Class 16
Syllable Structure

3/9/2022

1 Syllables

⋆ So far, we've talked just about strings of sounds (segments).
→ However, there's good reason to think there are ways of arranging sounds into hierarchical structures, in much the same way as we did with features.

- A **syllable** is a phonological unit comprised of one or more speech sounds.
  - It's an intermediate unit between the individual sounds and the words they make up.

- Words are divided up into syllables.
  - Syllable boundaries are indicated by periods.
  - Syllable is often abbreviated as sigma σ.

(1) a. *a.pa.la.chi.co.la* [æ.pə.læ.ʧɪ.koʊ.lə] → 6 syllables
b. *cat* [kæt] → 1 syllable

- Every word contains at least one syllable.
  - Every syllable is built around a vowel (or a consonant masquerading as a vowel; see below).
  - → Every vowel creates its own syllable.
    - ↪ That's why we call them [+syllabic].

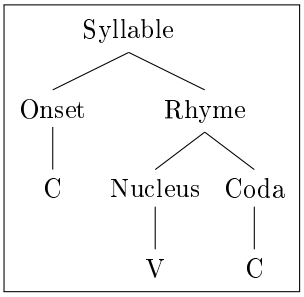
2 The parts of a syllable

- Within the syllable, we can identify several important **constituents** (sub-groupings).
  - Syllables consist of three main constituent parts:

(2) Components of a syllable
a. **Onset:** initial consonant or consonants
b. **Nucleus:** the vowel (can be a monophthong or a diphthong)
c. **Coda:** final consonant or consonants

  - Nucleus and coda form a constituent called the **rhyme** (or rime).
    - [I'll usually omit the *rhyme* constituent in the trees below.]

(3) Syllable tree



3 Types of syllables

⇒ We **name** *syllable types* by their sequences of consonants (C) and vowels (V).
⇒ We **classify** *syllable types* by the properties of their constituent parts.

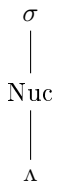
- The nucleus is *always* present, but the onset and/or the coda may be present or absent.
- Each constituent that is present can be either:
  1. **Simple** (simplex) = consisting of *exactly one* member, or
  2. **Complex** = consisting of *more than one* member
- Languages vary about what types of syllables and what types of syllabic constituents they allow.
  - ⋆ In the general case, whatever types of *syllabic constituents* that a language does allow can be *freely combined* with one another.

3.1 The nucleus

- Syllables can consist of just a vowel (either a monophthong or a diphthong).

- A monophthong creates a **simple** nucleus.

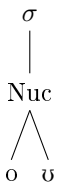
(4) The word "a" (English indefinite article):



⋆ *This syllable is of type V.*

- A *diphthong* creates a *complex* nucleus.

(5) The word "oh":



⋆ *We can refer to this syllable type as VV.*

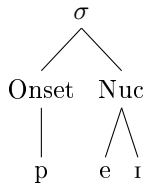
- In languages that have **long vowels**, long vowels count as *VV* (a complex nucleus).

3.2 The onset

- Consonants that join onto a syllable and **precede the nucleus** are called the **onset** of the syllable.

- A **simple** onset has *exactly one* consonant:

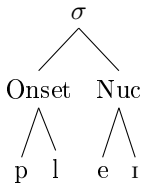
(6) The word "pay":



⋆ *This syllable is of type CV.*

- A **complex** onset has *more than one* consonant:

(7) The word "play":



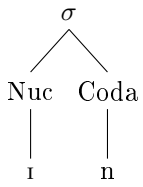
⋆ *This syllable is of type CCV.*

3.3 The coda

- Consonants that join onto a syllable and **follow the nucleus** are called the **coda** of the syllable.

- A **simple** coda has *exactly one* consonant:

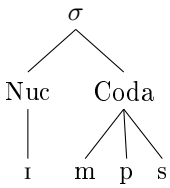
(8) The word "in":



⋆ *This syllable is of type VC.*

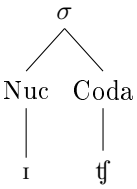
- A **complex** coda has *more than one* consonants:

(9) The word "imps":



⋆ *This syllable is of type VCCC.*

(10) The word "itch":



⋆ *This syllable is of type VC.*

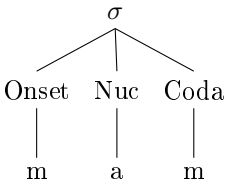
** **NOTE: Affricate counts as single consonants.**

4 Principles of syllabification

4.1 Monosyllabic (1σ) words and word edges

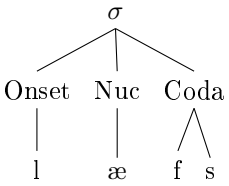
- A good way to check what types of syllables a language allows is by looking at words that consist of exactly 1 syllable:

(11) The word "mom":



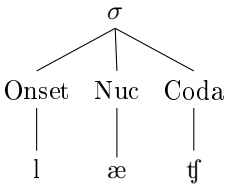
⋆ *This syllable is of type CVC.*

(12) The word "laughs":



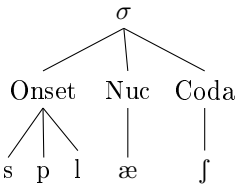
⋆ *This syllable is of type CVCC.*

(13) The word "latch":



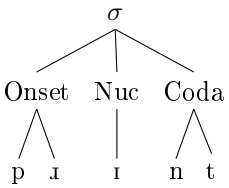
⋆ *This syllable is of type CVC.*

(14) The word "splash":



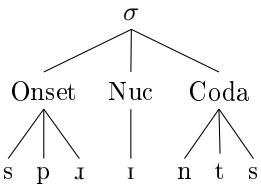
⋆ *This syllable is of type CCCVC.*

(15) The word "print":



⋆ *This syllable is of type CCVCC.*

(16) The word "sprints":



⋆ *This syllable is of type CCCVCCC.*

- In some languages, there might be few or no 1 syllable words. In that case, the closest you can get to this method is by looking just at the word edges:

(17) **Foolproof place to look for onsets:** *At the beginning of a word!*
All consonants at the beginning of a word MUST be an onset to whatever the first vowel is.

(18) **Foolproof place to look for codas:** *At the end of a word!*
All consonants at the end of a word MUST be a coda to whatever the last vowel is.

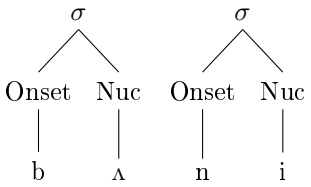
- You can usually extrapolate from word edges to word-internal onsets and codas.

4.2 Word-medial syllabification and the sonority scale

- Languages tend to *like having onsets* and *dislike having codas.*
  - ⋆ We can call this the "*maximize the onset*" principle.

⇒ A single consonant between two vowels always(?) gets syllabified as an onset, not a coda: [bʌ.ni] not *[bʌn.i]

(19) The word "bunny":



⋆ *There are two syllables in this word. The first is of type CV, and so is the second.*

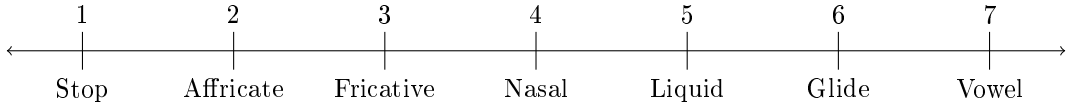
- When there are multiple consonants between vowels, the choice of whether or not to apply the "maximize the onset" principle is subject to "sonority".

- We know about the feature [±sonorant]:

(20) a. Obstruents [−sonorant]: *stops, fricatives, affricates*
b. Sonorants [+sonorant]: *nasals, liquids, glides, vowels*

- The related notion of "sonority" turns this into a scale:

(21) Sonority scale



- Syllables are generally constructed around **sonority peaks** (which usually means vowels).
  - The nucleus is the sonority peak.
  - Sonority normally *rises* from the beginning of the syllable (the onset) to the nucleus.
  - Sonority normally *falls* from the nucleus to the end of the syllable (coda).

- If a language allows **complex onsets and/or codas**, it usually places restrictions on the *relative sonority* of the first and second consonant in the complex onset/coda. The restrictions are mirror images of each other:
  - → In a complex onset: the *steeper* the sonority **rise**, the better.
  - → In a complex coda: the *steeper* the sonority **fall**, the better.

- For example, English allows *stop + liquid* complex onsets (with a big sonority rise), but not *stop + nasal* (with a small sonority rise): ✓ ***pl****ay* vs. ✗ ***pn****ay*
  - (NB: borrowings like *pneumonia* pronounced with just [n], not *[pn])

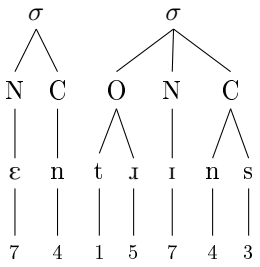
- So, the way that *maximize the onset* interacts with sonority is:

(22) For a sequence of consonants between vowels:
  a. If they have a sonority profile that the language allows for complex onsets, they get syllabified as a complex onset.
  b. If they don't, they get syllabified as coda + simple onset.

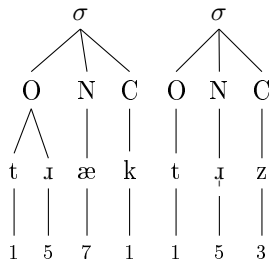
⋆ In English, and many other languages, [s] can show up in places where it violates these sonority principles.

(23) Example syllable trees

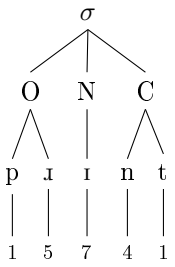
a. Syllable tree for *entrance*



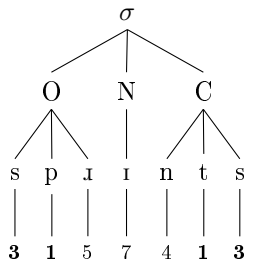
b. Syllable tree for *tractors*



c. Syllable tree for *print*



d. Syllable tree for *sprints*



5 Syllabic consonants

- Consonants can sometimes function like vowels and form the nucleus of a syllable.
  - When they do this, we mark them with a vertical line below: [m̩]

(24) Syllabic final consonants

bottle	[ˈba.ɾl̩]	*bottom*	[ˈba.ɾm̩]
butter	[ˈbʌ.ɾɻ̩]	*button*	[ˈbʌ.ʔn̩]

- Most languages don't allow syllabic consonants.
- Among those that do: the more sonorous the consonant, the more likely it is to be allowed as a syllable nucleus.

6 Deletion in Samoan

- Last time, we determined that the best way to understand the alternations in (26) was to posit the deletion rule in (25).

(25) C → Ø / _#

(26) Deletion in Samoan

Simple	Perfective	Gloss	Simple	Perfective	Gloss
tuː	tuːl-ia	'stand'	au	aul-ia	'flow on'
tau	taul-ia	'cost'	maːtau	maːtaul-ia	'observe'
ʔalo	ʔalof-ia	'avoid'	ili	ilif-ia	'blow'
oso	osof-ia	'jump'	ulu	uluf-ia	'enter'
asu	asuŋ-ia	'smoke'	soa	soaŋ-ia	'have a friend'
pole	poleŋ-ia	'be anxious'	fesili	fesiliŋ-ia	'question'
milo	milos-ia	'twist'	laʔa	laʔas-ia	'step'
valu	valus-ia	'scrape'	taŋi	taŋis-ia	'cry'
api	apit-ia	'be lodged'	mataʔu	mataʔut-ia	'fear'
lavaː	lavaːt-ia	'be able'	oʔo	oʔot-ia	'arrive'
siʔo	siʔom-ia	'be enclosed'	moʔo	moʔom-ia	'admire'
sopo	sopoʔ-ia	'go across'	fana	fanaʔ-ia	'shoot'

⋆ **Can we use syllables to understand this rule better?**