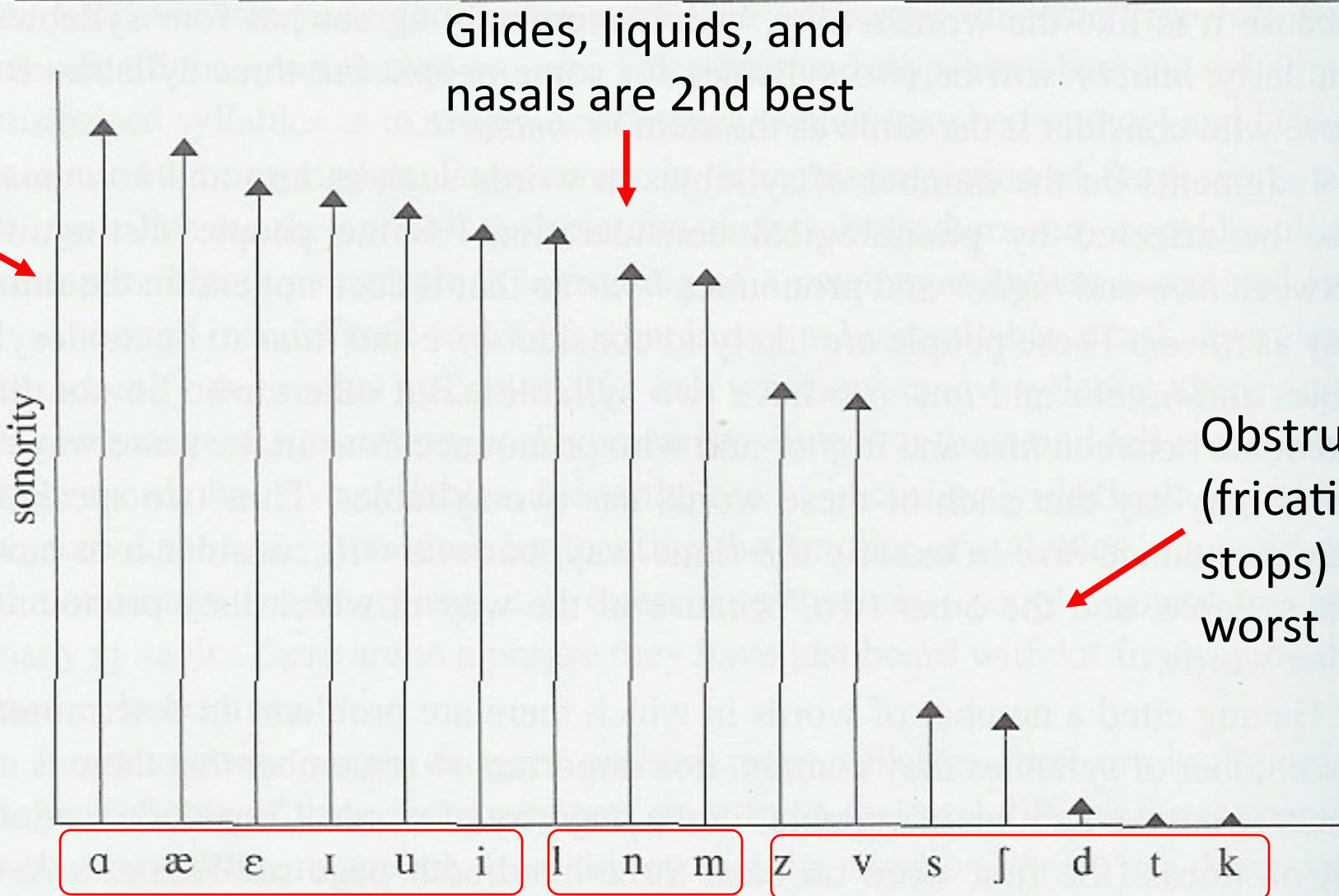
Sonority and Syllables

- Syllables are generally organized around a phonological property called sonority.
 - basically: sonority = perceived loudness
- Sonorants (vowels, liquids, nasals, glides) have lots of sonority;
 - obstruents (stops and fricatives) have less.
- Basic idea: the most sonorous segments in a syllable form the “peak” or **nucleus** of the syllable.

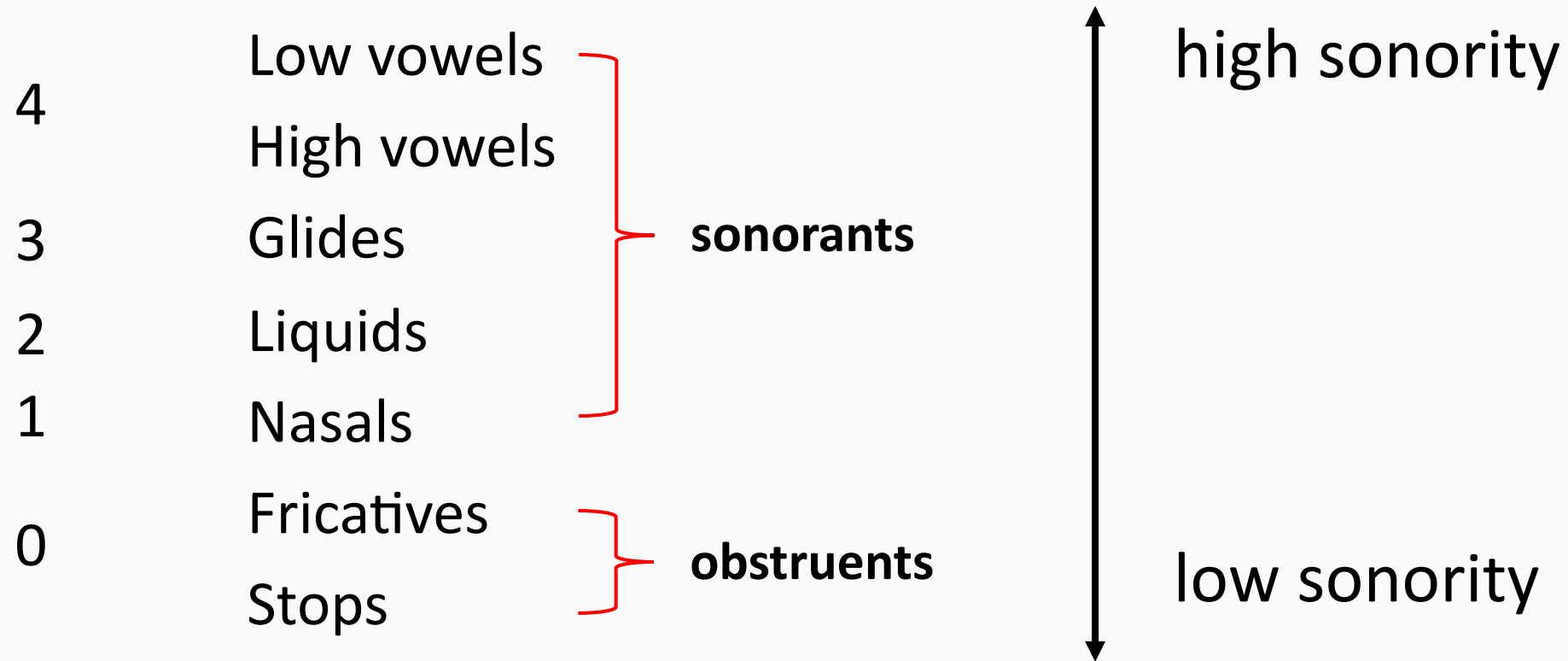
Relative Sonority Scale

FIGURE 10.1 The relative sonority of a number of the sounds of English.

Because of sonority, vowels make good peaks.

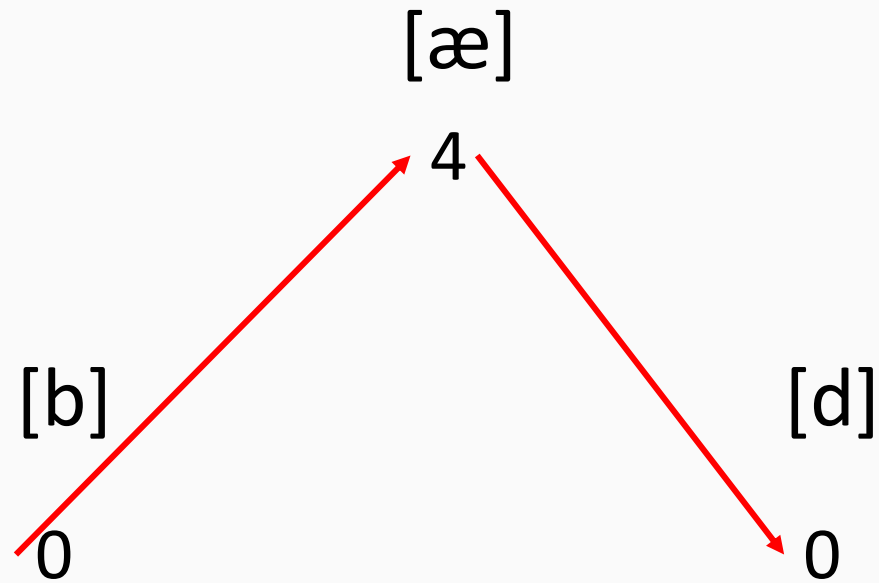


Sonority and Syllables



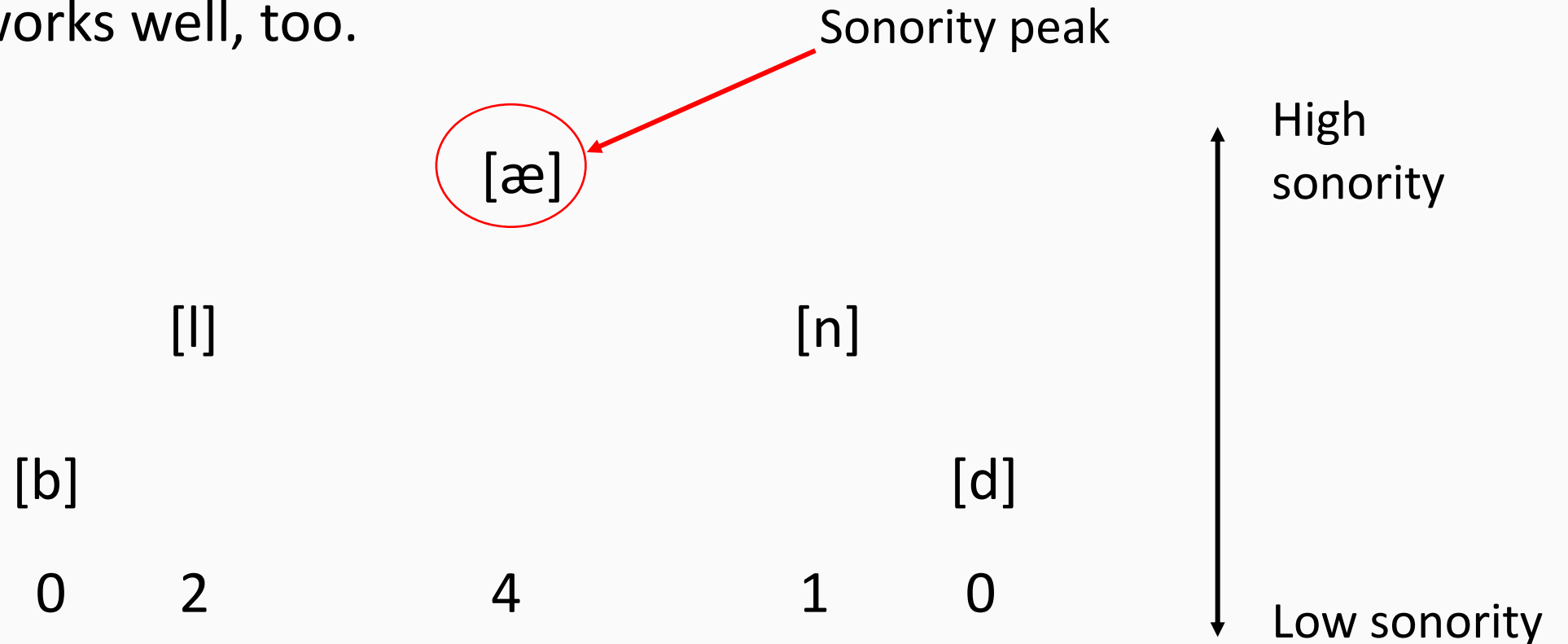
Sonority and Syllables

- An old idea (e.g., Pike 1943): syllables are organized around peaks in sonority.
- This is the **Sonority Sequencing Principle (SSP)**
- Example: [bæd] is a well-formed syllable in English



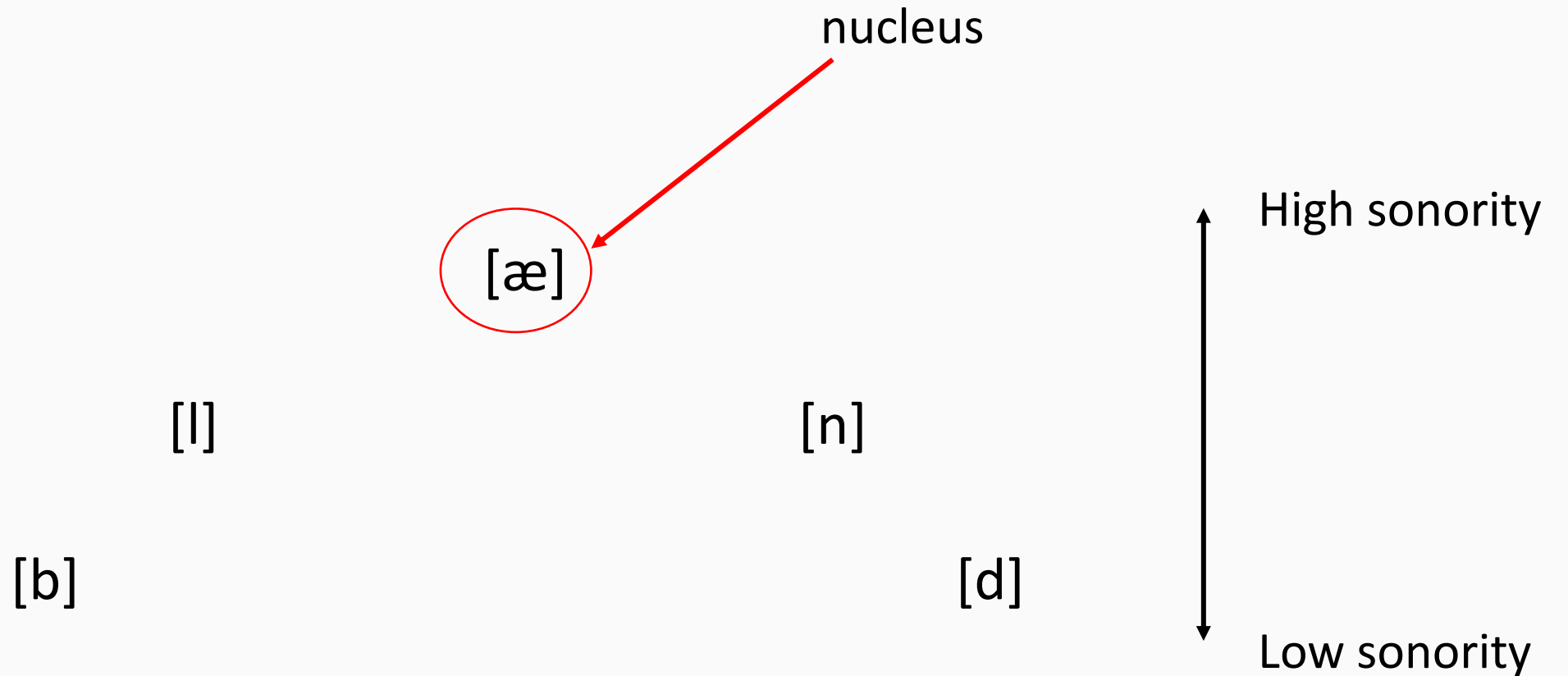
Sonority and Syllables

- [blænd] works well, too.



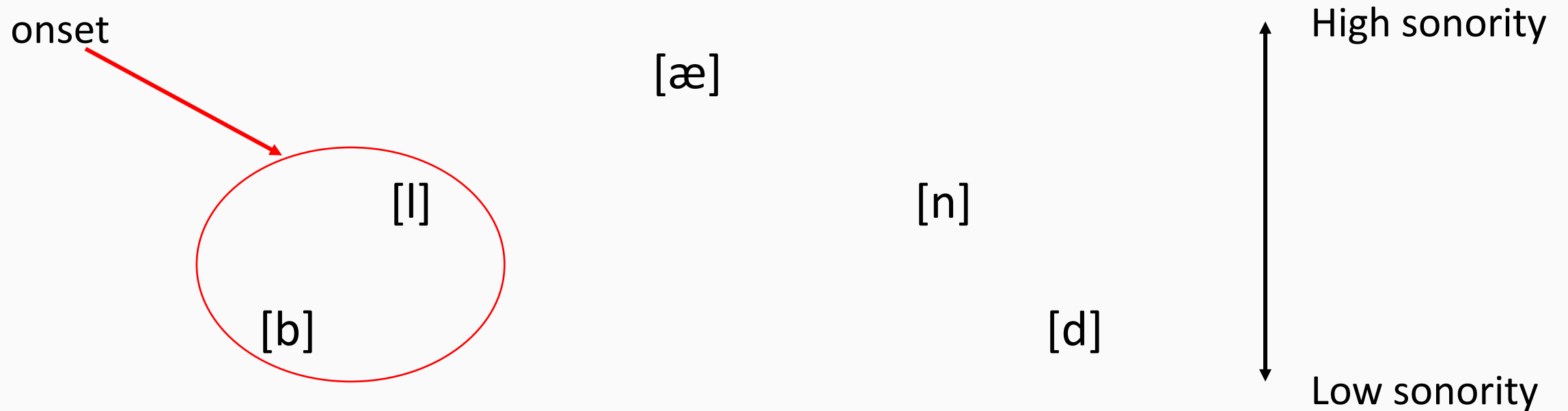
Sonority and Syllables

- The sonority peak forms the **nucleus** of the syllable.



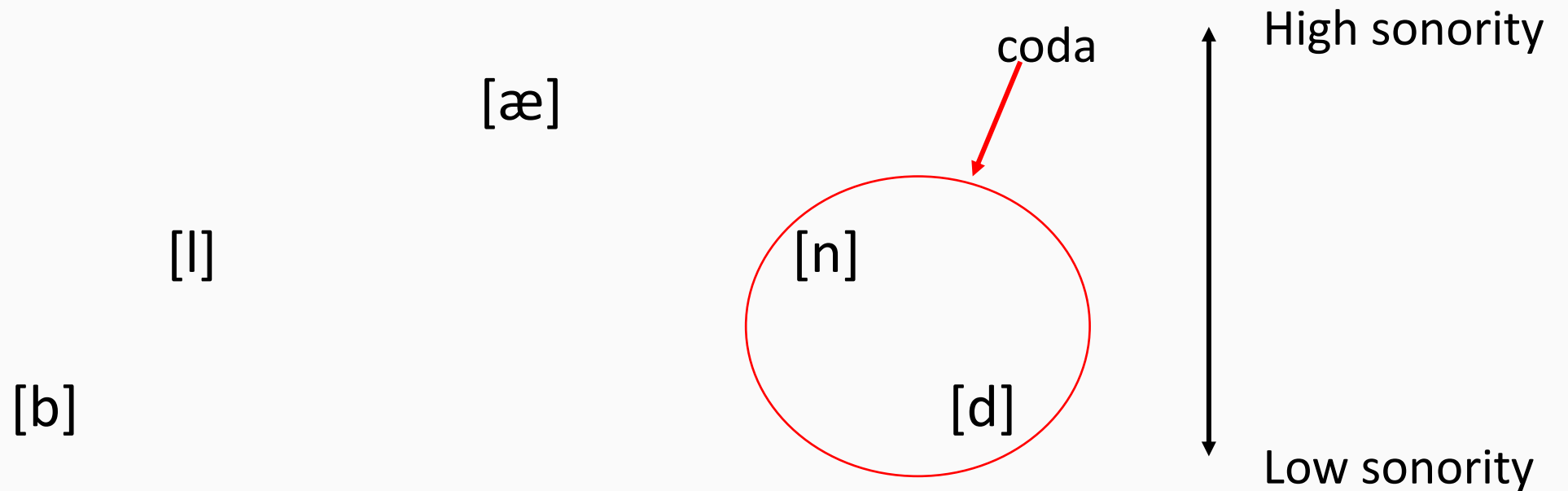
Sonority and Syllables

- The sonority peak forms the **nucleus** of the syllable.
- The sounds that precede the nucleus form the syllable **onset**.



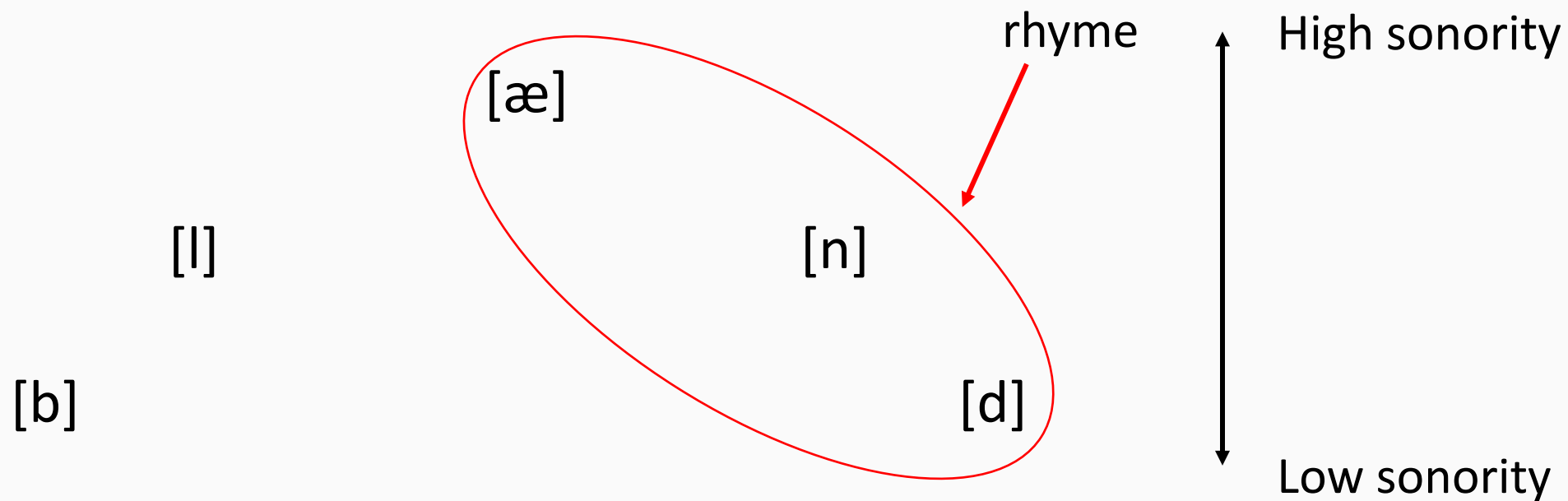
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- The sounds that follow the nucleus form the syllable **coda**.



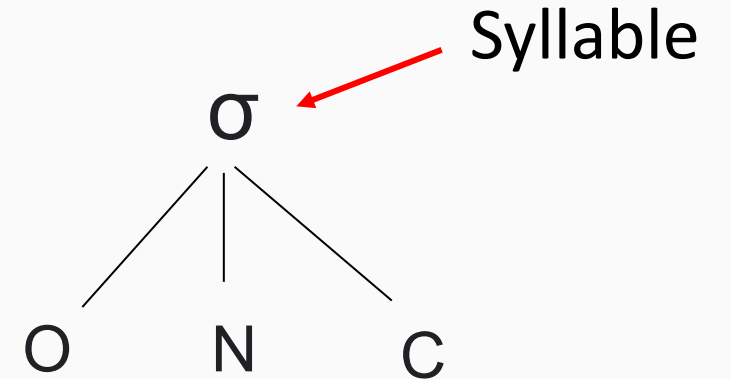
Sonority and Syllables

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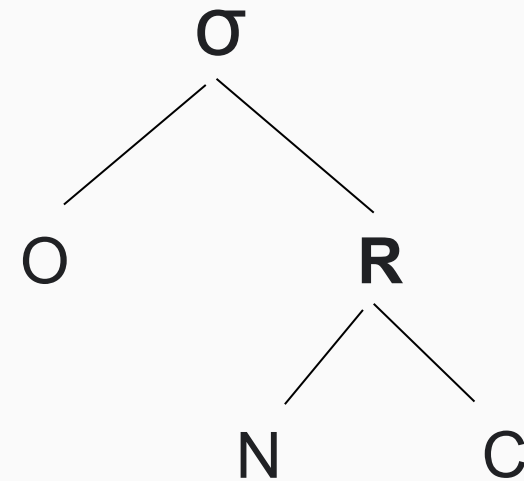


Syllable Structure

- Syllables have three sub-parts:
 1. Onset
 2. Nucleus
 3. Coda



Together, the nucleus and coda form the **rhyme**.

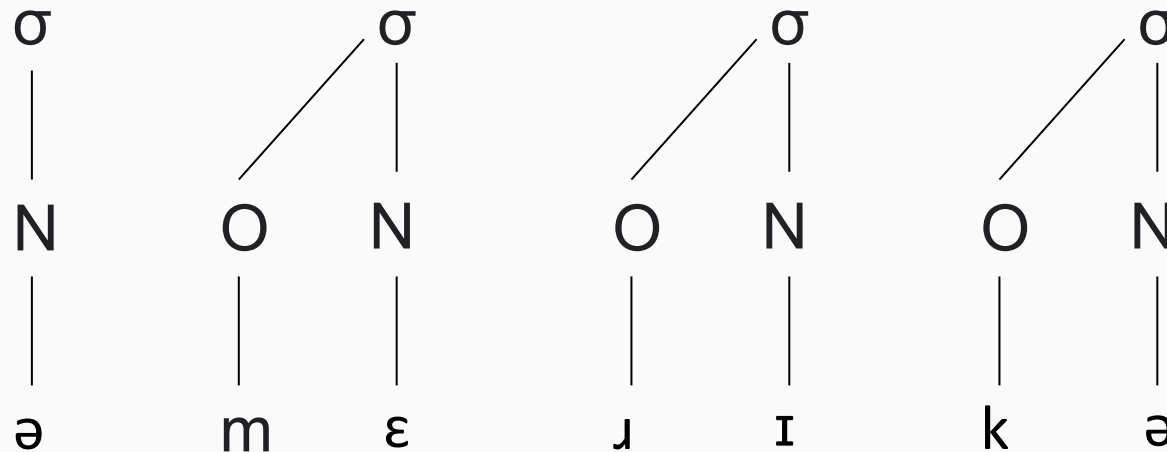


Universality

- In all languages, syllables must have a **nucleus**.
- All languages appear to allow an **onset**.
 - Korean allows just one consonant in an onset.
 - French permits two.
 - English allows up to three.
- No language requires that every syllable has a **coda**.
 - In English, onsets and codas are optional.

Syllable Formation

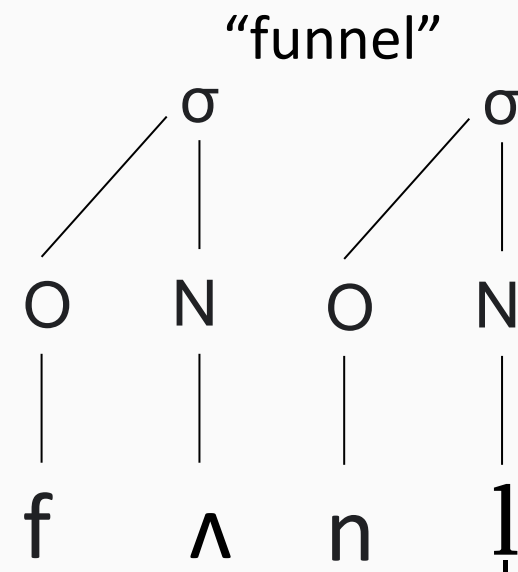
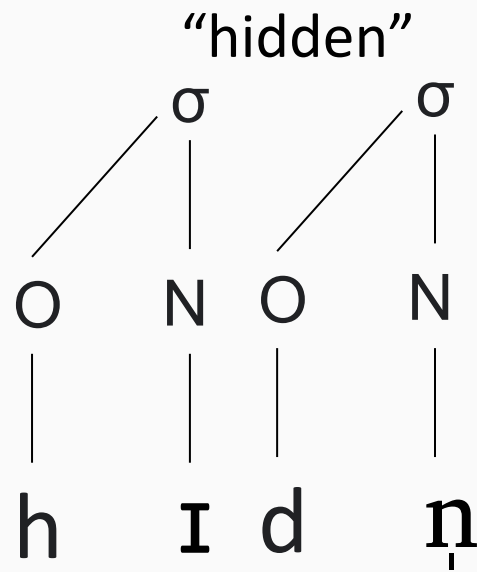
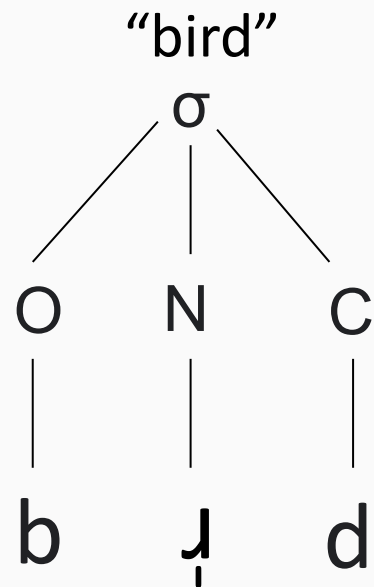
- In order to figure out how to organize a word into syllables, first identify the syllable **nuclei**.
 - = vowels (and any syllabic consonants)
- Example: “America”



- Then identify any potential **onsets** to each syllable
 - = consonants preceding the nuclei

Syllabic consonants

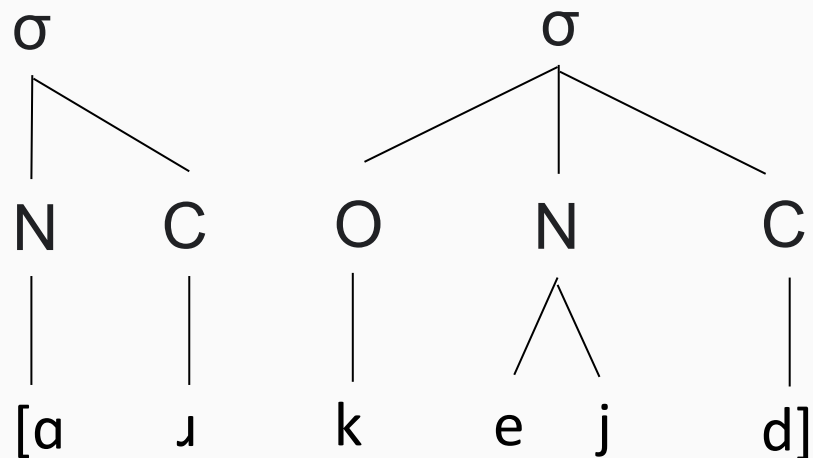
- Some consonants are so sonorous that they may function as syllabic nuclei.
 - If they function as syllabic nuclei, these consonants are called **syllabic consonants**.
 - Syllabic consonants can be liquids and nasals



Phonotactics

- **Phonotactic** constraints determine what sounds can be put together to form the different parts of a syllable in a language.
- Ex: English onsets
 - /kl/ is okay: “clean” “clamp”
 - /pl/ is okay: “play” “plaque”
 - /tl/ is not okay: *tlay *tlamp
- If we ever encounter a word that starts with /tl/, we have to do something about it.
- How do you say “Tlingit”?
- Or “Dmitri”? Or “Dvorsky” Or maybe even “Svetlana”?

Let's Try Another...



"arcade"

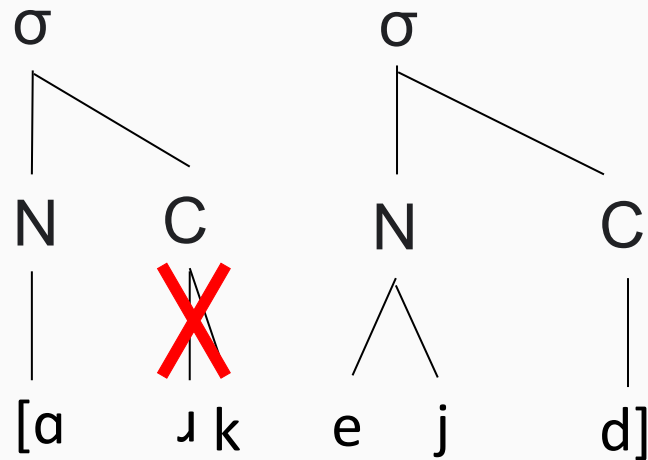
Note 1: both halves of a diphthong combine into one nucleus

Note 2: [ɹk] is not a possible onset!

⇒ The [ɹ] has to form the coda of the preceding syllable

So, Step 3 = remaining consonants go into codas.

Why not [aɪk-ejd] ?



“emblem”

[ɛ.mblɛm]

⇒ [ɛm.blɛm]

[ɛmb.lɛm]

[ɛmbl.ɛm]

“ugly”

⇒ [ʌ.gli]

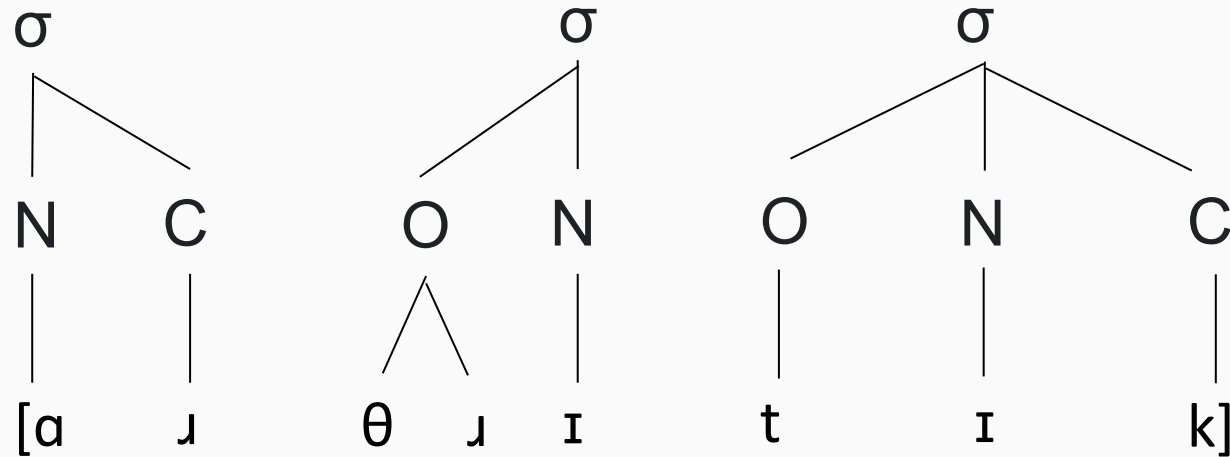
[ʌg.li]

[ʌgl.i]

- Because Onsets are greedy!

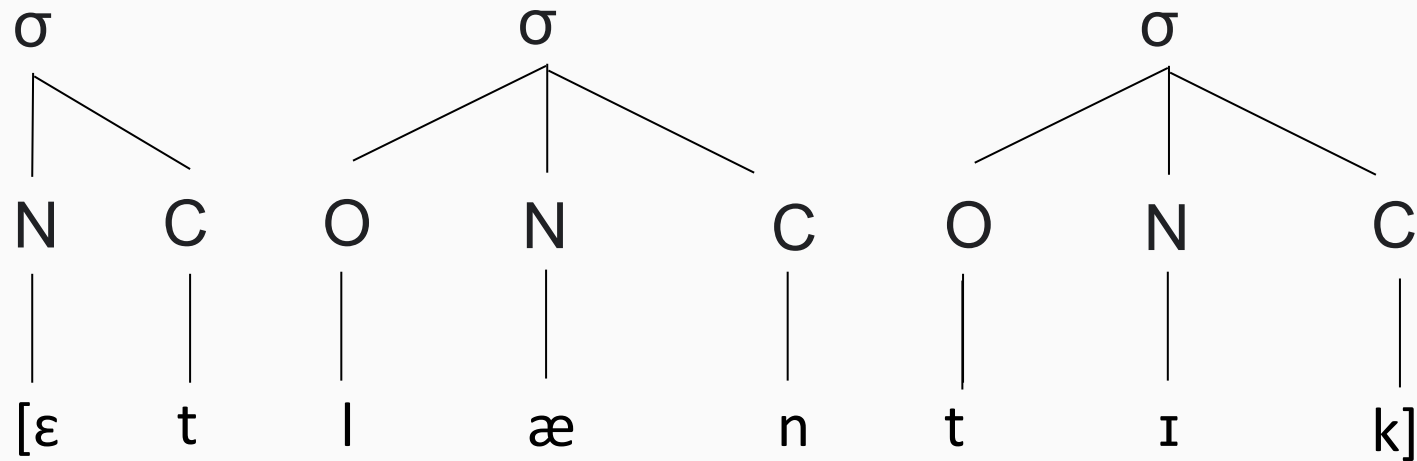
The Possibilities are not Endless

- Q: What combination of consonants can form a possible onset?
- A: Any combo that can be found at the beginning of a word.
- [θɹ] can start a word (“three”), so “arthritic” is syllabified like this.



The Possibilities are not Endless

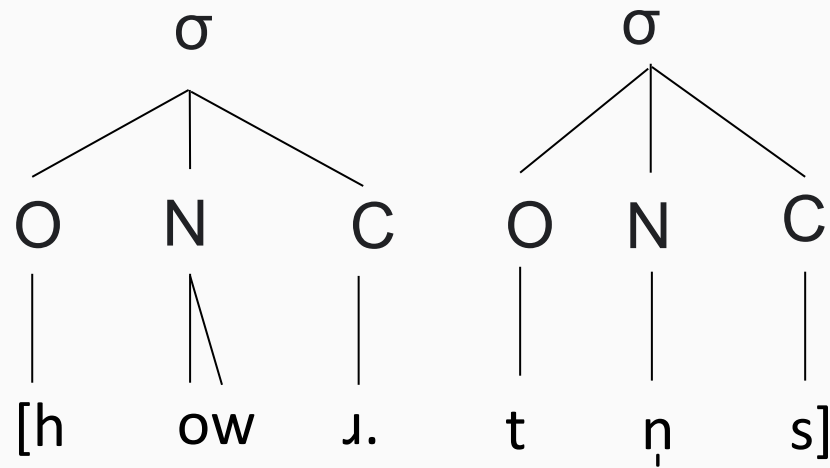
- [tɫ] and [nt] cannot start words in English, so they cannot form legal syllable onsets.
- Check out the syllabification for “Atlantic”:



Rules of building a syllable

1. Onsets are greedy – put as many sounds into the onset as possible.
2. Combinations that cannot start a word in English cannot be in the onset.

- Tim
Hortons



- *1. Start with the Nucleus*
- *2. Build an Onset*
- *3. Whatever's left goes into Coda.*

Other Languages

- Phonotactic constraints may become active when words cross language boundaries
- In Spanish, the following consonant clusters cannot start a syllable or a word:
 - * /sp/
 - * /st/
 - * /sk/
- Potential Spanish pronunciation of English:
“student” → [ɛstudent]

Nativization

- In borrowings, languages often substitute native sounds for non-native sounds
- They may also break up sound sequences to satisfy native phonotactics, which is the process of **nativization**.
- Example:
 - English “birth control” [bɜːθ kən.tʃrɔːl]
 - Japanese: [ba.su kon.to.ro.ru]
- Or Hawaiian: [me.le ka.li.ki.ma.ka] for “Merry Christmas”



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