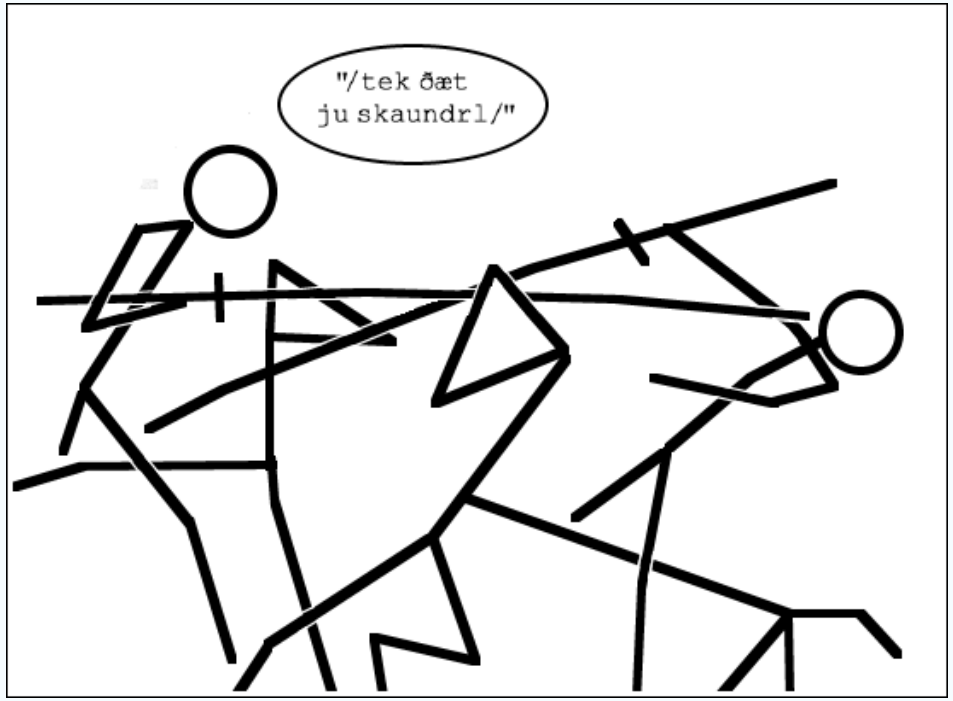
Phonology I: Features and Underspecification

Reading: FRH Ch. 6

PLIN0006: Introduction to Language



Recap: Phonetics

- **Articulation:**

  The production of individual speech sounds.

- **Transcription:**

  We use the IPA, which is **uniform** and **international**.

- **Natural classes:**

  Speech sounds can be classified according to shared properties.

Knowledge of Phonology

- Phonology asks two questions:

1) What do people know about the sounds of their language?
2) What do people know about the combinatorial properties of these sounds?

- (Sign Language phonologists ask the same questions, but for “signs” instead of “sounds”)

Minimal Pairs

- **Minimal Pair:**

  A pair of words that differ in only one respect,

  e.g. **voicing** or **nasality**, and nothing else.

- **Examples***:*
  - [pʰɪn] vs. [bɪn] (voicing)
  - [baɪ] vs. [maɪ] (nasality)
  - …

Distinctive Features

- **Distinctive Features:**
  - The binary opposition distinguishing two minimal pairs.
  - Speakers must know the distinctive features of their language in order to be able to distinguish minimal pairs.

- Examples:
  - [pʰɪn] vs. [bɪn] → [±voice]
  - [baɪ] vs. [maɪ] → [±nasal]

Non-distinctive Features

- **Non-distinctive features:**

  Binary oppositions between sounds that do not yield minimal pairs.

- Examples:
  - [pʰɪn] vs. ʔ[pɪn] → [±aspirated]
  - [fəʊ̃n] vs. [fə̃ʊ̃n]/ʔ [fəʊn]/ʔ [fə̃ʊn] → [±nasal] (on vowels)

- Pairs such those above cannot contrast meaning in English, because **aspiration** and **vowel nasalisation** are **not** distinctive features in English.

Predictability

- The distribution of non-distinctive features is **predictable**.

- The two values of a non-distinctive feature are in **complementary distribution** to each other.

- By contrast, the distribution of distinctive features is (mostly) **unpredictable** and **overlapping**.

Features for Consonants

Phonological Features are closely linked to phonetic descriptors:

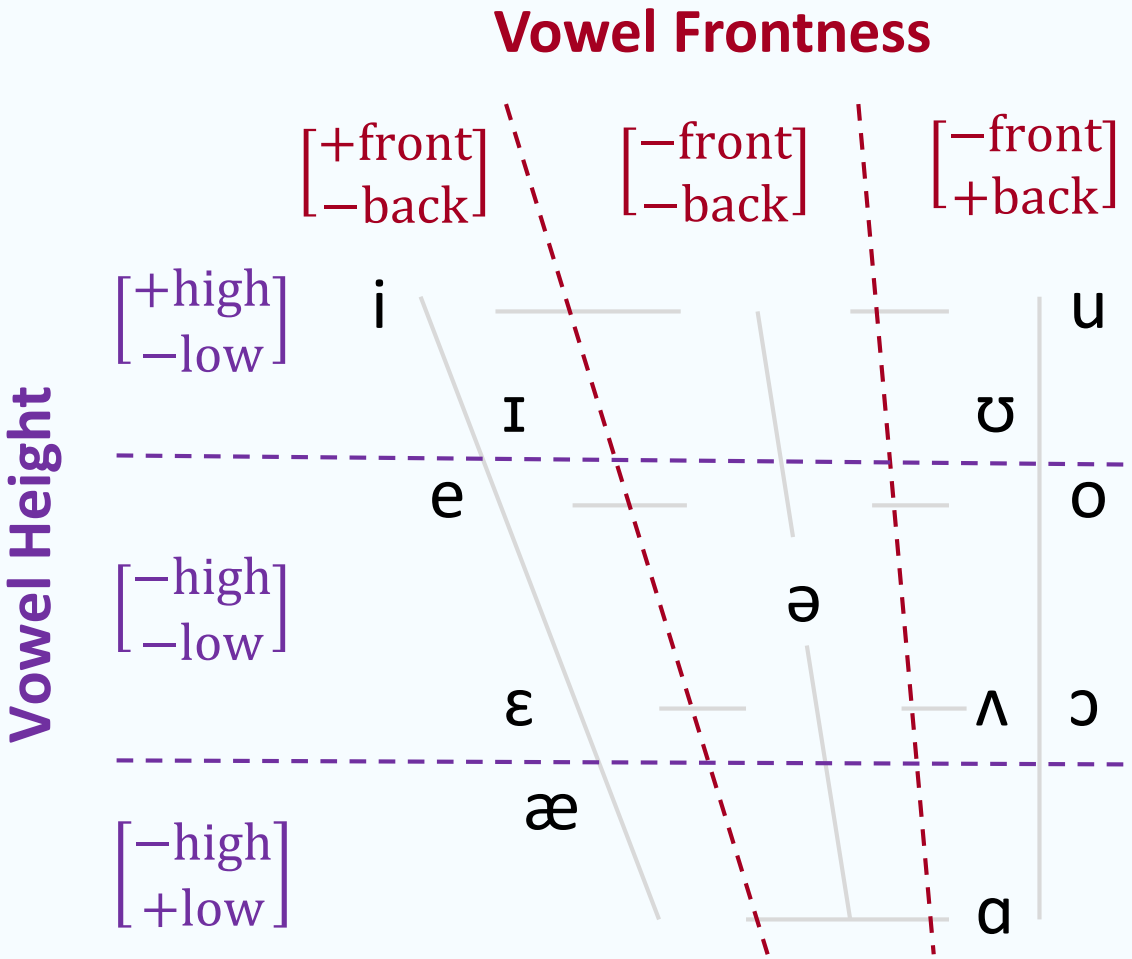
Voiced	↔	[+voice]	Nasal	↔	[+nasal]
Aspirated	↔	[+aspirated]	Stop	↔	[−continuant]

Note however that features for PoA refer to **active articulators**, e.g.:

(Bi)labial	↔	[+labial]	Velar	↔	[+dorsal, +back]
Alveolar	↔	[+coronal]	Glottal	↔	[−dorsal, +back]

Consonants are usually [−syllabic], but [l, n] are sometimes [+syllabic]

Features for Vowels



Vowel Rounding

- [+rounded] ↔ [u, o, ɔ]
- [–rounded] ↔ [ʊ, ʌ, ɑ, i, ɪ, æ, …]

Vowel Tenseness

- [+tense] ↔ [u, i, e, o, …]
- [–tense] ↔ [ɪ, ɛ, æ, ʊ, ɔ, …]

All vowels are [+syllabic]

Natural Classes

- **Natural Class:**

  A set of sounds which share the same value for one or more phonological feature(s).

- Examples:
  - [p, t, k, p^h, t^h, k^h] = [−continuant, −voice]
  - [b, d, g] = [−continuant, +voice, −nasal]
  - [f, p, v, b, w, (ʍ)] = [+labial]
  - [ɪ, ɛ, æ, ə] = [−back, −tense]

Underspecification

- **Question:** How are speech sounds stored in long-term memory?

- Chomsky & Halle (1968):

  ‘It is only necessary to store the unpredictable features of a speech sound’s pronunciation.’

→ Speech sounds are stored with as little information as possible.

→ Stored phonological objects are **underspecified.**

Converting URs to SRs

- **Question:** How can underspecified phonological objects be realised?
- **Surface Representations** (SRs) are determined by context:

  e.g. /p/ is pronounced [p^h] at the start of a stressed syllable

- Thus, **Underlying Representations** (URs) can be converted into SRs by simple, context-sensitive rules:

$$\text{p} \rightarrow [+\text{asp}] / \sigma \underset{[+\text{stress}]}{\overset{\text{V}}{\text{—}}}$$

Summary

Phonological knowledge includes:

1) Knowing what the sound units of one's language are.

   These units are stored in an underspecified form.

2) Knowing how underspecified units are to be realised,

   given the context in which they occur.