Tutorial 8
Phonological rules and derivation

November 7, 2024

Learning Outcomes
By the end of this tutorial, you should be able to:

- Conduct a phonemic analysis
- State phonological rules and identify URs and SRs
- Create derivational tables showing correct rule (non)application

Oroqen

The data below is from Oroqen, an Evenki language of the Tungusic family, spoken in China (Zhang 1996). Consider the consonant sounds [k] and [x] and answer the questions that follow.

[ɔːxiː]	'how many'	[açi]	'now'	[ɛːsa]	'eye'
[poːsə]	'winnowing fan'	[saː]	'know'	[tik]	'fall'
[kɔːsʊn]	'empty'	[iŋkirə]	'erase'	[açixa]	'pinecone'
[biraxan]	'river'	[səːksə]	'blood'	[suxə]	'axe'
[açiː]	'woman'	[çɛːn]	'ear'	[çiː]	'you (singular)'
[sʊnta]	'deep'	[tʊxala]	'clay'	[nəxin]	'sweat'
[kədərə]	'knife'	[sɔxɔ]	'fill'	[uskta]	'fingernail'

1. Create an environment table for [k] and [x]. An example is provided for you.

[k]	[x]
#_ɔː	ɔː_iː

2. Based on your work above, determine whether [k] and [x] are in contrastive or complementary distribution. If contrastive, explain how you know. If complementary, state generalizations about the environments in which the sounds can occur.

3. State the rule (in prose and of the form A → B / C __ D) that explains the distribution of these allophones.

4. Given the rule you proposed above, determine the underlying representations (URs) for the surface representations (SRs) [ɔːxiː] and [səːksə]. Explain how you know these.

5. Fill-in the missing information from the derivation table below.

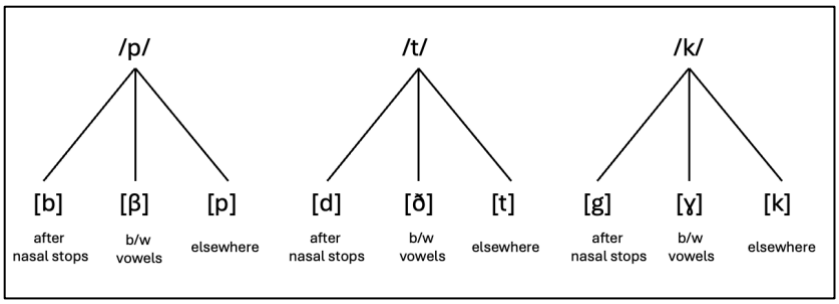
UR Gloss		/tik/ 'fall'	/nəkin/ 'sweat'	
Rule				
SR	[açixa]			[iŋkirə]

Maasai revisited

In Tutorial 6, you looked at data from Maasai (also known as Maa). The same data is presented below.

[keβer]	'heaven'	[olpurkel]	'dry steppes'	[imbaɣiβak]	'you are restless'
[ijjoːk]	'we'	[endorop]	'bribe him'	[poɣira]	'all'
[imbok]	'you clean'	[eŋgoː]	'advise him'	[eŋoɣi]	'sin'
[olkila]	'garment'	[eŋgila]	'small garment'	[koɣoː]	'grandmother'
[ailap]	'hate'	[emburuo]	'smoke'	[kaɣe]	'but'
[olpul]	'slaughtering place'	[imbala]	'papers'	[indai]	'you (plural)'
[pus]	'light coloured'	[oltuli]	'buttock'	[endaːraða]	'fight each other'
[asip]	'speak truly'	[tasat]	'disabled'	[emaŋaða]	'warrior's village'

Each of the three voiceless plosive phonemes /p/, /t/, and /k/ have three allophones of the same type: a voiced plosive [b], [d], and [g] that we see after nasal stops, a voiced fricative [β], [ð], and [ɣ] that we see between vowels, and a faithful default [p], [t], and [k] that we see everywhere else. The phoneme diagrams can be seen below.



6. Determine the rule(s) that we need to explain the distribution of the allophones.

7. Name the kind of rules these are.

8. **Challenge (do on your own):** Consider the derivation tables (1–3) below. For each, choose a good set of Massai words where:

   - only Rule #1 applies
   - only Rule #2 applies
   - both Rule #1 and Rule #2 apply
   - neither Rule #1 nor Rule #2 apply

   Complete the derivation tables for words containing /p/, /t/, and /k/. Table 1 is filled-in as an example.

Table 1. Derivation table for words containing /p/.

	only Rule #1 applies	only Rule #2 applies	neither Rule #1 nor Rule #2 apply	neither Rule #1 nor Rule #2 apply	both Rule #1 and Rule #2 apply
UR Gloss	/im**p**ok/ ‘you clean’	/ke**p**er/ ‘heaven’	/aila**p**/ ‘hate’	/**p**us/ ‘light coloured’	/im**p**aki**p**ak/ ‘you are restless’
Rule #1	imbok	–	–	–	imbakipak
Rule #2	–	keβer	–	–	impaɣiβak
SR	[imbok]	[keβer]	[ailap]	[pus]	[imbaɣiβak]

Table 2. Derivation table for words containing for /t/.

	only Rule #1 applies	only Rule #2 applies	neither Rule #1 nor Rule #2 apply	neither Rule #1 nor Rule #2 apply	both Rule #1 and Rule #2 apply
UR Gloss					
Rule #1					
Rule #2					
SR					

Table 3. Derivation table for for words containing /k/.

	only Rule #1 applies	only Rule #2 applies	neither Rule #1 nor Rule #2 apply	neither Rule #1 nor Rule #2 apply	both Rule #1 and Rule #2 apply
UR Gloss					
Rule #1					
Rule #2					
SR					