

Understanding Polish voicing

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(2) Aim: to understand...

- Phonetic properties of voicing
- Phonological properties of voicing:
 - Representation of contrast, e.g. b/p
 - Distribution of laryngeal contrast
 - Processes connected with voicing:
 - Neutralization of contrast
 - Final Obstruent Devoicing (FOD)
 - Regressive Voice Assimilation (RVA)
 - ~~Progressive Voice Assimilation~~
 - Role of sonorants as the **target**, **source** and **barrier**
- Relationship between phonology and phonetics

(3) Two-way voicing contrast in Polish __V, __SV

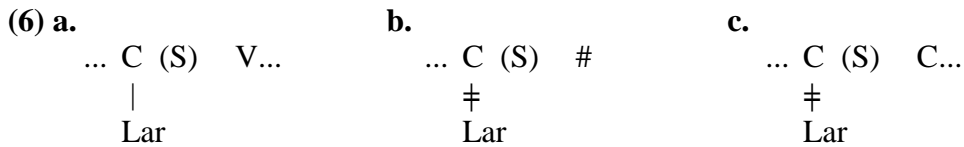
<i>pić</i>	[pʲit͡ɕ]	‘to drink’	<i>rysa</i>	[risa]	‘scratch’
<i>bić</i>	[bʲit͡ɕ]	‘to hit’	<i>ryza</i>	[riza]	‘ream’
<i>plotem</i>	[pɔtɛm]	‘fence, instr.’	<i>oknie</i>	[ɔkɲɛ]	‘window, loc.’
<i>blotem</i>	[bɔtɛm]	‘mud, instr.’	<i>ognie</i>	[ɔɲɛ]	‘fire, pl.’

(4) Neutralization and Final Obstruent Devoicing (FOD) __(S)#

- a. *waga* [vaga] / *wag* [vak] ‘scale, nom.sg./gen.pl.’
stogu [stɔgu] / *stóg* [stuk] ‘haystack, gen.s.g./nom.sg.’
żaba [ʒaba] / *żab* [ʒap] ‘frog, nom.sg./gen.pl.’
koza [kɔza] / *kóz* [kus] ‘goat, nom.sg./gen.pl.’
- b. *gwizdźę* [gvʲiʒd͡ʒɛ] / *gwizdź* [gvʲiʒt͡ʃ] ‘I whistle/whistle, imp.’
mózgu [muzgu] / *mózg* [musk] ‘brain, gen.sg./nom.sg.’
- c. *blizna* [blizna] / *blizn* [blisn] ‘scar, nom.sg. / gen.pl.’
dobro [dɔbrɔ] / *dóbr* [dupr] ‘goodness, nom.sg./gen.pl.’

(5) Neutralization and Regressive Voice Assimilation (RVA) __(S)C

- a. *dech* [dex] / *tchu* [txu] ‘breath, nom.sg./gen.sg.’
wieś [vʲɛɕ] / *wsi* [fci] ‘village, nom.sg./gen.sg.’
wesz [vɛʃ] / *wszy* [fʃi] ‘louse, nom.sg./gen.sg.’
- b. *prosić* [prɔɕit͡ɕ] / *prośba* [prɔʒba] ‘to ask/a request’
ryza [riza] / *ryzka* [riska] ‘ream/dim.’
mędrka [mɛndrɛk] / *mędrka* [mentrka] ‘smart aleck/gen.sg.’
- c. *kwiat begonii* [kʲɛd bɛɔɲji] ‘begonia flower’
litr bimbru [lʲidr bʲimbru] ‘a litre of moonshine’
sad śliwkowy [sat ɕʲifkɔvi] ‘plum orchard’
szyb kopalni [ʃip kɔpalni] ‘mine shaft’

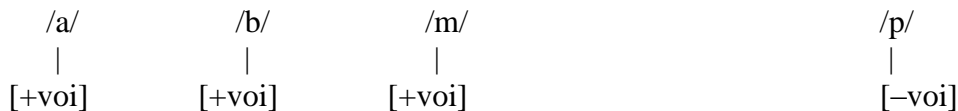


C = obstruent, (S) = optional sonorant, Lar = laryngeal specification, V = vowel

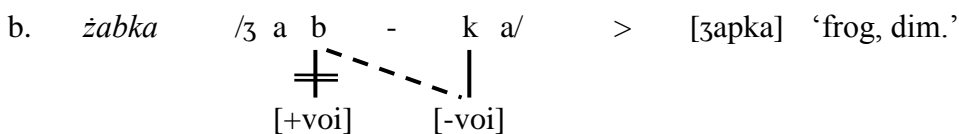
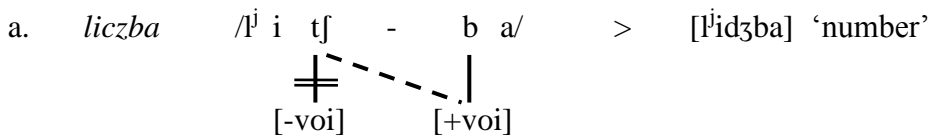
(7) Binary representation of voice [+voi] / [-voi]

Simplified story:

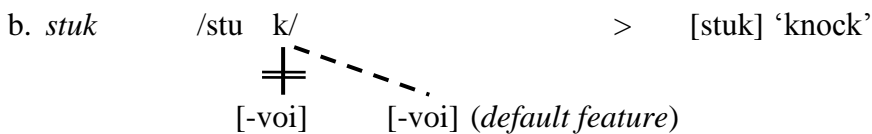
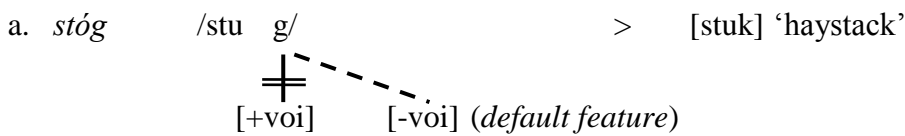
everything that is phonetically voiced has [+voi]
 everything that is phonetically voiceless has [-voi]



(8) Neutralization and Regressive Assimilation



(9) Neutralization and Final Devoicing (FOD)



(10) Problems with binary representation

- It is able to describe everything
 - without providing much insight (understanding)
- Feature [+voi] behaves differently in sonorants and obstruents, e.g., asymmetry in:
 - assimilations
 - devoicing
- Being symmetrical, [± voice] ignores universally observed asymmetries between [+voi] and [-voi] (markedness).
 - implications
 - distribution (direction of neutralization)
 - frequency of occurrence
 - order of appearance in acquisition, etc.

(11) Ways to avoid binarity problems

- **Rule specificity and rule ordering**, e.g.:
 - [+voi] can spread only from obstruents, and only onto obstruents (assimilations)
 - [+voi] spreads or is provided at the „right moment“
- **Underspecification of sonorants**
 - [+voi] is added later in derivation
 - especially that it comes in handy sometimes...

(12) Markedness tendencies (puzzle?)

	unmarked (default)	marked
Obstruents	[-voi]	[+voi]
Sonorants	[+voi]	[-voi]

(Default rules, Markedness conventions)

- [+sonorant] → [+voi]
- [-sonorant] → [-voi]

(13)-(14) Aerodynamic conditions on voicing

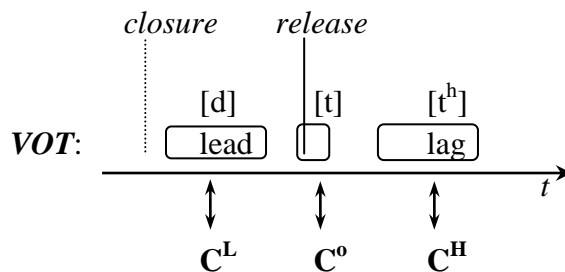
Voicing in sonorants is spontaneous
 Voicing in obstruents requires additional active gestures...

(15) Privativity

- Voiced sonorants should be unmarked
 – unless they are voiceless
- Voiced obstruents should be marked
 - unless they are voiceless

If there is no contrast, no marking is necessary...

(16) Phonetic categories based on VOT (Voice Onset Time)



(17) ‘Voicing’ and ‘Aspiration’ languages

	‘voicing’ <i>Romance & Slavic</i>		‘aspiration’ <i>Germanic</i>	
	<i>fully voiced</i>	<i>voiceless unaspirated</i>	<i>voiceless aspirated</i>	
	d	t	t ^h	
	/C ^L /	/C ^o /	/C ^H /	
Hawaiian	/–/	/t ^o /	/–/	
<u>Polish</u>	/d ^L /	/t ^o /	/–/	
<u>Icelandic</u>	/–/	/t ^o /	/t ^H /	
Thai	/d ^L /	/t ^o /	/t ^H /	
Hindi	/d ^L /	/t ^o /	/t ^H /	[d ^h] = /d ^{L+H} /

(18) Main features of Laryngeal Realism (within the Element Theory in GP)

- (strict) privativity – non-specification rather than underspecification
- no laryngeal representation of spontaneous voicing
- [b] = C^L
- [p] = C^o
- [p^h] = C^H

3 types of voicing:

- Spontaneous (universal phonetics) sonorants V^o, S^o
No marking!!!
- Active obstruents C^L
Marked
- Passive obstruents C^o
No marking (voicing is system dependent)

Within one system, voicing in obstruents is either active or passive, never both!!!

(19) Neutralization and Regressive Assimilation in Laryngeal Realism

- a. *liczba* /lⁱ i t^o - b a/ > [lⁱidʒba] ‘number’
- |
- /L/
- b. *żabka* /ʒ a b - k^o a/ > [ʒapka] ‘frog, dim.’
- ⊥
- /L/

(20) Final Obstruent Devoicing as Delaryngealization

<i>Lexical representation</i>		<i>Phonological representation</i>		<i>Phonetic interpretation</i>
		<i>L-delinking (FOD)</i>		
a. /stug ^L /	→	/stug ^o /	>	[stuk] ‘haystack’
b. /stuk ^o /	=	/stuk ^o /	>	[stuk] ‘knock’

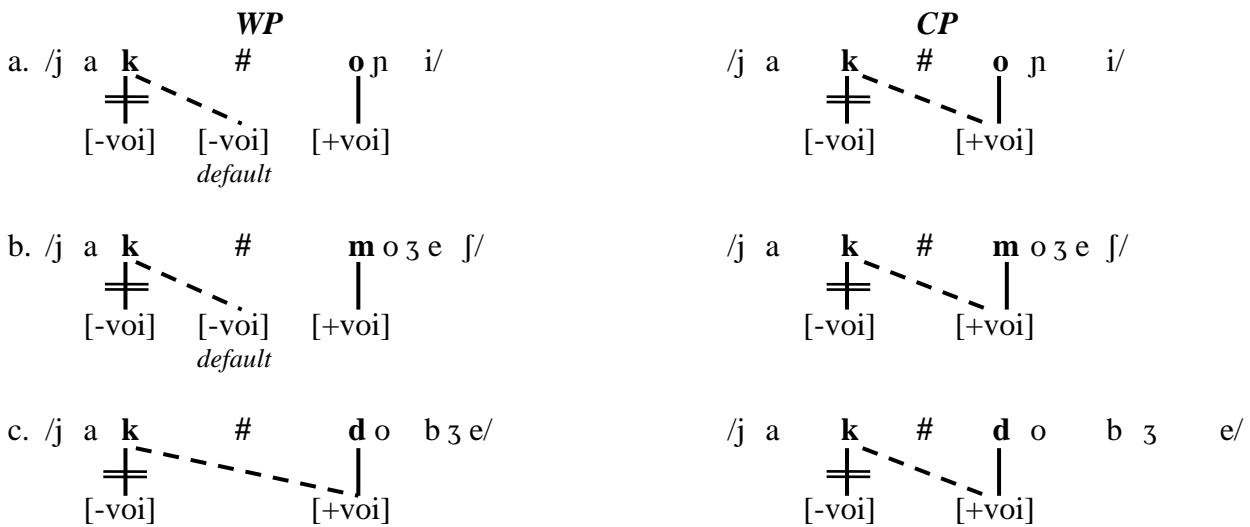
(21)-(22) Cracow-Poznań Sandhi Voicing

	WP	CP	
a. <i>jak oni</i> ‘how they’ <i>wkład odrębny</i> ‘separate contribution’	k-ɔ t-ɔ	g-ɔ d-ɔ	__V ^{+v}
b. <i>jak możesz</i> ‘how can you’ <i>wkład mój</i> ‘my contribution’	k-m t-m	g-m d-m	__S ^{+v}
c. <i>jak dobrze</i> ‘how well’ <i>wkład własny</i> ‘own contribution’	g-d d-v	g-d d-v	__C ^{+v}
d. <i>jak trudno</i> ‘how hard’ <i>wkład stały</i> ‘permanent contribution’	k-t t-s	k-t t-s	__C ^{-v}

(23) Formal analysis in binary feature models

- Spreading of [+voi] as in Regressive Voice Assimilation
- The target must be first neutralized
- The difference between WP and CP lies in the scope of the spreading rule wrt the source/trigger
 - **WP**: spreading [+voi] from obstruents only
 - **CP**: spreading [+voi] from any segment that has it (including vowels)

(24) Binary feature analysis (Rubach 1996)



(25) How about Laryngeal Realism? Polish is a voicing language (C⁰ vs. C^L)

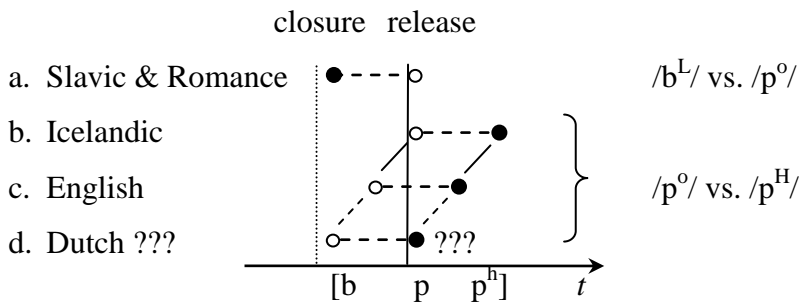
WP works perfectly

	<i>Phonology</i>	<i>Phonetic interpretation</i>
a.	/j a k ⁰ # o ⁰ ɲ i/	> [jak oɲi]
b.	/j a k ⁰ # m ⁰ o ʒ e ʃ/	> [jak moʒeʃ]
c.	/j a k ⁰ # d o b ʒ e/	> [jak dobʒe]

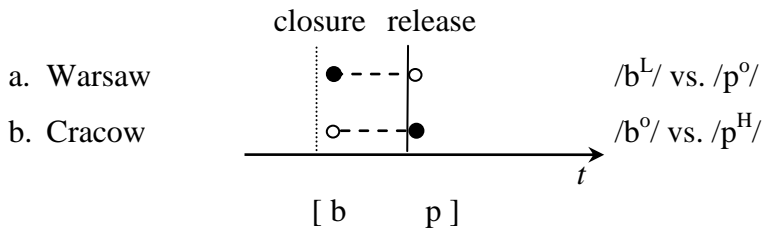
|
L

CP is a nightmare!

(26) *Variation in laryngeal systems and a hypothesis...*



(27) **Polish dialects in Laryngeal Relativism**



(28) **Final Devoicing in CP is interpretational not computational**

/3^oab^oa/ > [3aba] ~ /3^oab^o/ > [3ap]

Final Devoicing is rather an absence of passive voicing

Textbook question: Are we dealing with FOD or intervocalic voicing in [3aba~3ap]?

Textbook answer: FOD, because if there was a rule of intervocalic voicing, then /mapa/ → *[maba]

Wrong: we do not expect intervocalic delaryngealization /map^Ha/ → /map^oa/ > *[maba] in CP

CP has Neutralization, but it takes place in the contexts {_#, _C}

/map^H/ → /map^o/ > [map]

(29) **Neutralization and Regressive Assimilation in Laryngeal Relativism**

a. *liczba* /lⁱ i tʃ - b^o a/ > [lⁱdʒba] ‘number’

≠

/H/

b. *żabka* /ʒ a b^o - k a/ > [ʒapka] ‘frog, dim.’

|

/H/

(30)-(31) **What about Cracow-Poznań Sandhi voicing?**

Just two more details...

- The target of sandhi voicing must be /C^o/
 - either lexically neutral
 - or neutralized
- The source of voicing of obstruents:
 - WP = /L/ CP = phonetically voiced context
 - C^L C^o

(32) A reminder of what happens in Warsaw...

WP works perfectly

	<i>Phonology</i>	<i>Phonetic interpretation</i>
a.	/j a k ^o # o ^o ɲ i/	> [jak oɲi]
b.	/j a k ^o # m ^o o ʒ e ʃ/	> [jak moʒeʃ]
c.	/j a k ^o # d o b ʒ e/	> [jag dobʒe]

CP is a nightmare!

(33) In Cracow-Poznań, on the other hand...

	<i>Phonology</i>	<i>Phonetic interpretation</i>
a.	/j a k # o ^o ɲ i/	> [jag oɲi]
	⊕ H	
b.	/j a k # m ^o o ʒ e ʃ/	> [jag moʒeʃ]
	⊕ H	
c.	/j a k # d ^o o b ʒ e/	> [jag dobʒe]
	⊕ H	

(34) Because in Cracow-Poznań...

/C^o/ must be voiced in front of V^o, S^o, C^[+voi]

<i>inside words</i>	<i>and</i>	<i>between words</i>
C ^o V ^o [dom]	=	C ^o #V ^o [brad-ojtsa]
C ^o S ^o [brafc̥]	=	C ^o #S ^o [kub-ribe]
C ^o C ^o [gd̥i]	=	C ^o #C ^o [jag-dobʒe]

Sandhi phonetics is a very apt term to apply to CP voicing

(35) The main pillars of this analysis

- „Reversed” marking of obstruents in CP and WP:
 - CP system = C^H-C^o
 - WP system = C^o-C^L
 - Warsaw C^o cannot be passively voiced
- **CP voicing requires:**
 - A system with marked voicelessness: C^H-C^o
 - Passive voicing
 - Neutralization C^H → C^o / {_#, _C}

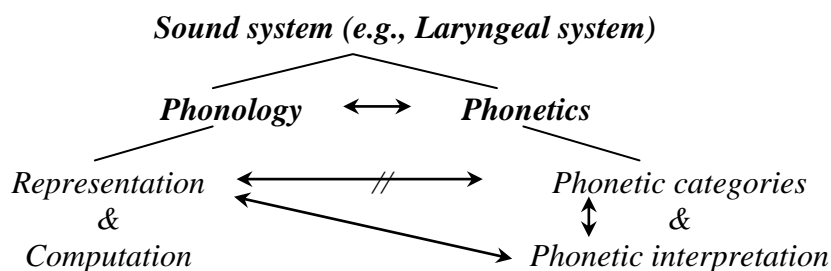
(36) Advantages of this analysis

- **Sonorants remain unmarked**
 - Their voicing is only of phonetic nature and importance
- **No special phonological rule is required for CP sandhi voicing**
 - No rule ordering either
 - Sandhi voicing = word-internal voicing in CP

(37) Consequences of this analysis and Laryngeal Relativism

- **There is no phonological voicing in CP**
 - Only spontaneous and passive
- **Final Obstruent Devoicing can be:**
 - Phonological (in Warsaw system)
 - Interpretational (in Cracow-Poznań system)
 - Assimilations can be:
 - Phonological
 - Spreading of /H/ or /L/
 - Neutralization (deletion of /H/ or /L/)
 - Interpretational (WP /t^ox^ou/, CP /jak^o d^oobzɛ/)
- **Full voicing of obstruents, FOD and RVA are not adequate criteria for claiming that a given language has [+voi]**
- **The relation between phonological categories (H,L) and phonetic categories (b-p-p^h) is by and large arbitrary!**

(38) Between Phonology and Phonetics



- privative categories
- (un)licensing, government
- (de)composition:
spreading, delinking

- universal phonetic principles
- universal principles of
phonetic interpretation
- system specific conventions
- sociolinguistic modifications

We need to afford greater role to Phonetic interpretation as a ‘mediator’ between phonological and phonetic categories.