# A Feature-based Approach to English Phonetic Mastery
## --Cognitive and/or Physical--

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Abstract

The phonetic mastery of English has been considered next to impossible to many non-native speakers of English, including even some teachers of English. This paper takes issue with this phonetic problem of second language acquisition and proposes that combination of cognitive and physical approaches can help master English faster and more easily.

## 1. Cognitive Map

In most of the textbook on phonetics, vowels and consonants are described separately. For vowels, the cardinal vowel diagram is used for locating the the tongue height and the part of the tongue used for the production of a given vowel. For consonants, an oblong shape are used for indicating the place and manner of a given consonant. Hence there is no way to bridge the gap between vowels and consonants and no mental image of CV structure can be established on the part of the EFL learner.

Furthermore, those description doesn't clarify how the learner's sound system is related to that of the target language. I would like to propose therefore the 3•3 square framework instead, based on distinctive features rather than the framework traditionally used by Jones, Gimson, and some other phoneticians.

## 2. The 3•3 Square

Taking hints from the Japanese five-vowel system, I have come up with the 3•3 square framework. That is, when we open a mouth wide enough and utter a vowel, we have /a(:)/ sound, irrespective of its length. On the other hand, when we utter vowels with a narrow aperture between the lips we produce /i(:)/ if the front of the tongue is raised towards the hard palate, and /u(:)/ if the back of the tongue is raised toward the soft palate.

If the degree of aperture of the mouth is somewhere between high and low vowels, we have /e(:)/ and /o(:)/, as is clear from Fig. 1.

| [+front] [-back] | [-front] [-back] | [+back] [-front] | |
|---|---|---|---|
| i(:) | | u(:) | [+high] [-low] |
| e(:) | | o(:) | [-high] [-low] |
| | a(:) | | [+low] [-high] |

Fig. 1. The Japanese vowel system

The five vowels in Japanese are in a clear contrast from each other in terms of the distinctive feature-based 3•3 square. This 3•3 framework seems to have some language-universal features and it can be applied to the acquisition of the English vowel system and hopefully to any other language.

3. The English Alphabet

The English alphabet is, phonetically speaking, does not give a clear picture of the English sound system. Even if one has learned the English alphabet, that does not guarantee that one has learned the basics of the English sound system. By that I mean, the twenty-six letters of the alphabet do not represent all the significant sounds of English. For example, th-sounds, and syllable initial l and r, and some others are not included in the names of these alphabet letters.

Here is an analysis of the English alphabet from the phonetic viewpoint.

| | Grapheme | | Onset | Nucleus | Coda |
|---|---|---|---|---|---|
| 1. | A | a | | ei | |
| 2. | B | b | b- | i: | |
| 3. | C | c | s- | i: | |
| 4. | D | d | d- | i: | |
| 5. | E | e | | i: | |
| 6. | F | f | | e | -f |
| 7. | G | g | dʒ- | i: | |
| 8. | H | h | | ei | -tʃ |
| 9. | I | i | | ai | |
| 10. | J | j | dʒ- | ei | |
| 11. | K | k | $k^h$- | ei | |
| 12. | L | l | | e | -l |
| 13. | M | m | | e | -m |
| 14. | N | n | | e | -n |
| 15. | O | o | | ou | |
| 16. | P | p | $p^h$- | i: | |

| | | | | | |
|---|---|---|---|---|---|
| 17. | Q | q | $k^hj$- | u: | |
| 18. | R | r | | ɑ: | -r |
| 19. | S | s | | e | -s |
| 20. | T | t | $t^h$- | i: | |
| 21. | U | u | j- | u: | |
| 22. | V | v | v- | i: | |
| 23. | W | w | d- | ʌ | -b(lju:) |
| 24. | X | x | | e | -ks |
| 25. | Y | y | w- | ai | |
| 26. | Z | z | z- | i: | |

If we expand the concept of the 3◦3 square, we should start from Fig. 2 instead.

| [+front] [-back] | [-front] [-back] | [+back] [-front] | |
|---|---|---|---|
| E | | U | [+high] [-low] |
| A | | O | [-high] [-low] |
| | I | R | [+low] [-high] |

Fig. 2. The vowels in the English alphabet

4. English Vowel System

The English vowel system, which may look complicated at a superficial glance, still shares DF's with Japanese and can be clearly described in the framework of the 3•3 square. However, one needs to add one more distinctive feature, i.e. [tense] to indicate the qualitative difference between long and short vowels. For the distinction of /ɔ:r/:/ɑ(:)/ and /au/:/ai/, another feature [round] is required.

It is quite obvious in Fig. 3 that there is a great difference between long and short vowels. And it is this difference that EFL learner has to acquire as a necessary step to the phonetic mastery of English.

| [+front] [-back] | [-front] [-back] | [+back] [-front] | |
|---|---|---|---|
| i: i | | u: u | [+high] [-low] |
| ei e | ə:r ə | ou ʌ | [-high] [-low] |
| æ | ai au | ɔ:r ɑ(:) | [+low] [-high] |

Fig. 3. The English vowel system

The 3•3 square can also be helpful to indicate morphological relationships between long and short vowels as the following table indicates:

| | *Diphthongs* | *Short Vowels* |
|---|---|---|
| ⟨A⟩ | grave | gravity |
| | explain | explanatory |
| | profane | profanity |
| ⟨E⟩ | extreme | extremity |
| | supreme | supremacy |
| ⟨I⟩ | describe | description |
| | divine | divinity |
| | decide | dicision |
| ⟨U⟩ | induce | induction |
| | reduce | reduction |
| ⟨O⟩ | tone | tonic |
| | phone | phonetic |
| | neurosis | neurotic |
| ⟨ou⟩ | south | southern |
| | pronounce | pronunciation |
| | profound | profundity |

5. The English Consonants

The English consonant system can be fitted into the same 3•3 square framework with all its significant phonemes as in Fig. 4. The phoneme /h/ is exempted, because of the specific features of its sound quality, which can be stated in the form of the rewrite rule as follows:

$$/h/ \rightarrow \begin{matrix}\text{voiceless } V_x \\ [\text{-syllabic}]\end{matrix} \quad / \_\_ V_x$$

That is to say, /h/ is a voiceless counterpart of its following vowel.

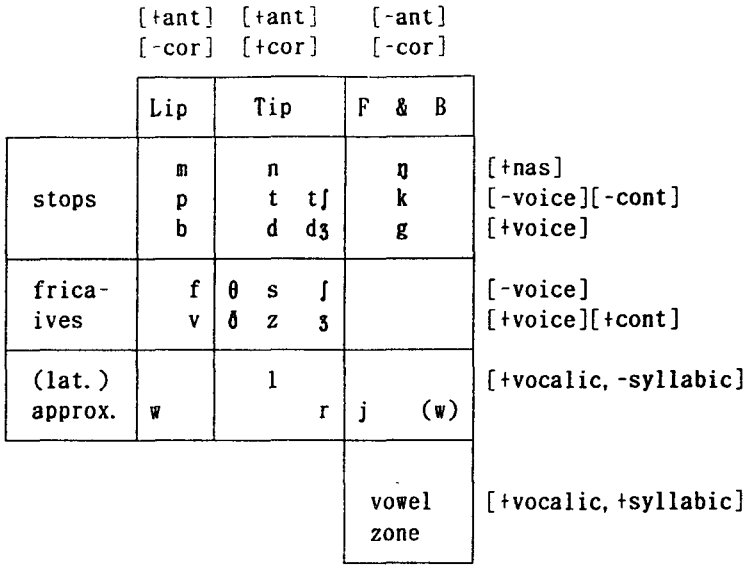


Fig. 4. The 3•3 square of consonants combined with Vowels.

Tripartite division, both horizontal and vertical, of vowels and consonants, based on the DF analysis, leads one to the setting up of the basis for the phonetic mastery of English.

6. Proposal: English Pronunciation Mastery Procedure

Out of my 30 years of teaching English with an emphasis on its phonetic aspect, I have come to the conclusion that the following ten steps are the most appropriate approach to English phonetic mastery. They are as follows:

Step 1: diphthongization and intonation in greetings
Ex. Hi. Hello. Good night, John.
Step 2: 4-beat rhythm, i.e. □□□■
Ex. Mother goose. ABCDEFG HIJKLMNOP, 1(and then a)2 3 4...
Step 3: Stress and Stress shift
Ex. New York vs. New York City
Step 4: Voc features: tense/nontense, etc.
Ex. We eat to live, not live to eat.
Step 5: Cons features: aspiration, stop/continuant, lateral, etc.
Ex. Phass it tʰake it kʰeep it upʰ.
Step 6: C^V linking
Ex. Thank^you. I did^it. I like^it.
Step 7: Linking and assimilation
Ex. Did^you? Could^you? Would^you do it?
Step 8: Consonant clusters
Ex. spring, play/pray, weightless/waitress
Step 9: Reduction and dropping

Ex. fm/from, I direct films and act'n them.
I think that that that that student wrote should be deleted.(=I think (that) that "that" which the student wrote should be deleted.)

Step 10 Reading aloud with good accent(RAWGA)
Ex. Three-tiered text

| | | | | | | |
|---|---|---|---|---|---|---|
| Rhythm(R) | | · | · | □ | · | |
| Orthograhy(O) | T h e r e | | w a s | o n c e | a | |
| Approxima.(A) | [ðə | | wz | wʌnts | ə | |
| R: | □ | · | · | · | ■ | · |
| O: | w o o d s m a n | | a n d | h i s | w i f e | w h o |
| A: | wudzmən^ | | ənd^ | iz | waif | hu |
| R: | · | □ · | ■ | · | □ | · |
| O: | w e r e | v e r y | s a d | b e c a u s e | | t h e y |
| A: | wə | veri | sæd | bikɑ:z | | ðei |
| R: | · | □ | ■ | · | | |
| O: | h a d | n o | c h i l d r e n. | | | |
| A: | əd | nou | tʃildrən] | | | |

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