

Class 19: Evolutionary Phonology

Background

1. What's the goal of studying phonology?

We want to know things like

- Representation: What does a person know about her phonology—that is, what characterizes a mind as knowing English/Marshallese/whatever phonology?
- Learning: How is a phonology acquired?
- Processing: How is phonology produced and comprehended?
- UG: What, if anything, are the limits on possible phonologies a person could know? These might be imposed by properties of the mind independent of exposure to learning data (i.e., the 'initial state' plus development not influenced by the language being learned), by properties of how acquisition proceeds, or even by limits of processing.

2. Why does studying typology help with the last point?

- If a language type is attested, obviously it is learnable, representable, and usable.
- If a language type is unattested, what then?

3. Diachrony as a source of typology (unattested ≠ impossible?)

Besides having to be learnable, representable, and usable, an attested language must be reachable by a possible historical change from another attested language.

Schematic example: Which languages could be attested?

- the shaded cells are learnable, representable, and usable; the unshaded cells are not
- the cells with a circle are attested now
- possible moves are those of a knight in chess

N										o				
M		o												
L														
K														
J														
I														
H														
G									o					
F														
E														
D														
C		o											o	
B														
A														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14

4. Bach & Harms 1972: How do languages get crazy rules?¹

Japanese coronals undergo affrication before certain vowels:

ta	tʃi	tsu
da	dʒi	
sa	ʃi	su
za		zu

$$\begin{bmatrix} \text{-sonorant} \\ \text{+coronal} \\ \text{<+voice>} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+del rel} \\ \text{+strident} \\ \alpha\text{anterior} \\ \text{<}\alpha\text{continuant>} \end{bmatrix} / \text{---} \begin{bmatrix} \text{V} \\ \text{+high} \\ \alpha\text{back} \end{bmatrix}$$

Affrication before [u] seems very unnatural. B&H propose the following series of events.

1. Somebody innovates a rule that's phonetically reasonable:

$$\begin{bmatrix} \text{-sonorant} \\ \text{+coronal} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+del rel} \\ \text{+strident} \\ \text{-anterior} \end{bmatrix} / \text{---} \begin{bmatrix} \text{V} \\ \text{+high} \\ \text{+back} \end{bmatrix}$$

○ What does the syllable inventory look like now?

2. The rule gets generalized a little in a way that's structurally (if not phonetically) reasonable:

$$\begin{bmatrix} \text{-sonorant} \\ \text{+coronal} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+del rel} \\ \text{+strident} \\ \alpha\text{anterior} \end{bmatrix} / \text{---} \begin{bmatrix} \text{V} \\ \text{+high} \\ \alpha\text{back} \end{bmatrix}$$

○ What does the syllable inventory look like now?

3. Now a new, also reasonable rule is innovated...

$$\begin{bmatrix} \text{-sonorant} \\ \text{+strident} \\ \text{+voice} \\ \text{+anterior} \end{bmatrix} \rightarrow \text{[+continuant]}$$

4. ...then generalized:

$$\begin{bmatrix} \text{-sonorant} \\ \text{+strident} \\ \text{+voice} \\ \alpha\text{anterior} \end{bmatrix} \rightarrow \text{[}\alpha\text{continuant]}$$

¹ Bach, Emmon and Robert T. Harms (1972). How do languages get crazy rules? *Linguistic Change and Generative Theory: essays from the UCLA conference on historical linguistics in the perspective of transformational theory*. Bloomington, IA: Indiana University Press.

5. And it all gets collapsed into the one “unholy” rule (p. 15).

So each step is reasonable, but the result is “crazy”. (B&H are also concerned with an SPE proposal, linking conventions, that I won’t get into.)

Now let’s hear from Sameer about Blevins & Garrett.

5. Example from Yu 2000: Lezgian²

Backwards voicing alternation (from Yu’s (2) and (3)), in monosyllabic nouns only:

- a. Underlying final /p/

tʃ ɛb	tʃɛ p -edi	day
ɤ ab	ɤa p -u	hollow of the hand, handful
ja b	ja p -u	ear
x eb	x p -er	animal/sheep-PL
x eb -mal		cattle
qa b	qa p -uni	box/box-OBL
qa b -mab		boxes and similar things
- b. Underlying final /t/

ra d	ra t -uni	intestine
ga d	ga t -u	summer/summer-OBL
ga d -di		all summer
ɤ ed	ɤe t -re	star; fish
- c. Underlying final /k^w/

le g ^w	le k ^w -e	wash tub
tse g ^w	tse k ^w -re	ant
ru g	ru k ^w -adi	dust
- d. Underlying final /q/

ju ɤ	ju q -ar	day/day-PL
ju ɤ -di		all day
my ɤ	my q -y	bridge
na ɤ ^w	na q ^w -adi	tear
- e. Underlying final /ts/

la z	la ts -adi	kaolin, china clay
me z	me ts -i	tongue
wa rz	wa ts -ar	month, moon
	wa ts -ra	moon/month-OBL

- What’s expected, and what’s unexpected about this?

² Yu, Alan (2000). On the origin of coda voicing in Lezgian. *BLS* 26, 349-360.

6. Yu's historical explanation

These stops were historically voiced and became voiceless in certain contexts.

1. Voiced obstruents became geminated and voiceless pretonically (it's common and phonetically motivated for geminate obstruents to be voiceless).
2. Then geminates de-geminated.

The –ar/-er suffixes above both get stressed after a monosyllabic noun, but not after a polysyllabic noun.

The other (oblique-case) suffixes also get stress and are used only with monosyllabic nouns.

gad + u → gadú > gattú > gatú
but gigad + er → gigáder (made-up example)

The non-alternating cases, which might be thought of as the ones with synchronic underlying voiced stops, are mainly borrowings except for a few mystery cases:

tʃ'iɜ	tʃ'iɜ-re	bee
mirg	mirg-i	deer
mag	mag-re	nest
p'uz	p'uz-a	lip
zarb	zarb-uni	quickness

7. Example from Hyman (1998)³

Remember *NT? It drives post-nasal voicing and various other rules in other languages (see Pater).

But Tswana is different—it seems to have a *ND conspiracy:

postnasal devoicing

bón-á	'see'	m-pón-á	'see me'
dís-á	'watch'	n-tís-á	'watch me'
áráb-á	'answer'	ŋ-káráb-á	'answer me'

mu+b → *mm* (instead of expected *mb*)

mū-bús-í	→	m-músí	'governor'
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CVn+ile → *CVn-ne* (instead of *CVn-de* as in a neighboring language)

rék-ile	→	rek-ile	'buy'
gan-ile	→	gan-ne	'refuse'

³ Handout from a talk at UCLA. Appears in published form as Hyman (2001). The limits of phonetic determinism: *NC revisited. In Elizabeth Hume and Keith Johnson (eds.), *The Role of Speech Perception in Phonology*. Academic Press.

8. Hyman's historical explanation

There was actually a general loss of voiced stops (*D)...

		N__	elsewhere
*b	>	p'	β
*d	>	t'	l except [ɾ] __[*i, *u]
*g	>	k'	Ø

...but then [β] became [b], and [ɾ] became [d], so that *D can no longer be described as high-ranking, and *ND must be invoked in the synchronic grammar.

9. Attested = good?

So we see that people can learn a typologically unusual language like Lezgian or Tswana. But is there any sense in which these patterns are less natural? Harder to learn, for example? Colin's current research may shed light on this question.