

Why Language Variation and Change needs Phonological Theory

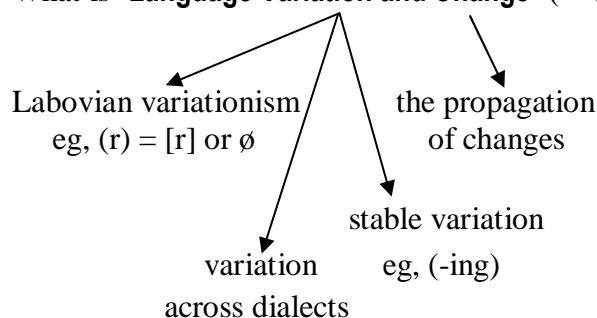
Patrick Honeybone, Linguistics and English Language, University of Edinburgh
patrick.honeybone@ed.ac.uk

The structure of this talk:

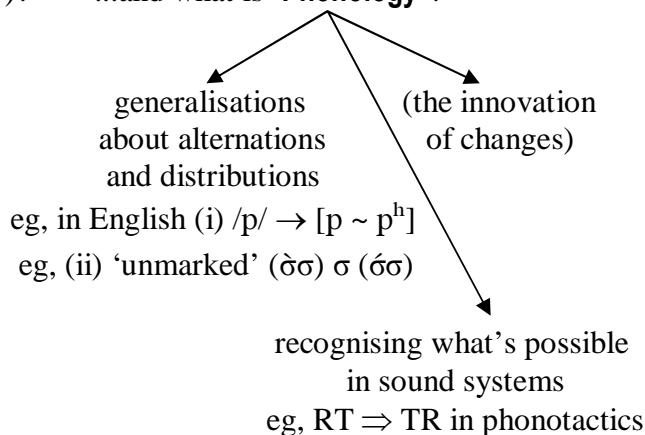
1. What this talk is about and what it's not...
2. 'Theoretical Phonology' and 'Basic Phonological Theory'
3. How *delicate* can phonology be?
4. Conclusion: why does LVC need to know how delicate phonology can be?

1. What this talk is about and what it's not...

What is 'Language Variation and Change' (= 'LVC')?



...and what is 'Phonology'?



This talk is about why it's reasonable to claim that 'LVC' needs an awareness of 'Phonology'

NB¹ This talk is **not** about *Why Phonological Theory needs Language Variation and Change...*

- that would be another, but different, equally important talk

NB² This talk is not rocket science...

- I'm not crying in the wilderness about things which are never done in LVC
- far from it: most best work in LVC precisely *is* informed by a knowledge of phonology, as we'll see
- but not all work is, and it's easy to *imagine* work which is not so well phonologically-informed
- a number of traps open up for the innocent LVCer if they ignore phonological factors...

1.1 Why are there obviously issues to consider here?

One reason to discuss my title's claim is the clear phonocentrism of LVC work

- from Labov (1963, 1972) onwards, most LVC work deals with variation at the phonological level
 - this has often been work on the phonology of English, in fact (cf Carr & Honeybone, 2007)
 - if most work in LVC is based on variation at the phonological level, we should consider whether it reflects or rejects (or reinforces or refutes) the things that formal phonologists discuss

Another reason to discuss my title's claim is the uncertain status of the LVC parentheses

- what is the status of the entities in round brackets?
 - what and where *is* (t) or (r) or (-ing)
 - we know what /t/ is (and where it is: in the mind, at the 'start' of phonology)
 - we know what [t], [ʔ], [r] are (and where they are: in the mind, at the 'end' of phonology)
 - are there constraints on what (t) can be? are these phonological constraints?
 - where is (t) situated? In the community? In the speaker?
 - if it's in the speaker, then is it simply part of phonological competence?
 - if so, it should be subject to the same constraints as all phonology is...

2. 'Theoretical Phonology' and 'Basic Phonological Theory'

Does LVC need to take into account *everything* that phonologists worry about?

- NO.

We need to differentiate between:

- basic phonological theory 'BaPhTh'
- theoretical phonology 'ThPh'

I argue that there is no *need* for LVC to constantly engage with ThPh

- although there's no reason why it shouldn't...

But there *is* a real need for LVC to engage with BaPhTh

The distinction between BaPhTh and ThPh is not one which is commonly made, but I think the basis of the distinction makes sense

- it can be connected with Dixon's (1998) contrast between 'basic linguistic theory' and what most theoretical linguists currently do (although I would *not* accept Dixon's conclusions about this...)
- in a sense, BaPhTh provides the descriptive toolkit for those who do ThPh to work on

ThPh works to develop:

- the best way of modelling the constraints on the distribution of the elements of BaPhTh
- an understanding of the ways in which the elements of BaPhTh can interact
- the best way to understand constituency and 'atomic structure' of the elements of BaPhTh
- it seeks to explain *why* particular patterns of the distribution of phonological entities *exist* (and are thus 'available' for co-option as varying patterns in sociolinguistic variation)

A slight confusion of BaPhTh and ThPh is inevitable, however:

- BaPhTh has been worked out *in* ThPh (during the development of ThPh)
- it would be wrong to think that BaPhTh is atheoretical:
 - all phonological entities are theoretical entities
 - nothing but noise exists in the phonetic signal
- BaPhTh does change, but it does so much less quickly than true ThPh

2.1 What does BaPhTh look like?

Basic Phonological Theory deals with *phonological generalisations* about such things as

(i) contrast and predictability

- *segmental phonology*: the distribution of [l] and [ɫ] in most varieties of English is predictable (in other languages these segments may contrast with each other)
- underlying and surface levels: /pɪl/ → [p^hɪl]; the 'phonemic principle' and 'allophonic processes'
- *suprasegmental phonology*: the distribution of stress is fully predictable in some languages and partly predictable in English

(ii) segments have subsegmental structure: 'features'

- features help shape inventories and can determine the nature of phonological processes

(iii) syllabic phonology

- segments are grouped into syllables, which have structure and can be the basis for phonotactics

(iv) feet and phonology at higher prosodic levels

- stress is typically assigned to syllables, sometimes depending on their position within feet

(v) the interaction between phonology and morphology and syntax and the lexicon

- typically such interactions can involve more than one generalisation

The existence of these entities is (pretty much) uncontroversial

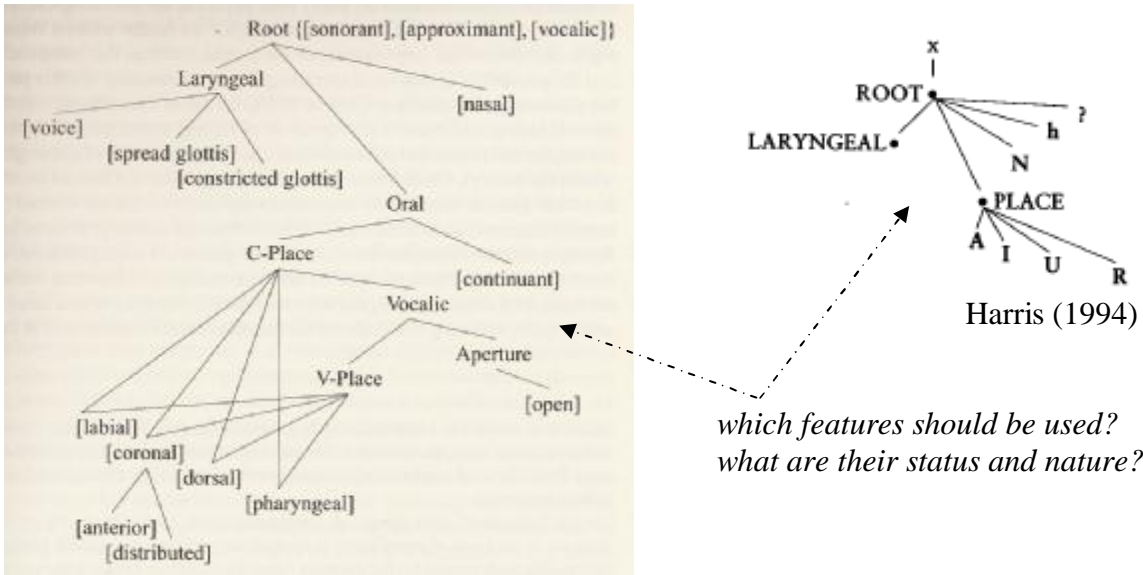
- they are necessary to talk about phonological things and are quite straightforward assumptions
- nonetheless, even BaPhTh generalisations can be really quite *delicate*, as we will see...

2.2 What does ThPh look like?

Theoretical Phonology deals with the entities and assumptions of BaPhTh, and attempts to produce clear *formal* models which explain how and why they behave and pattern as they do

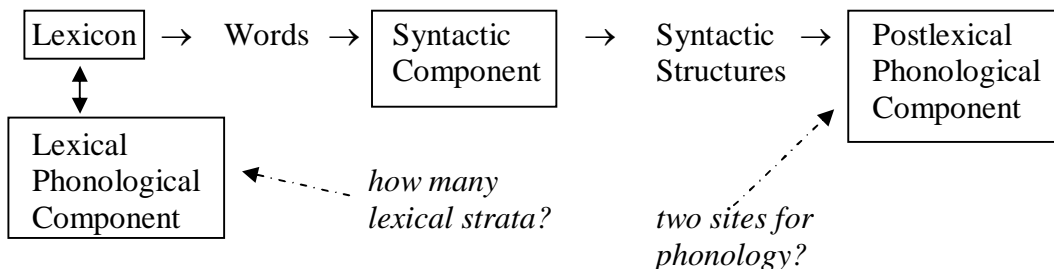
- attempting to describe what's *possible* in phonology and what's impossible
- attempting to be *precise* about types of processes, possible interactions between processes and, indeed, whether there are really 'processes' at all
- attempting to be *precise* about the structure of phonological entities

(i) ThPh worries about segmental structure:



Uffmann (2005), (following Clements & Hume 1995)

(ii) ThPh worries about the nature of phonological processes and the constraints on them:



(iii) ThPh worries about whether rules of constraints should be used to model phonology and how opacity in process interactions can be dealt with:

/fija/ ← 'fear'	*CODA-r	MAX _{9-0-V}	MAX ⊕	CODA-COND	DEP
fij		*!	*		
fija	*!	*		*	
⊕ fijə	*!				*
☞ fijə			*		*

which constraints exist?

how do underlying and surface representations interact?

Orgun (2001)

2.3 BaPhTh, ThPh and two types of variation in phonology

Both BaPhTh and ThPh assume that there are phonological *systems* (or, at least, *systematic* aspects of structure)

- BaPhTh assumes that languages can have clear phonological generalisations, determining the distribution of ‘allophones’ or stress
- ThPh develops models of phonology in which large numbers of such generalisations interact

If we connect ‘phonology’, of either BaPhTh or ThPh type, with variation, we can recognise two conceptually possible types of variation:

- (i) variation within a system
- (ii) variation between systems

Variation between systems can be the result of contact between two systems

- systems of segmental phonological or of suprasegmental phonology
- it assumes that there can be stable systems, with categorial performance, which can interact

Variation within a system can be due to the endogenous development of a process

- systems of segmental phonological or of suprasegmental phonology
- it assumes that systems can be variable, either in ‘stable variation’ or in ‘variation and change’

3. How *delicate* can phonology be?

LVC does not *need* to engage with ThPh, but it *does* need to engage with BaPhTh

- clearly LVC and ThPh need to meet: like Newtonian and quantum physics, the assumptions must be compatible at some point
- this is a problem for *both* disciplines
- but both can arguably proceed to an extent independently, as long as each is aware of the basics of the other

Can the LVCer carry on without any serious engagement with phonology?

- NO.
- because sometimes BaPhTh is not so basic...

To understand this, we need to consider how *delicate* (even BaPhTh) phonological generalisations can be; this section considers 3 cases with delicate conditions on phonological distribution and patterning

- ‘delicate’ = complex, intricate, non-obvious, *phonological*

3.1 Western Basque stress assignment

Stress assignment in Basque and its dialectology have been the subject of quite a number of studies. The most recent (eg, Hualde 1998, 2002) show that the “picture is one of great complexity and typological diversity, greater than that found anywhere else in Europe within a single language” (Hualde, 2002, 207 – also the source of the maps below)

- work has been done on this in ThPh to see how well theories cope with the data
- the basic generalisations can be stated in BaPhTh

places mentioned below dialects of Basque



Stress assignment varies considerably in Western Basque, as shown in this data (Hualde, 2002, 216)

Representative western varieties: unmarked accentual pattern				
	Gernika	Antzuola	Azkoitia	Beasain
'the head'	<i>buru^é</i>	<i>bur^ía</i>	<i>bur^íe</i>	<i>bur^íe</i>
'the man'	<i>gixon^á</i>	<i>gixon^á</i>	<i>gixon^á</i>	<i>gixon^á</i>
'to the man'	<i>gixonar^í</i>	<i>gixon^{ái}</i>	<i>gixon^{ái}</i>	<i>gixon^{ái}</i>
'the mayor'	<i>alkat^íe</i>	<i>alkat^ía</i>	<i>alkat^íe</i>	<i>alkátea</i>
'to the mayor'	<i>alkatier^í</i>	<i>alkati^{ái}</i>	<i>alkatie^í</i>	<i>alkáteai</i>

However, the variation is not random, and tight, phonologically-informed dialectological work has established that these four areas have different *systems*:

- | | |
|--|--|
| (i) Gernika: final stress | (iii) Antzuola: penultimate stress (second from end) |
| σσ | σσσ |
| σσσ | σσσσ |
| σσσσ | σσσσσ |
| (iii) Beasain: peninitial stress (second from start) | (iv) Azkoitia: postpeninitial stress (third from start) |
| σσσ | σσσ <i>but final stress not possible: if final stress would occur due to the postpeninitial impetus, stress skips back a syllable, so that it occurs on the penultimate syllable</i> |
| σσσσ | σσσσσ |
| σσσσσ | σσσσσσ |

Postpeninitial stress was long thought to be improbable, but Hualde (1998) shows that it is indisputably found as the unmarked pattern in Azkoitia (and other towns in the Urola Valley, a small area in the province of Gipuzkoa); there are some lexical exceptions and other morphophonological generalisations, but the basic pattern is clear. [Diagrams below from Hualde (1998), $\acute{o} = \acute{\sigma}$ = stressed syllable.]

Azkoitia: singular forms		
	/gizon/	/txakurr/
	'man'	'dog'
ABS	gixon ^á	txakúrre
DAT	gixon ^{ái}	txakurréi
GEN + ABS	gixonána	txakurréna
COM	gixonákin	txakurrékin
BEN	gixonántzako	txakurréntzako
	/alkate/	/alargun/
	'mayor'	'widow'
ABS	alkat ^í e	alargúne
DAT	alkat ^í e ⁱ	alargúne ⁱ
GEN + ABS	alkat ^í ena	alargúne ^{na}
COM	alkat ^í ekin	alargúne ^{ekin}
BEN	alkat ^í entzako	alargúne ^{ntzako}

	Antzuola [-2]	Azkoitia [+3] and nonfinality
a.	o o o txakúr ^{ra} mendí ^x a	o o o txakúr ^{re} mendí ^x e 'the dog' 'the mountain'
b.	o o o o txakurr ^{ári} alab ^{ía} itturrí ^x a	o o o o txakurr ^{éi} alab ^{ie} itturrí ^x e 'to the dog' 'the daughter' 'the fountain'
c.	o o o o o tabernak ^{úa} ieltser ^{úa} errukarrí ^x a emakum ^{ía}	o o o o o tabernak ^{ue} ieltser ^{ue} errukarrí ^x e emakum ^{ie} 'the one of the tavern' 'the bricklayer' 'the unlucky one' 'the woman'
d.	o o o o o o o emakumí ^{andá} ko	o o o o o o o emakumí ^{entzako} 'for the woman'

Why are LVC and BaPhTh relevant here?

- the surface difference between stress assignment in Antzuola and Azkoitia is *absent or minimal in most words*: "the most common words are trisyllabic. Next come words of two or four syllables. Most of the words occurring in the natural discourse present patterns that are ambiguous between penultimate and postpeninitial accent (with nonfinality)... the most frequent words do not reveal what the accent rule is" Hualde (1998, 109)
- we need quite *delicate* generalisations (still simple & part of BaPhTh, though) to discover and describe this
- if we did LVC fieldwork in the Western Basque country, without this knowledge...
 - we might simply describe *variation within a system* if we recorded the stress in 5 syllable words in Azkoitia and Antzuola; we might even simply describe random variation
 - we wouldn't know to investigate 6 or 7 syllable words in word lists or reading passages
 - we would not know that there may be *variation between systems* in the transition areas between the dialects

3.2 Eastern US ash-tensing

As Labov (and others) have discussed in a number of places (eg, Labov 2007), the phonology of the ‘short *a* vowel’ in US accents of English is complex. As in Basque stress assignment, the situation varies considerably from dialect to dialect:

- the basic assumption is that there is an essentially predictable distribution between [æ] and [eə]
 - this is typically described as the ‘tensing’ of a lax underlier: /æ/ → [eə] [the transcription of the tense vowel varies...]
 - there can be very delicate constraints on the phonology of ash-tensing: on where [eə] occurs

Labov (2007) describes five basic systems in US English:

- (i) NASAL SYSTEM: Short-*a* before nasal consonants is tense (*man, manage, span, Spanish*), and lax elsewhere.
- (ii) RAISED SHORT-*a*: Historical short-*a* is always tense (found only in the Inland North).
- (iii) CONTINUOUS SHORT-*a* RAISING: Short-*a* is variably tense, with tokens before nasal codas leading and tokens before voiceless stops and in words with obstruent-liquid onsets (*glass, brag*) remaining in low front position.
- (iv) SOUTHERN BREAKING: Short-*a* breaks into a low front nucleus, palatal glide, and following inglide (found in the Southern dialect area).
- (v) COMPLEX SHORT-*a* SYSTEMS: A distribution of tense and lax short-*a* is governed by a complex of phonological, grammatical, stylistic, and lexical conditions (found in New York City and the Mid-Atlantic states).

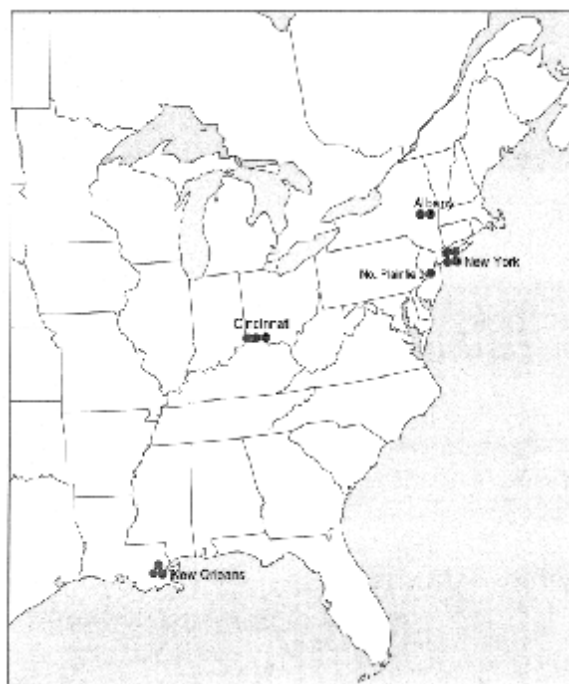
In New York City English, there are both simple phonological constraints on the distribution of [eə], and more complex ‘hyphen-phonological’ constraints: [all taken from Labov (2007)]

The tense [eə] occurs directly before one of these consonants:

p	t	č	k
b	d	ǰ	g
m	n		ŋ
f	θ	s	š
v	ð	z	ž
	l	r	

To this basic condition there are added a number of specific conditions:

- a. Function-word constraint: Function words with simple codas (*an, I can, had*) have lax short-*a*, while corresponding content words have the tense variant (*tin can, hand, add*); *can't*, with a complex coda, has the tense vowel, however, which preserves the contrast of tense *can't* vs. lax *can* in environments where the /t/ is elided or neutralized.
- b. Open-syllable constraint: Short-*a* is lax in open syllables, yielding tense *ham, plan, cash* but lax *hammer, planet, cashew*. There is considerable variation before voiced fricatives and affricates (*magic, imagine, jazz*).
- c. Inflectional-boundary closing: Inflectional boundaries close syllables, so that tensing occurs in *planning* as well as *plan, staffer* as well as *staff*.
- d. Initial condition: Initial short-*a* with a coda that normally produces tensing is lax (*aspirin, asterisk*) except for in the most common words (*ask, after*).
- e. Abbreviations: Short-*a* is often lax in abbreviated personal names (*Cass, Babs*).
- f. Lexical exceptions: There are a number of lexical exceptions: for example, *avenue* is normally tense as opposed to lax *average, savage, gavel*.
- g. Learned words: Many learned or late-learned words have lax short-*a* in environments where tensing would normally occur: *alas, carafe*.



Most of these NYC constraints can be captured as phonological (in the broadest sense) in BaPhTh, including interactions with other linguistic levels.

Why are LVC and BaPhTh relevant here?

- as Labov (2007) shows, in order to understand the variation that exists within ash-tensing in Eastern US English, it is necessary to consider these phonological conditions and how they can vary:
 - in Northern New Jersey, the same restrictions as in NYC apply except the ‘function word constraint’ is relaxed: it does not apply before nasals, so *can* and *can’t* are homophonous
 - in Albany, the ‘function word constraint’ is lost and the ‘open-syllable constraint’ is lost
- in order to be able to describe and investigate this variation...
 - we need to know what to look for, how speakers might behave
 - which words may be worth testing in a word list or reading passage
 - or how to interpret free speech: if we are counting the occurrences of [eə] to track variation between systems, we need to know which words count
- we again need *delicate* generalisations (still part of BaPhTh, though) to discover and describe this

3.3 Liverpool Lenition

Watson (2007) has shown that there are some quite delicate phonological generalisations at play in the patterns of stop lenition in Liverpool English, greatly extending our knowledge of this from that of other work (eg, Honeybone 2001, Sangster 2001).

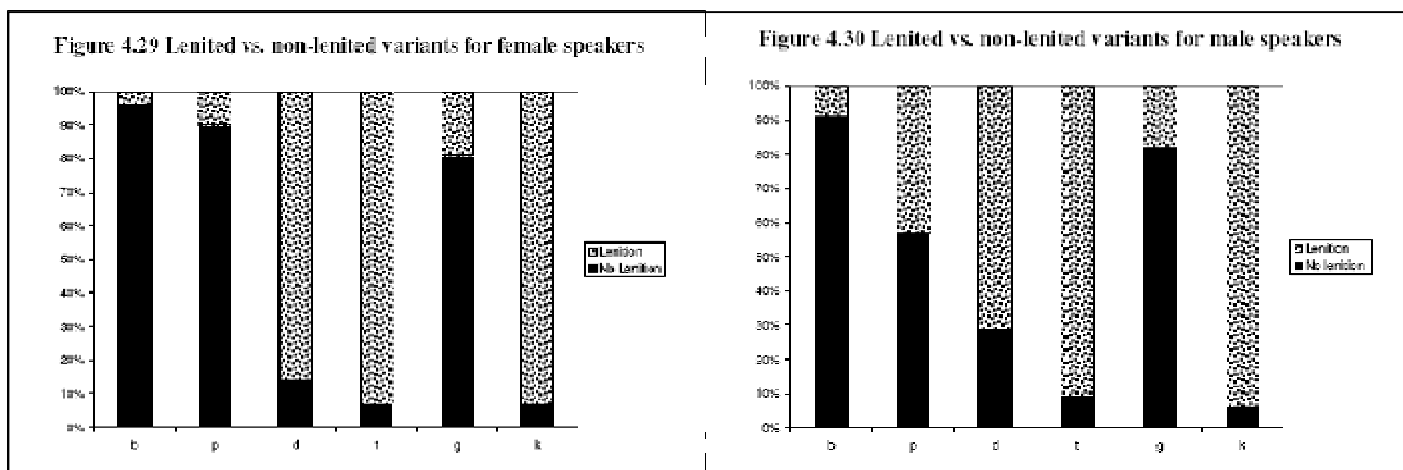
Liverpool lenition involves the realisation of underlying stops as affricates, fricatives or other reduced forms – possible transcriptions include:

- ***crime*** [kxra:m]
- ***expe**C**t*** [exspɛxt]
- ***time*** [tθa:m]
- ***night*** [naɪθ]
- ***lead*** [li:ð]
- ***deep*** [dði:φ]

[θ] and [ð] = alveolar slit fricatives
(or the fricative part of an affricate)



Watson (2007) shows that stops lenite to different degrees:



Also, stops lenite to *different degrees* in different environments: focusing on the [C_#] environment, compared to [V_#] (C = consonant; V = vowel)

- [N_#] – lenition is inhibited (‘less likely’) [N = a nasal stop which is homorganic with the following stop]
- [l_#] – lenition is inhibited for /ld/, but not for /lt/, /lk/
- [f_#] – lenition is not consistently inhibited
- [k_#] – lenition is not inhibited

Other environments (eg, in word medial positions) are also thought to be differently inhibitory.

Why are LVC and BaPhTh relevant here?

- this seems clearly to be a case of *variation within a system*
- we might thus want to investigate how much the stops of different types of speakers within a speech community lenite: women vs men, children vs adolescents vs adults, class vs class
- in order to really be able to come up with numbers to use in the comparison of the cells in a sociolinguistic sample, we need to be sure that we are *comparing like with like*
- it will be important not to count tokens which are phonologically less likely to lenite
- we shouldn't compare /t/ in [N_#] in one speaker with /t/ in [l_#] in another speaker
- this is crucial in the analysis of free speech
- and such concerns also need to be considered in the construction of reading passages and word lists
- the generalisations needed to discover and describe this are again *delicate* (a clearly part of BaPhTh)

4. Conclusion: why does LVC need to know how delicate phonology can be?

What could happen if an LVCer doesn't consider what BaPhTh tells us about how delicate phonology can be?

- we could miss the fact that some variation that we observe is variation between systems
- we could simply get the description of the phonological variables that we investigate wrong
- we could count the wrong tokens in free speech or select the wrong words for reading tasks

Describing the sociophonetics of glottalization in particular phonological environments/positions in Tyneside English, Docherty, Foulkes, Milroy, Milroy & Walshaw (1997, 290) write that: "it is in general unwise to make a negative claim to the effect that glottalization does not occur in this position, even if the occurrences are rare. Variationist accounts assume that the occurrence or non-occurrence of glottalization in different environments is quantitatively more or less likely rather than categorical."

- their "more or less likely" is determined by *social* factors: a fair point
- equally important, however, is the recognition that *phonological* factors can be (and typically *are*) relevant when we are seeking to identify (i) what the distribution of phonological entities (such as stress or 'allophones') is, or (ii) where a process rarely or hardly ever occurs as opposed to those environments where it might occur commonly

If we don't know the phonology of the phenomena that we investigate, we are likely to design LVC investigations which are faulty

- an accurate description of the environment in which a process occurs, or the distribution of segments, or the assignment of stress is vital if we are to truly understand the phenomena themselves and their sociolinguistic patterning
- when we work with phonological variables, this requires of us a good understanding of BaPhTh
- we can't understand variation unless we understand the system that the variation is *in*, or the systems that there is variation *between*

To return to the status of entities in sociolinguistic parentheses ('round brackets')

- if, for example, (t) → [ʔ], [r], [t] describes *variation within a system*, it is describing the same thing as other phonological generalisations
- and should be subject to the same constraints that all phonology is
- we need BaPhTh to describe these (and ThPh to explain them)

References

- Clements, G. & E. Hume (1995) 'The internal organization of speech sounds.' In: Goldsmith, J. (ed) *Handbook of Phonological Theory*. Oxford: Blackwell.
- Dixon, R.M.W. (1998) *The Rise and Fall of Languages*. Cambridge: Cambridge University Press.
- Docherty, G., P. Foulkes, J. Milroy, L. Milroy & D. Walshaw (1997) 'Descriptive adequacy in phonology: a variationist perspective.' *Journal of Linguistics* 33, 275-310.
- Harris, J. (1994) *English Sound Structure*. Oxford: Blackwell.
- Honeybone, P. (2001) 'Lenition inhibition in Liverpool English.' *English Language and Linguistics* 5, 213-249.
- Hualde, J. (1998) 'A gap filled: postpeninitial accent in Azkoitia Basque.' *Linguistics* 26, 99-117.
- Hualde, J. (2002) 'Basque accentuation and dialectology.' In Bern, J. & Marle, J. van (eds) *Present-Day Dialectology*. Berlin: Mouton de Gruyter, 207-230.
- Labov, W. (1963) 'The Social Motivation of a Sound Change.' *Word* 19, 273-309.
- Labov, W. (1972) 'The Social Stratification of (r) in New York City Department Stores.' Chapter 2 of Labov, W. (1972) *Sociolinguistic Patterns*. University of Pennsylvania Press, Philadelphia.
- Labov, W. (2007) 'Transmission and diffusion'. *Language* 83, 344-387.
- Orgun, C. (2001) 'English r-Insertion in Optimality Theory.' *Natural Language & Linguistic Theory* 19, 737-749.
- Sangster, C. (2001) 'Lenition of alveolar stops in Liverpool English.' *Journal of Sociolinguistics* 5, 401-412.
- Uffmann, C. (2005) 'Optimal geometries.' In van Oostendorp, M. and van de Weijer, J. (eds) *The Internal Organization of Phonological Segments*. Berlin: Mouton de Gruyter, 27-62.
- Watson, K. (2007) *The Phonetics and Phonology of Plosive Lenition in Liverpool English*. Unpublished PhD thesis, Edge Hill/Lancaster University.