Transcribing English

1. Start with Ladefoged’s minimal sets for English consonants. These are lists of words that illustrate the main consonant contrasts used in English. Note how these lists are constructed because you will need to try to come up with such lists for your project language (though in many languages it is very hard to make such large lists!).

| p | pie | pea |
| t | tie | tea |
| k | kye | key |
| b | by | bee |
| d | dye | D |
| g | guy |
| m | my | me | ram |
| n | nigh | knee | ran |
| η | rang |
| f | fie | fee |
| v | vie | V |
| θ | thigh |
| ð | thy | thee |
| s | sigh | sea | listen |
| z | Z | mizzen |
| ʃ | shy | she | mission |
| ʒ | vision |
| l | lie | lee |
| w | why | we |
| r | rye |
| j | ye |
| h | high | he |
| tʃ | chi(me) | chea(p) |
| dʒ | ji(ve) | G |

2. This table lists the phonetic symbols that we will use to transcribe English consonants. The phonetic contrasts of English (like other languages) are systematic, and phonetic description of language delves into this systematicity.
3. We focus on the activities of the mouth - how the articulators move - as a basis of the systematicity of the English phonetic system. And this focus on speech pronunciation (or “articulation”) results in an analysis that can be presented as a consonant chart of English. The columns of the chart indicate the “place of articulation” of the sound, the rows indicate the “manner of articulation” of the sound, and where symbols appear in pairs within a cell of the table, the symbol on the left is analyzed as voiceless while the symbol on the right is analyzed as voiced.

4. Names for the passive and active articulators in the sagittal section of the vocal tract are shown in Ladefoged’s figures 1.5 and 1.6. These relate to the Place of Articulation columns in the consonant chart.
FIGURE 1.5  The principal parts of the upper surface of the vocal tract.

FIGURE 1.6  The principal parts of the lower surface of the vocal tract.
5. Relating the consonant chart to the sagittal section of the vocal tract.

a. Passive articulator does not move (generally -- the upper lip is an exception), and is generally on the upper surface of the vocal tract.
   - upper lip, upper incisors, alveolar ridge, hard palate, soft palate (velum), uvula, and back pharyngeal wall.

b. Active articulator does move and is generally on the lower surface of the vocal tract.
   - lower lip, tongue tip, tongue blade, tongue body, and tongue root.

c. Because active and passive articulators are not freely combinable (e.g. lower lip cannot touch pharyngeal wall) the “places of articulation” are generally considered as unitary descriptors despite the fact that we name many of them using a combination of the names of the active and passive articulators involved (e.g. labio-dental).

<table>
<thead>
<tr>
<th>place of articulation</th>
<th>active articulator</th>
<th>passive articulator</th>
</tr>
</thead>
<tbody>
<tr>
<td>bilabial</td>
<td>lower lip</td>
<td>upper lip</td>
</tr>
<tr>
<td>labio-dental</td>
<td>lower lip</td>
<td>teeth (upper incisors)</td>
</tr>
<tr>
<td>interdental</td>
<td>tongue tip</td>
<td>teeth (upper incisors)</td>
</tr>
<tr>
<td>alveolar</td>
<td>tongue blade</td>
<td>alveolar ridge</td>
</tr>
<tr>
<td>palato-alveolar</td>
<td>tongue blade</td>
<td>(front part of) hard palate</td>
</tr>
<tr>
<td>palatal</td>
<td>tongue front</td>
<td>hard palate</td>
</tr>
<tr>
<td>velar</td>
<td>tongue center/back</td>
<td>soft palate (velum)</td>
</tr>
<tr>
<td>glottal.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

d. Manner of articulation refers to the degree of constriction and secondary openings by which sounds are made at these places.

   - stop, fricative, affricate, nasal, lateral

e. Voicing refers to whether the vocal folds vibrate (more or less) during the consonant constriction.

6. For example, the alveolar stop articulation found in [t] “tip”, [d] “dip”, or [n] “nip” is like the one captured below in a tracing of one frame from an x-ray movie of a person saying a word with an alveolar stop.
6. Ladefoged also gives minimal sets for the English vowels. For example, many of the **contrastive vowels** of English can be illustrated in a list of words that all start with [h] and end with [d]. For American English we can **phonetically transcribe** this “H-vowel-D list” as follows:

<table>
<thead>
<tr>
<th>[hid]</th>
<th>heed</th>
<th>[hud]</th>
<th>who’d</th>
</tr>
</thead>
<tbody>
<tr>
<td>[hid]</td>
<td>hid</td>
<td>[hod]</td>
<td>hood</td>
</tr>
<tr>
<td>[hæd]</td>
<td>head</td>
<td>[hod]</td>
<td>hawed</td>
</tr>
<tr>
<td>[hæd]</td>
<td>had</td>
<td>[hod]</td>
<td>hod</td>
</tr>
<tr>
<td>[hænd]</td>
<td>HUD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hænd]</td>
<td>herd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hænd]</td>
<td>hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hɪ]</td>
<td>here</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hɛ]</td>
<td>hair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hænd]</td>
<td>hired</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hænd]</td>
<td>hide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hau]</td>
<td>how</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[əhɔ]</td>
<td>ahoy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[hjud]</td>
<td>hued</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. Like the consonants our initial phonetic analysis of vowels is presented in a chart, which as with the consonant chart is intended to reflect an analysis of the articulation of the vowels.
8. Relating the vowel chart to the sagittal section of the vocal tract.

a. Roughly, the location of the highest point of the tongue in the sagittal section correlates with the location of the vowel in the vowel chart.
   high/low, front/back.

b. But notice that you can glide from one vowel to another in pronunciation [i .. e .. æ]. So the articulatory description is more approximate than in consonant transcription.

c. Story - David Stampe learning German. The book said umlaut ü in German is pronounced like [i] but with rounded lips. Therefore, Stampe taught himself to say ü as [i] (with rounded lips). It is possible to make this sound with round lips, if you adjust the tongue position just so.

d. Lip rounding - In English is correlated with vowel backness.

9. Some sagittal section x-ray tracings that support the phonetic analysis given in the vowel chart. These traces were kindly shared by Dr. Mona Lindau.

a. Front vowels have the tongue further forward than back vowels, and the height relationships among these front vowels are as we see in the vowel chart.
b. Back vowels are pronounced with the tongue further back than in front vowels, and the height relationships are as we see in the vowel chart.

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<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[u]</td>
<td></td>
</tr>
<tr>
<td>[u]</td>
<td></td>
<td>[α]</td>
</tr>
<tr>
<td></td>
<td>“food”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“good”</td>
<td>[u]</td>
</tr>
<tr>
<td></td>
<td>“father”</td>
<td>[α]</td>
</tr>
</tbody>
</table>
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10. Caution: The vowel x-ray tracings above were carefully selected to illustrate the connection between the “height” dimension in the vowel chart and tongue height during vowels. It should be noted though that this relationship is not perfect - the articulatory analysis (in terms of tongue height) is a good start but is not the best phonetic analysis we have to offer. We’ll come back to the topic of phonetic analysis of vowels at least twice more in this course - once from an auditory perceptual point of view and again from an acoustic point of view.

11. Grooved vs ungrooved coronal fricatives. The midline of the tongue may be pulled down (relative to the sides) so that the tongue has a mid line “groove” in it. Ladefoged shows, in the figures reproduced below, that English [s] has such a grooved configuration of the tongue while [S] does not. This is not a necessary feature of [s] and other languages, or even other speakers of English, have a sound that we would transcribe as [s] (apical alveolar voiceless fricative) that does not have a grooved tongue shape.

We choose particular aspects of the articulation, like the place of tongue contact on the roof of the mouth, and ignore others, like tongue grooving according to what seems to be the most important phonetic characteristics of the sounds. These choices simplify our descriptions, but at times the more detailed information, such as whether or not the tongue is grooved, can make language sound patterns less mysterious. Pike’s (1943) *Phonetics* is a useful discussion of a range of detail that one can consider in phonetic descriptions.
The articulatory gesture for \textit{s} as in \textit{saw}, as pronounced by the first author. The solid line indicates the position of the center of the tongue as known from x-rays; the dashed lines indicate the positions of the side of the tongue as indicated by palatograms. The coronal section on the right gives a transverse view of the shape of the tongue at the point indicated by the arrows on the sagittal section on the left. (Based on data in Ladefoged, 1957.)

The articulatory position for \textit{f} as in \textit{shaw}, as pronounced by the first author. The solid line indicates the position of the center of the tongue as known from x-rays; the dashed lines indicate the positions of the side of the tongue as indicated by palatograms. The coronal section on the right gives a transverse view of the shape of the tongue at the point indicated by the arrows on the sagittal section on the left. (Based on data in Ladefoged, 1957.)