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Discussion Section A: Mondays 10:30–11:30 AM, 2 Arrow St Room 420
Section B: Tuesdays 12:00–1:00 PM, 2 Arrow St Room 408
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Answer Keys for Section 6 and 7

2023 Apr 3/4/10/11

1 Section 6

Please List the Natural Class which contains all of these items:

(1) Rotokas: {p,t,k,b,d,g,m,n,ŋ,a,e,i,o,u}

a. {p,b,m} = $\begin{bmatrix} + & \text{LABIAL} \end{bmatrix}$
b. {e,a,o} = $\begin{bmatrix} - & \text{HI} \end{bmatrix}$
c. {m,n,ŋ} = $\begin{bmatrix} + & \text{NAS} \end{bmatrix}$
d. {p,t,b,d,m,n} = $\begin{bmatrix} - & \text{DORSAL} \end{bmatrix}$
e. {k,g,ŋ,i,u} = $\begin{bmatrix} + & \text{HI} \end{bmatrix}$
f. {b,d,g,m,n,ŋ} = $\begin{bmatrix} + & \text{VOICE} \\ - & \text{SYL} \end{bmatrix}$

(2) Central Alaskan Yup'ik: {p,t,k,q,ts,tʃ,f,v,s,z,x,ɣ,χ,ʁ,xʷ,ɣʷ,χʷ,ʁʷ,ɬ,l,j,w,m̥,m,n̥,n,ŋ̊,ŋ,i,ə,u,a}

a. {m,n,ŋ} = $\begin{bmatrix} + & \text{NAS} \\ + & \text{VOICE} \end{bmatrix}$
b. {xʷ,ɣʷ,χʷ,ʁʷ,w,u} = $\begin{bmatrix} + & \text{ROUND} \end{bmatrix}$
c. {q,χ,ʁ,χʷ,ʁʷ,u} = $\begin{bmatrix} + & \text{BACK} \end{bmatrix}$
d. {l,ɬ} = $\begin{bmatrix} + & \text{LATERAL} \end{bmatrix}$
e. {ɣ,ɣʷ,ə} = $\begin{bmatrix} + & \text{VOICE} \\ - & \text{FRONT} \\ - & \text{BACK} \end{bmatrix}$
f. {p,m̥,m,f,v} = $\begin{bmatrix} + & \text{LABIAL} \\ - & \text{DORSAL} \end{bmatrix}$
g. {ts,tʃ,s,z,ɬ} = $\begin{bmatrix} + & \text{CORONAL} \\ + & \text{DELREL} \end{bmatrix}$

(3) Southern Vietnamese: {p,t,tʰ,t̪,c,k,ʔ,ɓ,ɗ,f,s,s̪,x,h,ɣ,k,r,j,w,m,n,ɲ,ŋ,i,ɨ,u,e,ə,ə̆,o,ɛ,a,ă,ɔ}

a. {ɨ,ə,ə̆,a,ă} = $\begin{bmatrix} - & \text{FRONT} \\ - & \text{BACK} \\ + & \text{SYL} \end{bmatrix}$
b. {tʰ} = $\begin{bmatrix} + & \text{SG} \end{bmatrix}$
c. {j,c,ɲ,i,e,ɛ} = $\begin{bmatrix} + & \text{FRONT} \end{bmatrix}$

d. $\{t,t^h,ʈ\} = \begin{bmatrix} + & \text{COR} \\ - & \text{CONT} \\ - & \text{VOICE} \end{bmatrix}$

e. $\{ʈ,ʂ\} = \begin{bmatrix} - & \text{ANT} \end{bmatrix}$

f. $\{m,n,ŋ\}$ = No natural class: $\begin{bmatrix} + & \text{NAS} \\ - & \text{FRONT} \end{bmatrix}$ implies dorsal, which would remove /n/ and /m/

Each of the three languages above have {m,n,ŋ}, but require different features to describe them, why? The natural class is the smallest set of features which accounts for a distribution WITHIN a given language, languages with more/more complex phonemes will require more specification for the same set of phonemes.

If a language needed the following set to describe {m,n,ŋ}, what kinds of phonemes would we expect/not expect in its inventory?

(4)

a. $\begin{bmatrix} + & \text{NAS} \\ + & \text{CONS} \end{bmatrix}$: there are non-consonant nasals (/ã/)

b. $\begin{bmatrix} + & \text{NAS} \\ - & \text{ROUND} \end{bmatrix}$: there are rounded nasals (/ŋ^w/)

c. $\begin{bmatrix} + & \text{NAS} \\ - & \text{CONT} \end{bmatrix}$: there are continuant nasals (/z̃/)

d. $\begin{bmatrix} + & \text{VOICE} \\ + & \text{CONS} \end{bmatrix}$: there are no other voiced consonants in this language (*/d/)

e. $\begin{bmatrix} + & \text{NAS} \\ - & \text{LABIODENT} \end{bmatrix}$: impossible, already rules out /n/ and /ŋ/

2 Section 7

2.1

(5)

Meaning	singular	plural
wildflower	pɛ	pɛt
cotton	lœb	lœβət[1,2]
mouse	fyəs	fyəsət[1]
dewdrop	sik	sikət[1]
sunlight	falaɢ	falaʁət[1,2]
sedge	ɔpaəd	ɔpaəðət[1,2]
dandelion	aβɔt	aβɔtət[1]
rivulet	tisa	tisat

a. It appears that the singular forms are the base forms, as they do not share any common ending or beginning; plural forms either add /t/ or /ət/

b. Plural ending /t/ would require epenthesis of /ə/, while plural ending /ət/ would require deletion of /ə/; there are environments where /ət/ would require deletion /tisa + ət/ → [tisat], but where deletion does not occur in similar environments [ɔpaəd], suggesting epenthesis.

c. [1] /ə/ is added when it would be between consonant and /t/.

d. [2] voiced plosives (/b/, /ɢ/, /d/) becomes fricatives (/β/, /ʁ/, /ð/) when between /ə/ and the preceding vowel.

(6) a. /ə/ is added between consonants:
$\varnothing \rightarrow$ ə/C__C

b. voiced plosives become fricatives between vowels:
{voiced plosives} $\rightarrow$ fricatives / V__V

$$\begin{bmatrix} + & \text{VOICE} \\ - & \text{SON} \end{bmatrix} \rightarrow \begin{bmatrix} + & \text{CONT} \\ + & \text{DELREL} \end{bmatrix} / \text{V\_\_V}$$

(7) This is an example of Feeding

a. What it is:

$\varnothing \rightarrow$ ə/C__C; $\begin{bmatrix} + & \text{VOICE} \\ - & \text{SON} \end{bmatrix} \rightarrow \begin{bmatrix} + & \text{CONT} \\ + & \text{DELREL} \end{bmatrix} /$ V__V	/pɛt/	/fyəst/	/falaɢt/
	—	[fyəsət]	[falaɢət]
	—	—	[falaʁət]

b. What could've been:

$\begin{bmatrix} + & \text{VOICE} \\ - & \text{SON} \end{bmatrix} \rightarrow \begin{bmatrix} + & \text{CONT} \\ + & \text{DELREL} \end{bmatrix} /$ V__V; $\varnothing \rightarrow$ ə/C__C	/pɛt/	/fyəst/	/falaɢt/
	—	—	—
	—	[fyəsət]	[falaɢət]

2.2

Suppose a language has the following two rules, ordered as follows:

(8) a. $$\begin{bmatrix} + & \text{SYL} \end{bmatrix} \rightarrow \begin{bmatrix} + & \text{ROUND} \\ - & \text{FRONT} \\ + & \text{BACK} \end{bmatrix} / \_\_ \begin{bmatrix} + & \text{ROUND} \end{bmatrix}$$

b. $$\begin{bmatrix} + & \text{COR} \end{bmatrix} \rightarrow \begin{bmatrix} - & \text{ANT} \\ + & \text{DIST} \end{bmatrix} / \_\_ \begin{bmatrix} + & \text{HI} \\ + & \text{FRONT} \end{bmatrix}$$

The language in question has the following phonemic inventory:

(9) a.

	Bilabial	Alveolar	Unrounded Velar	Rounded Velar	Pharyngeal
Nasal	m	n	ŋ	ŋʷ	
Oral Stop	p b	t d	k g	kʷ gʷ	ʡ
Fricative	ɸ β	s z	x ɣ	xʷ ɣʷ	ʜ
Approximant		l	ɯ̞	w	

b.

	Front	Central	Back
Close	i y		u
Mid	e ø		o
Open		a	

If this language only has CV syllables; come up with a possible word in this language for which the first rule applies; one where the second rule applies.

(10)

		Rule 1		Rule 2
/tik^{w}a/	→	[tuk^{w}a]	→	[tuk^{w}a]
/syke/	→	[syke]	→	[ʃyke]

What kind of relationship do the two rules, crucially ordered, have? Can you think of a possible word which would demonstrate this?

(11) This is an example of Bleeding

a. What it is:

$$\left[+\ \text{SYL}\right] \rightarrow \begin{bmatrix} + & \text{ROUND} \\ - & \text{FRONT} \\ + & \text{BACK} \end{bmatrix} / \_\_ \left[+\ \text{ROUND}\right]$$

$$\left[+\ \text{COR}\right] \rightarrow \begin{bmatrix} - & \text{ANT} \\ + & \text{DIST} \end{bmatrix} / \_\_ \begin{bmatrix} + & \text{HI} \\ + & \text{FRONT} \end{bmatrix}$$

/tik^{w}a/	/syke/	/syk^{w}o/
[tuk^{w}a]	—	[suk^{w}o]
—	[ʃyke]	—

b. What could've been:

$$\left[+\ \text{SYL}\right] \rightarrow \begin{bmatrix} + & \text{ROUND} \\ - & \text{FRONT} \\ + & \text{BACK} \end{bmatrix} / \_\_ \left[+\ \text{ROUND}\right]$$

$$\left[+\ \text{COR}\right] \rightarrow \begin{bmatrix} - & \text{ANT} \\ + & \text{DIST} \end{bmatrix} / \_\_ \begin{bmatrix} + & \text{HI} \\ + & \text{FRONT} \end{bmatrix}$$

/tik^{w}a/	/syke/	/syk^{w}o/
—	[ʃyke]	[ʃyk^{w}o]
[tuk^{w}a]	—	[ʃuk^{w}o]

2.3

(12)

Meaning	absolutive	ergative	dative	ablative	locative
woman	guhate	guhatene	guhatefu	guhatego	guhateŋa
man	hapi	hapne[1,4a]	hapfu[1]	hapgo[1,4a]	hapŋa[1,4a]
kinfolk	d͡zapa	d͡zapane	d͡zapafu	d͡zapago	d͡zapaŋa
ginger	t͡sot	t͡sodne[2a]	t͡sotfu	t͡sodgo[2a]	t͡sodŋa[2a]
grass	fed	fedne	fetfu[3a]	fedgo	fedŋa
bowl	kas	kasne[2b]	kasfu	kasgo[2b]	kasŋa[2b]
flour	t͡sit͡si	t͡sit͡sne[1,4a]	t͡sit͡sfu[1]	t͡sit͡sgo[1,4a]	t͡sit͡sŋa[1,4a]
water	nomu	nomne[1]	nomfu[1]	nomgo[1]	nomŋa[1]
mountain	pelad͡z	pelad͡zne	pelat͡sfu[3a]	pelad͡zgo	pelad͡zŋa
horse	pego	pegone	pegofu	pegogo	pegoŋa
arrow	sipik	sipigne[2a]	sipikfu	sipiggo[2a]	sipigŋa[2a]
lottery	gesu	gesne[1]	gesfu[1]	gesgo[1]	gesŋa[1]
rain	kot͡s	kod͡zne[2a]	kot͡sfu	kod͡zgo[2a]	kod͡zŋa[2a]
peppercorn	sefum	kesumne	kesumfu[3b]	kesumgo	kesumŋa
wheel	lep	lebne[2a]	lepfu	lebgo[2a]	lebŋa[2a]
hole	badu	badne[1]	badfe[1,4b]	badgo[1]	badŋa[1]

a. It appears that the absolutive forms are the base forms, as they do not share any common ending or beginning; other forms appear to add endings: /ne/, /fu/, /go/, /ŋa/ respectively.

b. [1] These words do not contain the last vowel of their root (absolutive form): /i/ and

/u/ seem to delete, while /a/, /e/, /o/ do not.

c. [2a] The final consonants (/t/, /k/, /t͡s/, /p/) voice before voiced consonants (/n/, /g/, /ŋ/).

d. [2b] The final consonants (/s/) do not voice before voiced consonants (/n/, /g/, /ŋ/).

e. [3a] The final consonants (/d/, /d͡z/) devoice before voiceless consonants (/f/).

f. [3b] The final consonants (/m/) does not devoice before voiceless consonants (/f/).

g. [4a] When the last root deletes, the sequence (/pn/, /t͡sn/, etc.) does not obey the voicing rule.

h. [4b] When the last root deletes, the sequence (/df/) does not obey the devoicing rule.

(13) a. /i/ and /u/ delete between consonants, when each consonant is surrounded by vowels:
{i,u} → ∅ / VC__CV

$$\begin{bmatrix} + & \text{HI} \\ + & \text{SYL} \end{bmatrix} \rightarrow \varnothing / \text{VC}\_\_\text{CV}$$

b. plosives (/t/, /d/, etc.) and affricates (/t͡s/, /d͡z/), but not nasals (/m/) or fricatives (/s/) match in voicing with the following consonant:
{plosives, affricates} → α voice / __C[α voice]

$$\begin{bmatrix} - & \text{CONT} \\ - & \text{SON} \end{bmatrix} \rightarrow \begin{bmatrix} \alpha & \text{VOICE} \end{bmatrix} / \_\_ \begin{bmatrix} - & \text{SYL} \\ \alpha & \text{VOICE} \end{bmatrix}$$

(14) This is an example of Counterfeeding (could have been feeding)

a. What it is:

	/d͡zapane/	/hapine/	/lepne/
$\begin{bmatrix} - & \text{CONT} \\ - & \text{SON} \end{bmatrix} \rightarrow \begin{bmatrix} \alpha & \text{VOICE} \end{bmatrix} / \_\_ \begin{bmatrix} - & \text{SYL} \\ \alpha & \text{VOICE} \end{bmatrix}$	—	—	[lebne]
$\begin{bmatrix} + & \text{HI} \\ + & \text{SYL} \end{bmatrix} \rightarrow \varnothing / \text{VC}\_\_\text{CV}$	—	[hapne]	—

b. What could've been:

	/d͡zapane/	/hapine/	/lepne/
$\begin{bmatrix} + & \text{HI} \\ + & \text{SYL} \end{bmatrix} \rightarrow \varnothing / \text{VC}\_\_\text{CV}$	—	[hapne]	—
$\begin{bmatrix} - & \text{CONT} \\ - & \text{SON} \end{bmatrix} \rightarrow \begin{bmatrix} \alpha & \text{VOICE} \end{bmatrix} / \_\_ \begin{bmatrix} - & \text{SYL} \\ \alpha & \text{VOICE} \end{bmatrix}$	—	[habne]	[lebne]