

BBN–ANG–242 Phonology

9. **n** and **ŋ**;
allophonic rules and alternations:
aspiration, L-darkening and flapping

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I. \mathbf{n} and $\boldsymbol{\eta}$

n and ŋ in Hungarian

inka ‘Inca’ [iŋkə]

bingó ‘bingo’ [biŋgo:]

tank ‘tank’ [təŋk]

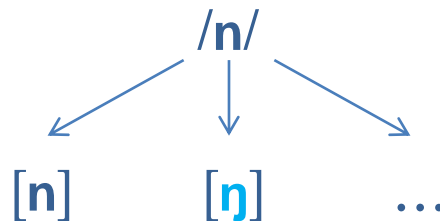
rang ‘rank’ [rəŋg]

In Hungarian the velar nasal [ŋ] only occurs before velar consonants (/k/ and /g/), i.e. its occurrence is predictable:

Nasal Place Assimilation:

$/n/ \rightarrow [ŋ] / _C_{\text{velar}}$

Which means that [ŋ] is an allophone of /n/ and not a phoneme:



n and ŋ in SSBE

Inca [íŋkə]

tank [táŋk]

bingo [bíŋgəw]

rang [ráŋ]

Just like in Hungarian, the velar nasal occurs before velar consonants (/k/ and /g/) in English.

BUT...

Unlike in Hungarian, it occurs word-finally too, and we find minimal pairs like

ran /rán/ – *rang* /ráŋ/

Which means that in English /ŋ/ is a phoneme on its own (“once a phoneme, always a phoneme” principle):

/n/ – /ŋ/

II. Allophonic rules and alternations

Allophonic rules and alternations

underlying representation (UR)

/kɪl/

allophonic rules

surface representation (SR)

[k^hɪɫ]



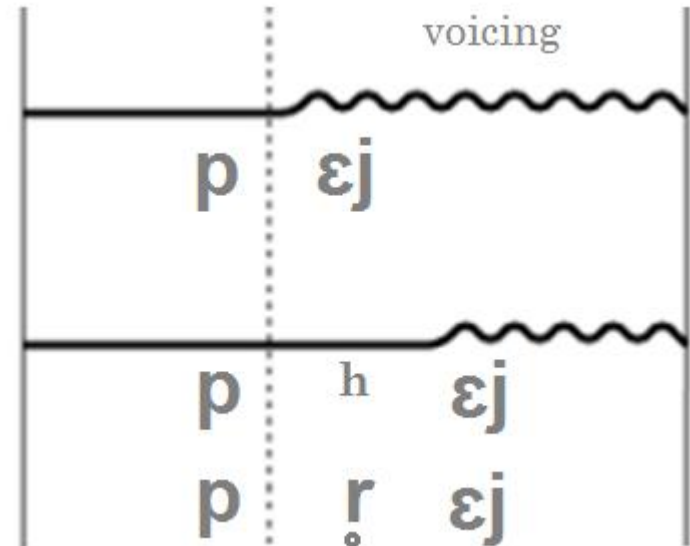
a. *Aspiration*

Aspiration

from a *phonetic* point of view

(1) pay /pɛj/ → [p^hɛj]

(2) pray /prɛj/ → [pɾɛj]



Aspiration is realized as either (1) a short [h] segment or (2) the devoicing of the sonorant following the aspirated segment: [ɺ, ɾ, j, w].

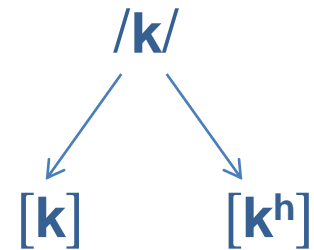
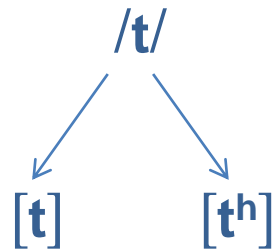
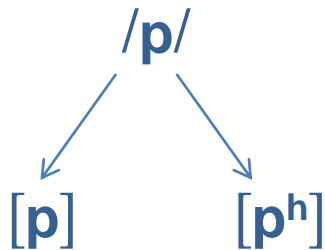
Aspiration

from a *phonological* point of view

Two types of obstruents in English:

- **lenis** (underlyingly voiced): **b, d, g, dʒ, v, ð, z, ʒ**
- **fortis** (underlyingly voiceless): **p, t, k, tʃ, f, θ, s, ʃ**

Fortis stops have aspirated and unaspirated allophones:



Aspiration

from a *phonological* point of view

		aspirated	
		#_	_(C)V*
strongly asp'ed	#_(C)V*	[p ^h]íg	com[p ^h]áre
		[p ^h]áralyze	occu[p ^h]átion
		[p ^h]óison	a[p ^h]éar
		[p _r]óud	com[p _j]úter
		[p _l]áy	a[p _r]óve
weekly asp'ed	#_(C)V*	[p ^h]aráde	
		[p ^h]olíte	
		[p _r]epáre	

* C = /l, r, j, w/, i.e. approximants/non-nasal sonorants

Aspiration

from a *phonological* point of view

unaspirated

_(C)V*

ó[p]era

léo[p]ard

há[p]y

Á[pr]il

_C ≠ /l, r, j, w/

o[p]timism

Se[p]tember

hy[p]nosis

_#

ti[p]

loo[p]

stam[p]

s_

s[p]eak

whis[p]er

was[p]

s[pr]ay

* C = /l, r, j, w/, i.e. approximants/non-nasal sonorants

Aspiration

from a *phonological* point of view

So, the rule:

A fortis stop is aspirated if it is

a) word-initial

or b) followed by (an approximant and) a stressed vowel.

Note: no aspiration after [s].

Aspiration

Pronunciation practice

cool

school

total

potato

pretty

Aspiration

Pronunciation practice

[k^h]óol

ɹ[k]óol

[t^h]ó[t]al

[p^h]o[t^h]á[t]o

[p_ɹ]é[t]y

b. L-darkening

L-darkening

from a *phonetic* point of view

[l]



clear L

[ɫ]



velarized

dark L

L-darkening

from a *phonological* point of view

L's in Russian

угол 'corner, angle' /úgəɫ/

vs.

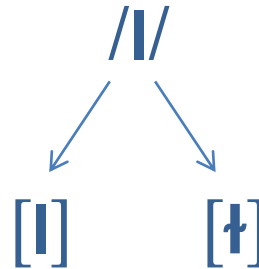
уголь 'coal' /úgəl/

/úgəɫ/ and /úgəl/ form a minimal pair,
/ɫ/ and /l/ are different *phonemes* in Russian

L-darkening

from a *phonological* point of view

L's in English



[l] and [ɫ] are in complementary distribution in English,
they are *allophones* of the same phoneme

L-darkening

from a *phonological* point of view

dark L

clear L

— ll

—(#)C ≠ j

—(#)V

— j

will

filter

live

value

tell

field

London

will you

handful

gold

legal

will go

allow

tell me

below

all the

tell us

L-darkening

from a *phonological* point of view

dark L

clear L

— ||

—(##)C ≠ j

—(##)V

— j

will

filter

live

value

tell

field

London

will you

handful

gold

legal

will go

allow

tell me

below

all the

tell us

L-darkening is a *post-lexical rule*,
i.e. it applies across word boundaries as well

L-darkening

from a *phonological* point of view

Plus, syllabic L's are always dark:

apple [ápəɫ] ~ [ápɫ]

e.g. [ápəɫ] + [ɪz] → [ápəɫɪz]

[ápɫ] + [ɪz] → [ápɫɪz]

L-darkening

from a *phonological* point of view

And the rule:

$$l \rightarrow ɫ / \left\{ \begin{array}{l} \underline{\quad} \parallel \\ \underline{\quad} (\#)C \neq [j] \\ \text{when syllabic} \end{array} \right\}$$

L-darkening

Pronunciation practice

Tell Allen a lie, but tell Bill the truth.

It was extremely cold in London in the middle of last July.

That girl will definitely call you.

I'm planning to play the violin if it's possible.

L-darkening

Pronunciation practice

Te[ɪ] A[ɪ]en a [ɪ]ie, but te[ɹ] Bi[ɹ] the truth.

It was extreme[ɪ]y co[ɹ]d in [ɪ]ondon in the midd[ɪ/ɹ]e of [ɪ]ast Ju[ɪ]y.

That gir[ɹ] wi[ɹ] definite[ɪ]y ca[ɪ] you.

I'm p[ɪ]anning to p[ɪ]ay the vio[ɪ]in if it's possib[ɹ]e.

c. Flapping

Flapping

from a *phonetic* point of view

[r]

the tongue rapidly flaps against the alveolar ridge, producing a one-tap *r*; the airflow isn't completely blocked as in the case of [d]:

atom [á**r**əm] (e.g. in GenAm, Irish and Australian English)

Hun. *perem* 'edge' [pɛ**r**ɛm]

Flapping

from a *phonological* point of view

atom /á**t**əm/ → [á**r**əm]
Adam /á**d**əm/

neutralization

Flapping

from a *phonological* point of view

cít _y	atómic	síster	métric	Tóm	cát
létt _{er}	attáck	áfter	átlas	táke	láte
látt _{er}	retáin	áctor	Whítney	ténd _{er}	cígarétte
ghétt _o	detéct	áalter	Átkins	tomórr _{ow}	bést
V__V ⁰	V ⁰ __V	V__C	C__V	#__	__#
flapping possible	no flapping				

Note 1: Flapping is possible in the environments **V_n__V⁰** and **V_r__V⁰** (and **V_l__V⁰**) too, where a sonorant consonant precedes the /t, d/, e.g. *sentence* [sɛ̃rəns] (nasalized flap), *party* [pɑ̃rtɪ].

Note 2: /t, d/ can be flapped even if the following vowel is in the next word, in which case it doesn't have to be unstressed, e.g. *eight elves* [ɛjɹ ɛlvz].

Terms to check

allophonic rules and alternations (*allofonikus szabályok és váltakozások*)

vocal folds/cords (*hangszalagok*)

voiced(ness) (*zöngés(ség)*) vs. **voiceless(ness)** (*zöngétlen(ség)*)

aspiration (*aspiráció, hehezet*)

lenis consonants (*lenis/laza mássalhangzók*)

vs. **fortis consonants** (*fortis/fesztes mássalhangzók*)

clear L vs. **dark L** (*világos l vs. sötét l*)

L-darkening (*l-sötétedés*)

flapping/tapping (*lebbentés*)

Recommended reading

- **The phoneme ŋ**
(<http://seas3.elte.hu/phono/notes/141-C-system.html>)
- **Two types of obstruent**
(<http://seas3.elte.hu/phono/notes/obstr.html>)
- **English phonology: Two types of l**
(<http://seas3.elte.hu/phono/notes/el.html>)
- **T-Voicing and T/D-Flapping**
Ádám Nádasy: *Background to English Pronunciation*, pp. 73–74