

Discussion Questions on Language Sounds and Writing

1. Although we perceive speech as a string of individual sounds, an instrumental record of speech shows that it is a continuous stream, with no clear breaks separating most sounds. Here are eight utterances with their acoustic waveforms. Under each waveform write the utterance which corresponds to it. Try to identify the “center” of each sound and what, in the pronunciation (= “articulation”) of the individual sounds causes the wave form to vary in amplitude (shown by longer or short striation).

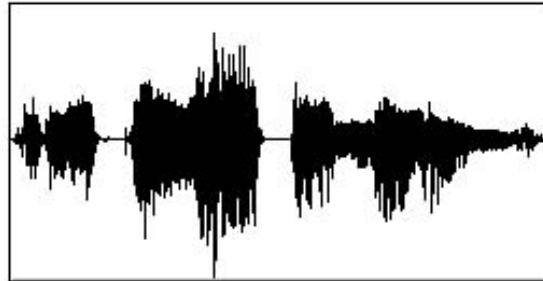
Say “u” all 9 lines. Say “u” all 10 lines. Say “u” all 9 times. Say “u” all 10 times.
Say “q” all 9 lines. Say “q” all 10 lines. Say “q” all 9 times. Say “q” all 10 times.



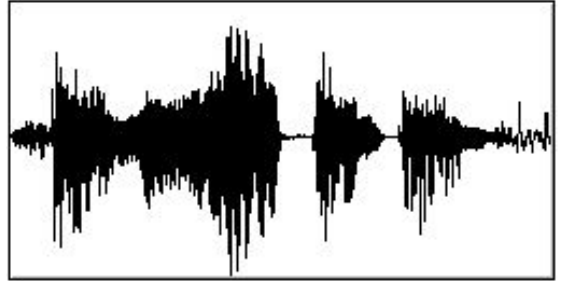
a. Say “q” all 9 times.



b. Say “u” all 10 lines.



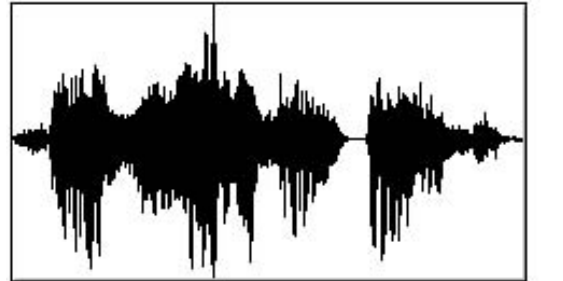
c. Say “q” all 10 lines.



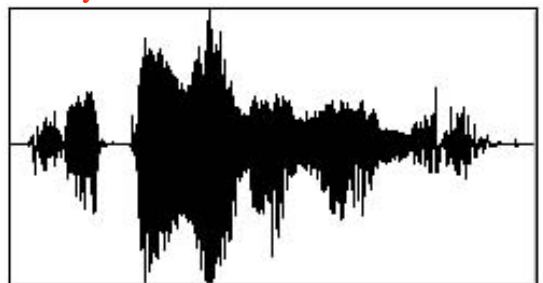
d. Say “u” all 10 times.



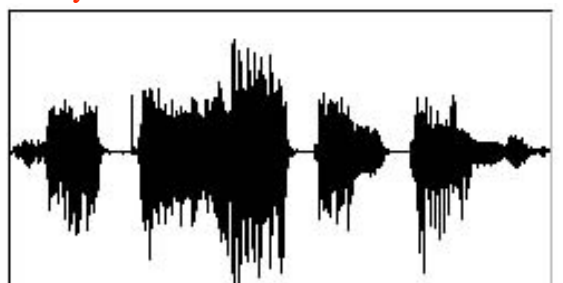
e. Say “u” all 9 lines.



f. Say “u” all 9 times.



g. Say “q” all 9 lines.



h. Say “q” all 10 times.

2. Speech sounds tend to be affected by word position and surrounding sounds, but speakers generally hear sets of sounds as “the same”, unconsciously compensating for the objective differences. In the table below, are the pairs of underlined sounds the same or different? If different, how do they differ and why?

t <u>all</u> -s <u>ta</u> ll	The <u>t</u> of 'tall' is <u>aspirated</u> (has a puff of air after it). The <u>t</u> of 'stall', since it follows <u>s</u> , is <u>unaspirated</u> . To show this, hold a piece of paper in front of your mouth and pronounce the two words. The aspiration will cause the paper to move when you say 'tall', but the paper will not move when you say 'stall'.
<u>l</u> ean - <u>l</u> awn	The <u>l</u> of 'lean' is a " <u>clear</u> " or " <u>light</u> " <u>l</u> . The tongue is rather high in the mouth, near the palate, anticipating the HIGH FRONT vowel "ea" [i]. The <u>l</u> of 'lawn' is a " <u>dark</u> " <u>l</u> . Most of the tongue is drawn to the back of the mouth, anticipating the LOW BACK vowel "aw" [a]. To hear the difference, say the words slowly, trying to prolong the "l" sounds.
w <u>ri</u> ter - <u>ri</u> der	In American English, both <u>t</u> and <u>d</u> between vowels (at the beginning of an unstressed syllable) are pronounced as <u>flapped</u> sounds, similar to the "flapped r" found in many languages. For many (most?) American English speakers, <u>t</u> and <u>d</u> in this context become the same sound, which we may symbolize <u>D</u> , and words 'writer' and 'rider' are pronounced identically, both being pronounced [rayDr]. For some speakers, the words are pronounced differently, with the <u>vowel</u> preceding the <u>t</u> of 'writer' being shorter than the vowel preceding the <u>d</u> of 'rider' (see the 'w <u>ri</u> te - <u>ri</u> de' example below). Personally (RGS) I feel that I make a difference in the <u>t</u> and <u>d</u> , with the <u>t</u> being pronounced with a lighter tap against the alveolar ridge than with the <u>d</u> , but like nearly all speakers of American English, I pronounce both as flaps, and in fast speech, I may well pronounce them identically.
bu <u>tt</u> on - bu <u>tt</u> er	For most speakers of American English, the <u>tt</u> of 'button' is pronounced as a <u>glottal stop</u> and the following "-on" is pronounced as a "syllabic <u>n</u> " (there is no vowel in the syllable). The "stop" feature of the glottal stop plus the alveolar position of the <u>n</u> sort of "reconstructs" the original <u>t</u> sound, which is an ALVEOLAR STOP. The <u>tt</u> of 'butter' is pronounced as the " <u>flapped D</u> " (see 'w <u>ri</u> ter - <u>ri</u> der' above). The "-er" is pronounced as a "syllabic <u>r</u> " (there is no vowel in the syllable).
l <u>in</u> t - l <u>in</u> k	The <u>n</u> of 'lint' is pronounced as a <u>alveolar</u> nasal because it comes before the alveolar stop <u>t</u> . The <u>n</u> of 'link' is pronounced as a <u>velar</u> nasal (the "ng" of 'sing') because it comes before the velar stop <u>k</u> . To demonstrate this, say each word. Stop just before the <u>t</u> of 'lint' and the <u>k</u> of 'link' and feel where you have placed your tongue.
I te <u>as</u> e you - I te <u>as</u> e her	The <u>s</u> in 'I tease you' is <u>palatalized</u> to "zh", anticipating the PALATAL GLIDE <u>y</u> of 'you'. The <u>s</u> in 'I tease her', is an <u>alveolar</u> fricative "z" since 'her' does not begin in a palatal sound.
de <u>ee</u> m - de <u>ee</u> p	The <u>ee</u> of 'deem' is <u>nasalized</u> in anticipation of the nasal consonant <u>m</u> . The <u>ee</u> of 'deep' is <u>non-nasalized</u> .
w <u>ri</u> te - <u>ri</u> de	For most speakers of English, regardless of dialect, a vowel preceding a <u>voiceless</u> sound is shorter than a vowel preceding a <u>voiced</u> sound. The <u>i</u> [ay] of 'write' should thus be shorter than the <u>i</u> [ay] of 'ride'. The length distinction is more prominent for some speakers than for others, though it probably exists for everyone. I (RGS) tend not to make a very big length difference, but for my wife, the difference is very easy to hear. For many speakers of English, the length distinction turns into a "quality" distinction for the DIPHTHONGS [ay] (usually written "i" as in 'ride') and [aw] (usually written "ou" as in 'loud'). For example, Canadian English speakers are well-known for the way they pronounce words like 'out' or 'about'. Such speakers have very different sounding vowels in pairs of words like 'lout' vs. 'loud', and many speakers do the same for pairs like 'write' vs. 'ride'.

3. Duality of Patterning

- Why does a pair of sentences like, “Bear fish in streams,” and “Fish bear in streams,” (with the same sounding elements rearranged) NOT illustrate duality of patterning?

We have rearranged **meaningful** units (the words) to create other meaningful units. We have not started with **meaningless** units and rearranged them to make different meaningful units.

- Does clicking the tongue (sometimes written “tsk-tsk”) meaning, “What a shame?” have duality of patterning?

No. The "tsk" cannot be broken down into smaller parts that could be rearranged. It is a unitary symbol with a meaning. We can string several "tsk's" together, but in so doing, we are not creating new utterances with different meanings (other than perhaps greater dismay or the like) any more than a duck quacking six times rather than seven times is saying something new and different.

- Does a cry, “Ouch!” have duality of patterning?

Yes. This word can be broken down into English sounds [a], [w], [ɔ] which could be rearranged to create units with other meanings--in this case 'chow' and 'watch'. It is true that we could say, "Ouch! Ouch! Ouch!" one or three or ten times with no difference in overall meaning other than emphasis, but unlike 'tsk' in the preceding question or a duck's quack, 'ouch' has an internal sound "structure".

- Do computer programming languages have duality of patterning?

Hmm...maybe. "Higher level" languages like Basic or C, with instructions such as "GOTO LINE 25", have duality of patterning--they combine individual letters, which alone are meaningless to make units like GOTO, which are meaningful to the HUMAN programmer. But these languages are just a convenient interface between the human and the machine. The very lowest level of instructions for all computers involve combinations of "0" and "1"--essentially "off" and "on". At this level, there are two units, which on their own have no meaning, but which can be put into combinations which make the computer behave in certain ways. The "hmmm" has to do with the issue of "meaning", since DUALITY OF PATTERNING speaks of combining meaningless units to form meaningful units. Does the computer process the different combinations of 0's and 1's as units that "mean" something, or are the computer behaviors that look like "responses" to these different combinations just end results of different strings of input, none of which have "meaning" in and of themselves. Suppose I have the following set of units:

() - : ;

I can combine these units linearly in various ways.

:-))-);-()(:;::

A human looking at this might see "a smiling face", "a smiling guy wearing a baseball cap", "a grimacing face", "a random string of punctuation marks" respectively. Is this a system of "art" with the property of duality of patterning? Maybe, but it seems different from "true" duality of pattern. By arranging various shaped objects in space,

we appear to have created units with "meanings", but they are "meanings" that we impose on the combinations as outside observers. Human perception of what computers are doing seems similar. By cleverly arranging 0's and 1's, we can get a computer to make the computer monitor that you are currently looking at display the things you are interpreting as letters of the Roman alphabet, i.e. you are using your experience with the written form of English to interpret the images in a certain way. These images "mean" nothing to the computer. This is in contrast to duality of patterning in language. Speakers of a language know the meaningless sound units of their language and they separately know the meanings of units composed of particular combinations of those units. For the human, the sounds making up the words 'pill' and 'lip' are the same, and are of an entirely different nature from the units resulting from their combination. For a computer, the individual letters and the combinations of the letters are not of a different nature--they are all strings of 0's and 1's. For a system to have "true" duality of patterning, it therefore seems necessary that that system be inherent to its user. A computer just uses a system of meaningless 0's and 1's, but it seems to be up to the human to interpret the results of combining those units in different ways as meaningful.

- Does Morse Code have duality of patterning?

Yes. For those who never heard of Morse Code and don't know its basis, it was a system used by telegraph that sent messages using "dots" (electrical signals of short duration) and "dashes" (electrical signals of long duration). The sender combined dots and dashes in different ways to form messages. Thus, in Morse Code ...- - - ... was the distress signal "SOS". Three dots represent "S" and three dashes represent "O". This message has duality of pattern because a "dot" or "dash" is a meaningless unit whereas the combinations make meaningful units. We could even look at Morse Code as having a "double duality" of patterning. On the meaningless side, we have the meaning units of dots and dashes which were combined to represent letters of the alphabet, which are also meaningless as units. On the meaningful side, the letters represented by sets of dots and dashes could be combined to form words--meaningful units--and those words could be combined to form sentences--larger meaningful units

- Does either or both the signs below illustrate duality of patterning?



Does **NOT** illustrate duality of patterning: There are two symbols here--the cigarette and the banned sign--but each has a meaning, and neither can be decomposed into meaningless parts that could be recombined to form some other meaningful unit.

DOES illustrate duality of patterning: The individual letters making up the written phrase, "No smoking," do not have meanings on their own, and they can be recombined to make other, unrelated meaningful units.

4. Below is a poem that some students may know, transcribed phonetically. IN EACH LINE THERE IS ONE TRANSCRIPTION MISTAKE. Read the poem and identify the transcription mistakes. There may be some aspects of the transcription which differ from yours, e.g. the dialect on which this transcription is based has [ɔ], which most speakers of Californian English lack. Distinguish the actual mistakes from the dialect differences.

ðə taɪm hæz kʌm ðə wɔːlrus sɛd	wɔːlrʌs
tu tɔk əf mɛni θɪŋz	ʌv
ʌv ʃɪps ən ʃuz ən sɪlɪŋ wæx	wæks
ʌv kæbʌʃlɪz ən kɪŋz	kæbʌʃlɪz
ænd hwaɪ ðə si ɪz bɔɪlɪŋ hot	hət
ænd hwɛðər pɪgs hæv wɪŋz	pɪgz

Here is the first verse of Robert Frost's "The Road Not Taken". Transcribe it phonetically. (Base on my pronunciation; yours could vary.—RGS)

Two roads diverged in a yellow wood,	tu rɔdz ðəɪvərʃd
And sorry I could not travel both,	ən səri aɪ kʊd nɔt trævəl bɔθ
And be one traveler, long I stood	ən bi wʌn trævələr lɔŋ aɪ stʊd
And looked down one as far as I could	ən lʊkt daʊn wʌn əz fɑr əz aɪ kʊd
To where it bent in the undergrowth.	tu hwɛr ɪt bɛnt ɪn ði ʌndərgrɔθ

5. On page 57, write the phonetic symbols corresponding to the underlined letters in the words. Give the names for the sounds in phonetic terminology, e.g. *voiced bilabial stop*, *mid front unrounded vowel*. (Here are the symbols. You should be able to supply the names from the charts on pages 53-54.)

f <u>a</u> me	[e]	fl <u>u</u> te	[u]	s <u>u</u> n	[s]	g <u>i</u> rl	[g]
f <u>a</u> d	[æ]	pu <u>t</u>	[ʊ]	s <u>u</u> gar	[ʃ]	g <u>i</u> ant	[j]
f <u>a</u> ther	[a]	b <u>u</u> t	[ʌ]	e <u>a</u> sy	[z]		
f <u>a</u> ll	[a]			me <u>a</u> sure	[ʒ]		
vill <u>a</u> ge	[ɪ]						
m <u>a</u> ny	[e]						
<u>ch</u> ip	[ʧ]	e <u>i</u> ther	[ð]	m <u>e</u> at	[i]		
mach <u>i</u> ne	[ʃ]	e <u>th</u> er	[θ]	gr <u>e</u> at	[e]		
<u>ch</u> aracter	[k]	<u>Th</u> omas	[t]	thr <u>e</u> at	[e]		

6. Below are representations in several writing systems (some obviously made up) of the English sentence

"Ants will frighten tenants."

For each representation, state whether the writing system is a *word writing* (= *logographic*), *syllabic*, or *phoneme* (= *phonetic*, *alphabetic*) system.

a. 

Word writing system: Slightly tricky because this system doubles the symbol to show plural, resulting in more written symbols than there are words. We can tell that the doubled symbols are not phonetic or syllabic symbols because they are just repetitions of the same symbol. Since phonetic and syllabic systems represent something about pronunciation, we would expect two different symbols, one for the root and one for the plural ending in either a phonetic or syllabic system.



Syllabic writing system: There are not enough symbols for a phonetic system and too many for a word writing system. We see the large "X" repeated in the locations where the syllable "ten" appears ('frighten', 'tenants'). The picture of a pair of ants seems to be a unit symbol representing the syllable "ants" ('ants', 'tenants').

c. æ̃ts wɪl fɹaɪʔŋ tɛnənts

Phonetic writing system: The number of symbols alone is enough to say that there must be *one symbol per sound*, i.e. a phonetic system. There are also repeated symbols that occur in the spots where we expect repeated sounds, e.g. the "t's" in 'ants' and 'tenants'.

d. æ̃ w ϕ t

Word writing system: Though the symbols look like symbols of a "phonetic" alphabet, there is just one symbol corresponding to each word.

e.

Word writing system: This is pretty much like (a). Although there are more symbols than there are words, the repeated symbols do not correspond to either repeated syllables or repeated sounds. They must therefore be doubled word symbols, probably as a way to show plural, or they might even be symbols which function as units but just have two written parts.

7. A large majority of the world's languages that have standard writing systems use systems of the type that we are referring to as "phonetic" or "alphabetic", that is, systems that at least approximate the ideal of a one-to-one match of written symbols to spoken sounds (consonants and vowels). In fact, all "alphabetic" writing systems in use today have one of just two origins: (1) The PHOENICIAN writing system, in use around the Mediterranean area some 4000-5000 years ago, is the ultimate source of all but one modern alphabetic writing system. The Roman, Greek, Arabic, Hebrew, Armenian, Indian, Thai, and many other scripts, as different as they look from each other today, can all trace their origins back to the Phoenician system. (2) The one alphabetic system that does not have this source is that of KOREAN. In the 15th century, King Sejong assembled a group of scholars to create a writing system especially suited to Korean. This system, called *hankul* 'great writing', is the one in use in Korea today. Below are the numbers 1-10 in *hankul* with phonetic transcriptions underneath. (These are the so-called Sino-Korean numbers, adopted into Korean from Chinese. There is another set of Native Korean numbers. Both sets are in common use, more or less depending on the types of things being enumerated.)

일	이	삼	사	오	육	칠	팔	구	십
[il]	[i]	[sam]	[sa]	[o]	[yuk]	[č ^h il]	[p ^h al]	[ku]	[šip]
1	2	3	4	5	6	7	8	9	10

(a) Cite types of evidence demonstrating that Korean *hangul* is an ALPHABETIC system.

If *hangul* were a **word writing** system, each of the numbers would have a single unique symbol unrelated to the other word symbols, and likewise, if it were a **syllabic writing** system each number would have a unique symbol because the words for the numbers all consist of a single syllable. However, we see certain "pieces" of *hangul* recurring that correspond to aspects of pronunciation. For example the numbers '3' and '4' both begin [sa-] and we can see *hangul* elements that are shared between the two numbers. Likewise, the numbers '1', '7', '8' all end in [l], and the *hangul* representations all have something that looks the same at the bottom. Hence, even without being able to fully decompose the *hangul* writing, we can see that it contains elements that **relate to individual sounds** rather than just to language units larger than individual sounds. (See the next question for some examples.)

(b) What are the *hangul* symbols for the following sounds: [s], [k], [l], [p], [a], [i], [u]?

[s] = ㅅ (see 3, 4, and also 10—"s" is pronounced [š] before "i")
 [k] = ㅋ (see 6, 9)
 [l] = ㄹ (see 1, 7, 8)
 [p] = ㅍ (see 1—this is the only word with "p", but by comparing 10 with, *sya*, 1 and 3, we can see how to separate it off)
 [a] = ㅏ (see 3, 4, 8)
 [i] = ㅑ (see 1, 2, 7, 10)
 [u] = ㅓ (see 9—there is only one clear example of the symbol for "u", but we can recognize "k" from 6, so what is left must be "u")

(c) What does the *hankul* symbol ㅇ seem to represent?

The ㅇ of *hankul* is written at the beginning of a syllable that, in pronunciation, begins in a vowel, as in '1', '2', '5'. Note that [yuk] '6' also has *hankul* ㅇ. In *hankul*, the sequence [yu] is written by adding an extra vertical line to the symbol for [u] (see just above). Since "u" is a vowel, the symbol for [yu] is considered to be a vowel in *hankul* and hence requires the ㅇ before it.

(d) Although *hangul* is an ALPHABETIC system, its printed appearance is that of a SYLLABIC or even a LOGOGRAPHIC system. What accounts for this appearance?

The *hankul* symbols are not written in a string, one after the other, like most alphabets. Sometimes one or more symbols in a syllable are written under the other symbols. This will be the case when either (1) the vowel symbol is horizontal, like the symbol for [u] (see '6', where the "k" is under the horizontal symbol for [yu]) or (2) when a consonant is at the end of a syllable (see '1', '3', '6', '7', '8', '10'). The effect is to make the written representation of each syllable fit into a little "box", giving the appearance of a compact single symbol for the syllable.

8. Here are four lines from the Prologue to Geoffrey Chaucer's "Canterbury Tales", written in the 2nd half of the 14th century, with a very literal translation into English of the early 21st century. Each is given in the standard orthography of the time followed by a phonetic transcription of the pronunciation of the time.

14 th century	21 st century
<u>Standard orthography</u> A knyght there was, and that a worthy man, That fro the tyme that he first bigan To riden out, he loved chivalrye Trouthe and honour, fredom and curteisye.	<u>Standary orthography</u> A knight there was, and that a worthy man, That from the time that he first began To ride out, he loved chivalry Truth and honor, freedom and courtesy.
<u>Phonetic</u> ə knɪxt θer was and θat ə wʊrði man, θat frɔ θə tɪm θat e fɪrst bɪɡan tɔ rɪdən ut, e lʊvəd ʧɪvəlriə trɔʊθ and ɔnʊr, frɛdɒm and kʊrtæziə	<u>Phonetic</u> ə naɪt ðer wɜz, ən ðær ə wɪði mæn, ðæt frʌm ðə taɪm ðær hi fɪrst bɪɡæn tə raɪr awt, hi ləvd ʃɪvɹi truθ ən anr, frɪrʌm ə kɪrəsi.

Suppose that you can fluently read both modern English orthography AND the phonetic alphabet. Which version of 14th century English would be easier for you to understand, the standard orthography or the phonetic? Why?

Just counting the number of differences between symbols, the Standard Orthography is much more similar between the two periods of English than are the phonetic versions. In fact, with the exception of the use of **y** in some cases in Middle English, where modern English uses **i** and a couple of other vowel spelling differences (**trouthe** for **truth**, **fredom** for **freedom**) the spelling is almost identical. The reason is that language continues to change in the way sounds are pronounced (we discuss this in week 5), but speakers continue to write words pretty much the same way, simply assigning the new pronunciations to the old letters.