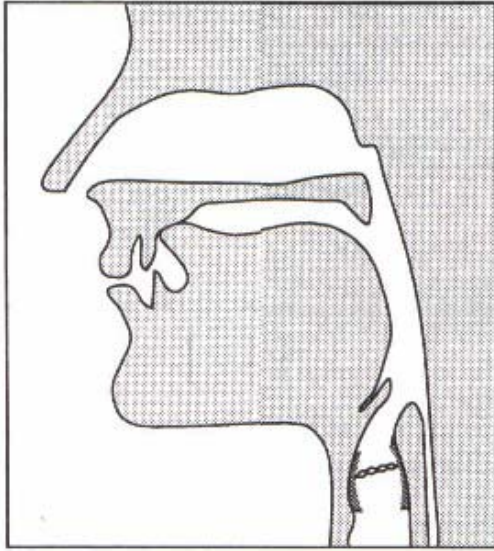
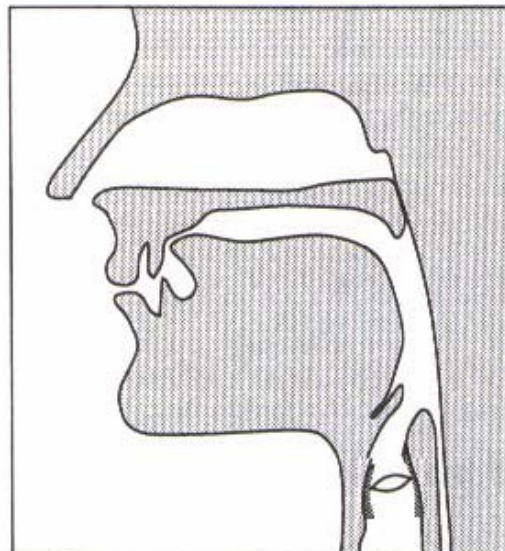


1. A. (4 Points) Using the appropriate phonetic symbol, indicate the stop, fricative or nasal sound that would be produced by the vocal tract in each of the following configurations.



[]



[]

B. (6 points) On the lines below write the corresponding articulatory description for each of the above sounds (for example, *voiceless velar stop*).

2. (6 Points) Consider the following data from Macuiltianguis Zapotec, an indigenous language spoken in southern Mexico:

naaja? 'yesterday'

dʒoo 'river'

saagwiu? 'coyote'

jiina? 'chile'

betti?dʒa?na 'I killed it'

bia? guudia 'spider'

joo 'river'

bellia 'star'

bella ittʒa? 'daddy long-legs'

naadʒa? 'yesterday'

dʒiina? 'chile'

betti?ja?na 'I killed it'

Does this data suggest that [j] and [dʒ] are allophones of different phonemes or allophones of the same phoneme? Explain your answer.

3. English has a negative prefix that has been borrowed from Latin and which has several different pronunciations (sometimes reflected in the spelling). Below, three variants of this prefix are given along with numerous example words. Consider the prefix, which has been underlined, and answer the questions below.

[im-]	[iŋ-]	[in-]
<u>im</u> possible	<u>in</u> complete	<u>in</u> operable
<u>im</u> mobile	<u>in</u> calculable	<u>in</u> tolerable
<u>im</u> plausible	<u>in</u> credible	<u>in</u> definite
<u>im</u> balance	<u>in</u> glorious	<u>in</u> sufferable
<u>im</u> palpable	<u>in</u> conceivable	<u>in</u> elegant
<u>im</u> material	<u>in</u> capable	<u>in</u> offensive
<u>im</u> mature	<u>in</u> consolable	<u>in</u> applicable
<u>im</u> penetrable	<u>in</u> capacitate	<u>in</u> intangible
<u>im</u> practical	<u>in</u> coherent	<u>in</u> decent
<u>im</u> modest	<u>in</u> conclusive	<u>in</u> different
<u>im</u> moral	<u>in</u> culpable	<u>in</u> sane
<u>im</u> maculate	<u>in</u> congruous	<u>in</u> effective

A. (3 points) List each of the distinct sound(s) which immediately follow the [im-] pronunciation of this prefix in the first column. Be sure to list sounds not letters.

B. (3 points) Do the sounds you listed in A. above form a natural class? If so, give it.

C. (3 points) List each of the distinct sound(s) which immediately follow the [iŋ-] pronunciation of this prefix in the second column. Be sure to list sounds not letters.

D. (3 points) Do the sounds you listed in C. above form a natural class? If so, give it.

E. (3 points) List each of the distinct sound(s) which immediately follow the [in-] pronunciation of this prefix in the third column. Be sure to list sounds not letters.

F. (3 points) Do the sounds you listed in E. above form a natural class? If so, give it.

G. (5 points) Which form of this prefix, [im-], [iŋ-] or [in-], should be chosen as the basic, underlying form of the prefix? (You can think of this as being like the phonemic form of the prefix). Justify your answer.

H. (3 points) What type of phonological process conditions the variant forms of the prefix (epenthesis, metathesis, etc.)?

I. (Extra Credit 3 points) This prefix actually has at least two more pronunciations. Can you give them, along with an example word for each and a statement of when each occurs?

4. English Historical Phonology. Consider the following English data below, paying particular attention to [w] segments and answer the questions that follow. The data set provides the Middle English pronunciation of a word, its Modern English pronunciation and a gloss (meaning). Note that a colon (:) indicates that the preceding sound is long.

Data Set 1

	Mid E	Mod E	Gloss
1.	swu:x	sʌf	<i>sough, murmur of sea</i>
2.	hwo:s	huwz	<i>whose</i>
3.	θwɔŋg	θɑ:ŋ	<i>thong</i>
4.	two:	tuw	<i>two</i>
5.	swɔ:rd	sɔrd	<i>sword</i>
6.	zwu:ndz	zawndz	<i>zounds (exclamation)</i>
7.	swɔ:	sow	<i>so</i>
8.	hwo:	huw	<i>who</i>

A. (4 points) Write down the phonetic environments of [w] in the MIDDLE ENGLISH words (the first one has been done for you). Note that these [w] segments were lost (stopped being pronounced) sometime between Middle English and Modern English.

- | | | | |
|----|-------------------|----|-------|
| 1. | _____ s _u: _____ | 5. | _____ |
| 2. | _____ | 6. | _____ |
| 3. | _____ | 7. | _____ |
| 4. | _____ | 8. | _____ |

Data Set 2

	Mid E	Mod E	Gloss		Mid E	Mod E	Gloss
9.	hwen	wɛn	<i>when</i>	18.	swift	swift	<i>swift</i>
10.	hwer	wɛr	<i>where</i>	19.	swim	swim	<i>swim</i>
11.	swa:ŋg	swɛŋ	<i>swang</i>	20.	twenti	twenij	<i>twenty</i>
12.	swam	swæm	<i>swam</i>	21.	twelv	twelv	<i>twelve</i>
13.	swe:p	swijp	<i>sweep</i>	22.	twi:xs	twajs	<i>twice</i>
14.	swein	swejn	<i>swain</i>	23.	twig	twig	<i>twig</i>
15.	swell	swɛl	<i>swell</i>	24.	wo:mb	wuwm	<i>womb</i>
16.	swer	swɛr	<i>swear</i>	25.	wulf	wulf	<i>wolf</i>
17.	swiŋg	swiŋ	<i>swing</i>	26.	wu:nd	wawnd	<i>wound</i>

B. (9 points) Now, write down the phonetic environments of [w] in the MIDDLE ENGLISH words in 9-26. Note that these [w] segments remain (are still pronounced) in Modern English.

- | | | |
|-----------|-----------|-----------|
| 9. _____ | 15. _____ | 21. _____ |
| 10. _____ | 16. _____ | 22. _____ |
| 11. _____ | 17. _____ | 23. _____ |
| 12. _____ | 18. _____ | 24. _____ |
| 13. _____ | 19. _____ | 25. _____ |
| 14. _____ | 20. _____ | 26. _____ |

C. (6 points) Based on the environments you wrote down in A and B, write a **general** phonological rule which characterizes the Middle English environment where [w] would be lost. In other words, if I am given a Middle English word containing a [w], I should be able to use your rule to predict if the [w] will be pronounced in Modern English or not.

In Middle English, [w] was lost when

D. (3 points) What kind of phonological process does this sound change from Middle English to Modern English represent (epenthesis, metathesis, etc.)?

E. (4 points) Recall the Great Vowel Shift (GVS) which was mentioned in class and is discussed in the course packet. Considering the words in Data Set 1 and 2, does it seem that the loss of [w] took place before or after the GVS? Provide evidence for your answer.

To answer the question, apply your rule in C and then the GVS to various Middle English words in Data Set 1. Then try the GVS before the rule in C, to the same word(s). Which ordering, C before GVS or C after GVS produces the correct Modern English form. That gives you your answer. Look at page 45 of the course packet for some discussion of rule ordering. Provide your evidence like the table on that page.

F. (4 points) Another sound change that took place in Middle English was the loss of [h] before sonorants ([l, r, n, w]) as in the following:

Old English	Middle English	Gloss
hriŋg	riŋg	'ring'
hnēkka	nēkka	'neck'
hla:f	lɔ:f	'loaf'
hwæte	wæ:tə	'wheat'

Did this change take place before or after the loss of [w]? Justify your answer. See E. above for details on how to proceed on this question.

G. (Extra Credit 4 points) In the available historical documents, the words *swollen*, *sworn*, *swum* and *swung* were at one point written without a *w* and presumably pronounced without a [w] as should be expected following the rule developed in C. Today, however, the *w* is attested in writing and pronunciation. Can you account for why these words changed back to being pronounced with a [w]? (Hint: Think of words related to these, but you are generally on your own here.)

5. (6 Points) Consider the distribution of the sounds [x] (voiceless velar fricative) and [ç] (a voiceless palatal fricative) in the German data below (: represents a long vowel):

[axt]	'eight'	[ho:x]	'high'	[ɪç]	'I'	[lɛçəlɪn]	'to smile'
[bu:x]	'book'	[fluxt]	'flight'	[ɛçt]	'real'	[ri:çən]	'to smell'
[lɔx]	'hole'	[laxən]	'to laugh'	[ʃpre:çə]	'would speak'	[fɛçtən]	'to fence'

Are [x] and [ç] in complementary distribution or overlapping distribution? If they are allophones of the same phoneme, state the phonetic environment of each.

6. (6 Points) Consider the distribution of the sounds [s] and [z] in colloquial Spanish based on the data written in our phonetic transcription below:

izla	'island'	tʃiste	'joke'	resto	'remainder'
fuersa	'force'	eski	'ski'	mizmo	'same'
peskado	'fish'	riezgo	'risk'	espalda	'back'
muskulo	'muscle'	fiskal	'fiscal'	razgo	'feature'
sin	'without'	rezvalar	'to slip'	beizbol	'baseball'
rasko	'I scratch'	dezde	'since'		

Are [s] and [z] separate phonemes of Spanish or allophones of a single phoneme? If they are different phonemes, support your answer; if they are allophones of the same phoneme, state the rule that specifies their distribution.

7. (16 Points) Consider a language that has the following consonant and vowel phonemes:

p	t	k	ʔ	i	u
b	d	g		e	o
	s		h	a	
	z				
m	n	ŋ			
	l				
	r				

For each group of phonemes listed below, state the natural class of features that uniquely define each phoneme group for this language:

- a. p t k ʔ b d g s z h _____
- b. s z h _____
- c. m n ŋ l r _____
- d. i u _____
- e. p t k ʔ s h _____
- f. m n ŋ l r i e a o u _____
- g. l r i e a o u _____
- h. k g ŋ _____