

0. Minimalist Phonology

Minimalist Phonology (MP) took off where Government Phonology (GP) left off by positing that melody and structure are distinct properties of phonology. One founding objection MP had with GP was the latter's confusion of melodic explanations for structural phenomena. One such example of this is New York City overlength (Pöchtrager 2006).

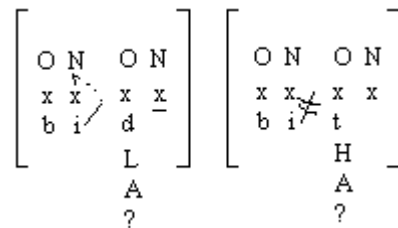
0.1. New York Overlength

New York City English (Pöchtrager 2006)

Short Vowels	vs.	Long Vowels	spellings
[bit] / [bi:d]	vs.	[bi:t] / [bi::d] [li:f] / [li::v]	'bit' / 'bid' vs. 'beat' / 'bead' 'leaf' / 'leave'

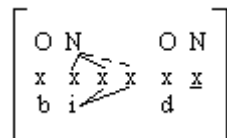
0.1.1. Could the element H be blocking a structural phenomenon such as length?

1) 'bid' vs. 'bit' in Standard Government Phonology



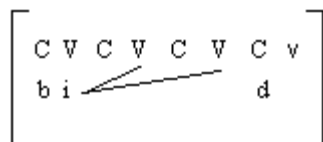
0.1.2. How this data would have to be interpreted in Standard Government Phonology (to be rejected)

2) 'bead' in sGP



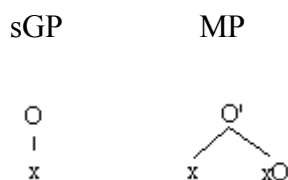
0.1.3. Even worse is the interpretation of the data surmised from Strict-CV analyses (Lowenstamm 1996 et seq.; Scheer 2004)

3) 'bead' in Strict-CV



0.1.4. MP takes the view that such violations of binarity are directly a result of the flat structure adopted by both GP and sCV. When a constituent looks tertiary branching a flat structure must reflect this violating binarity. However, a non-flat structure keeps itself binary by introducing tiers. Therefore a constituent is defined by the node which contains the constituent rather than the random assortment of parts of that constituent. MP therefore is hierarchical and binary:

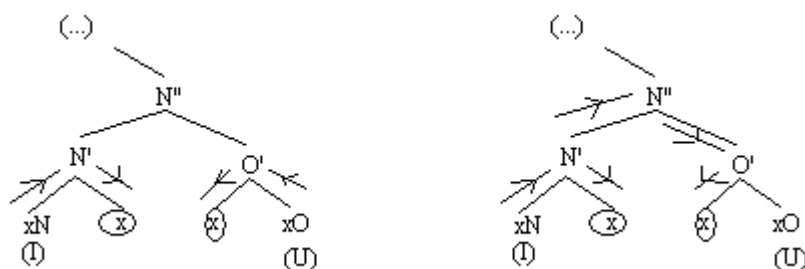
4 a, b) Structures for Fricative Onsets in,



0.1.5. The above structure contains a head and a complement. This takes the form of an un-annotated (ie. without lexical material) skeletal point. This un-annotated skeletal point, being devoid of lexical structure makes itself applicable to *the licensing of x's principle* (Pöchtrager 2006) which follows directly from the phonological *Empty Category Principle* (Charette 1988; Kaye et al. 1990). This position must be licensed. The argument in Pöchtrager (2006) is that if this un-annotated skeletal point is m-commanded (ie. licensed) by its own onset head then it is voiceless. If, however, this same skeletal point cannot be m-commanded by its head then in order to remain in the representation it must be m-commanded by another head. This other head will be the preceding nucleus. Not only therefore, will PF read this onset structure as voiced, but also as a marker that the nucleus is m-commanding into the onset domain it incorporates the length of this skeletal point. Therefore, we hear a long vowel + voiced consonant (6) and a short vowel before a voiceless consonant (5).

5) [li:f] 'leaf' long vowel

6) [li:v] 'leave' long vowel + overlength



0.1.6 As a marker to PF that a nucleus is word-final (signalling the end of the domain) the lexicon attributes this word-final nucleus with p-licensing. P-licensing is a force, not unlike m-command, except for the fact that it doesn't seem to incorporate the length of the complements it licenses (Pöchtrager 2006).

0.1.7 What we have therefore, in this framework, is a notion that phonological words are built up of binary projections of heads, which are married by nodes of these projections. Just as in syntax this model allows us to have relativisation of constituency.

1. Relativisation of Constituency

Phonology therefore, we will show may select its processes to a domain of application. This domain of application, unlike in sCV or GP is not a random allocation of Os and Ns and Cs and Vs. Rather, it will simply have to select for a node in the phonological tree. This node may be different from language to language and also from process to process.

1.1. Vietnamese Assimilation

In Vietnamese place of articulation assimilation of word-final nasals reveals itself not as a melodic process which varying location of application (as GP and sCV would have it) but as a process which specifically targets a projection.

“In [northern varieties of] Vietnamese the quantity and quality of the vowel determine the surface form of a final velar consonant” (Pham 2003:138).

For instance:

	VC			V:C	
front	central	back	front	central	back
i	ɿ	u			
e	ɛ	o		ɛ:	
E	a	ɔ	E:		
			iɿ	Mɿ	uɿ
ʈ	N	Nm	N	N	N

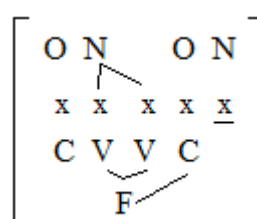
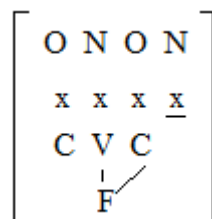
Translating Pham’s (2003:194) analysis into GP terms produces the following: according to standard assumptions about velars in GP (Ploch 1999) the velar nasal is underspecified for a place of articulation. The elements I and U, therefore, spread into this representation and produce the outputs /ʈ/ and /Nm/; this, however, happens only in short vowels.

In long vowels and diphthongs this assimilation does not occur.

What is true for Pham is true in GP, both melody and structure are in play in the analysis of this Vietnamese data. Although GP can explain the melodic portion respectably ie. I and U spreading within its views of privative elements shared between nuclei and consonants (Charette and Göksel 1998; Kaye 2000), it can only arbitrarily explain the structural condition:

7) permissible

8) impermissible



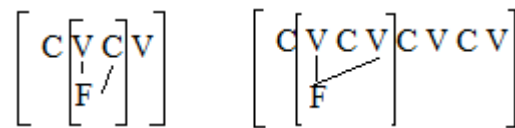
For GP it would be a highly arbitrary condition which stated: 'features may be transferred from the vowel in a nucleus into the onset of the following 'ON'-pair but only when the vowel is short.'

As GP's syllabic structure is flat there is no intermediate node which links V and C for form a constituent and therefore no way to attempt to exclude VVC from being a constituent. Therefore, all GP has to offer here is adjacency which would only be dubiously differentiated in (7) and (8).

Similarly in Strict-CV the shape of the constituent into which the feature can spread into a long vowel (ie. long E) is different in identity to the constituent where the feature can spread into the consonant.

9) feature in C

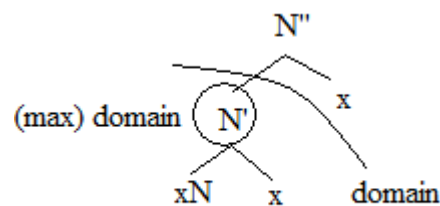
10) feature in long V



sCV shows in this case how the shape of the domain can be different for different processes and thus a structural answer to as why a long vowel may not have its feature spread into an adjacent following V cannot be expressed structurally as there is, in sCV, no unified structural configuration which defines this process.

MP on the other hand can understand the domain of application as a single structural process. This structural configuration also immediately understands why quantity should influence the assimilation.

11) MP domain of application



Similar to Pham's analysis (2003) (although in a more formal framework and structure), we can define N' as the maximal domain of application for this process.

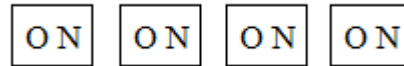
Node: $N' = (\text{max}) \text{ domain}$

With the above we have created a constituent xN, x . This is formed by the node N' being defined the maximal projection for this constituent. The whole thing we may call a constituent which excludes projections and their daughters above N' .

- 1.2. By having an arboreal binary structure we move away from a flat structure in which constituency is only ever defined in terms of licensing.

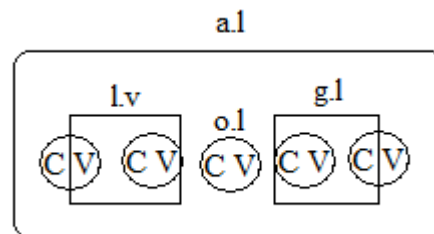
What we mean by this is that in a flat structure such as (12), the only natural constituency is between O and N (which are tied together by onset licensing):

12) onset licensing driving constituency in flat structure



- 1.3. We would argue therefore that in a flat structure domains are arbitrary groupings of Os and Ns or Cs and Vs. They function essentially like Venn diagrams. Which do not naturalistically explain why CV in CVCV is a good constituent while VCV in CVCV is not a good constituent (see 13)

13) Constituency in GP, sCV¹



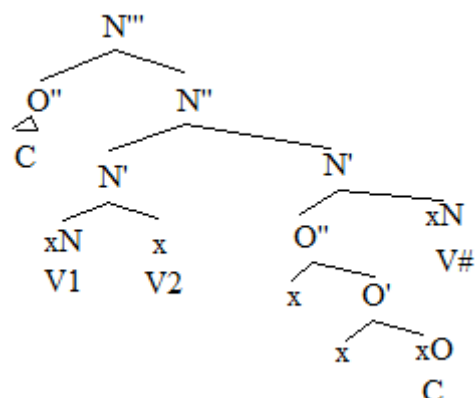
- 1.4. (13) shows essentially what seems to be a rather arbitrary collection of Cs and Vs, these must all be defined for phonology concretely, ie. as what they really are ie. $o.l = \{C;V\}$, $l.v = \{V; c; V\}$ etc...

Meanwhile, in MP the arboreal structure gives us the possible domains that exist. Every projection hosts a node, this node may be the maximal projection for a certain process (if PF decides so) while the details of the constituent are entirely dictated by containment. That is, any parts which are contained by the maximal projection of process z will be implicated (in its way) with the phonological process at hand. There is no need to specify C, V, C etc... It is all given to us by the structure. All we need is a single node of reference, we argue that's what PF reads.

- 1.5. Containment also restricts the power of this framework, for instance, a word such as #CV1V2CV# would be represented in (14). In this structure, the terminals are marked as A, B, C and D. The nodes of this tree, like any other (universally) are N', N'', N'''. These will be containing syllabic information. If a process applies to N' (let's say vowel harmony, spreading [+high] (I) between nuclei, then, if N' is the (max) domain then only V1V2 of the CV1V2CV3 sequence will be affected, while if N''' or N'' are affected then the phonological process will apply to V1V2 and V#. What may not happen however, because of the natural consequences of containment is V1 and V# being affected while V2 is not affected by the process. This would violate containment and N''' would not be the maximal projection for the process.

¹ o.l = onset licensing, l.v = long vowel, g.l = government licensing, a.l = A- licensing

14) #CVVCV#



2. So containment can constrain the power of our theory where constituency is relativised. It essentially means that as all words, in MP, are projection mediated by nodes which are projections of the nucleus (similar to Harris 1997), then all constituents possible are defined in a similar manner.

This conference in on the syllable. Although seemingly similar to Khan (1976), we see that although the syllable doesn't exist *per se* it has a psychological reality. The twist that MP puts on the story is to say that this psychological reality of the syllable is no more concrete (ie. deserving of its little Greek letter) than any other phonological constituent. As these would be defined by the processes that occur to them, this doesn't seem too controversial a position. What we prototypically call a syllable therefore is essentially N''' = (max) domain.

In real life this translation creates a syllable in which one must have an onset projection (filled or not), a nuclear head (and possible length) and an onset or nuclear projection (filled or not).

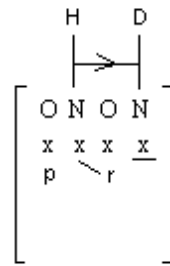
What MP therefore provides is a way to differentiate between ON and ON, one would be syllabic-like and one would not. This would depend entirely on the derivation of the structure in question.

- 2.1. The minor syllable is a feature found in many austro-asiatic languages. In essence, it is described as a 'reduced' syllable which occurs before large percentages of native vocabulary in languages like Khmer and Kammu. What we will show is that in the former language this ON pair does not act like a syllable while in the latter it does.

2.1.1 Khmer

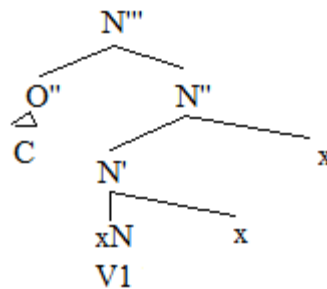
In Khmer the minor syllable may be a consonant and a vowel (ON). The vowel in question may only be a schwa and this minor syllable may not be stressed or accented.

17) minor syllable in Kammu (GP)



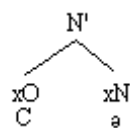
In GP neither of these structures looks much like a syllable, in fact, they appear to have more to do with the difference in feet, rather than in syllable. However, taking our Khan (1976) structure and converting it into MP we derive the following structure:

18) Prototypical syllable in MP

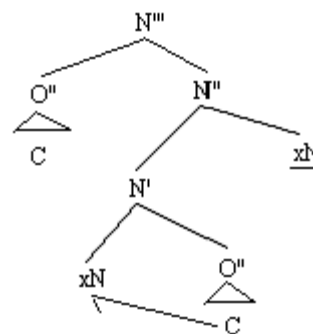


Interestingly, this coincides with an assumed CVX theories of syllable well-formedness in languages with minimal word constraints (English, Mandarin Chinese etc...). Furthermore, Khmer's minor syllable wouldn't have any of the above structure, its syllabic structure would simply be (19). While Kammu's minor syllable (20) is more complex and matches entirely with (18) the simple translation of Khan's (1976) syllable:

19) Minor Syllable in Khmer



20) Minor Syllable in Kammu²



² A vicissitude of a new framework, there are lots of things in this diagram that are not properly understood yet, for instance the exact representation of syllabic nasals etc...

MP therefore, shows us that even just a 2 segment string may behave like a syllable, not because it is a syllable ie. (σ), Rather because syllables are nothing other than N'', which requires an at least empty set of projections to raise to this height.

So we've seen that domains of application for processes can be reduced to PF's selection of a maximal projection and then containment handles the restrictions and we've seen that minor syllables which are both 2 segments long and thus could both be syllables (to a theory without a constrained notion of its categories) while their differing behaviour shows that their representations are quite different. The structure one would give the Kammu minor syllable incidentally mimics the structural translation of the Khmer syllable. What these two things share is that their maximal projections are N''.

3. Can PF's allocation of the maximal projection be selected from principles

We will take New York City overlength and show that it is possible to derive its behaviour (which is born from relativity of domains) from the principles of the licensing potential of empty nuclei.

As Pöchtrager (2006:177) notes, in 'bid' structures of New York English we see overlength alternations:

21) [bit] vs. [bi:d] 'bit' vs. 'bid'

22) [li:f] vs. [li:v] 'leaf' vs. 'leave'

In 'libby' structures, however, there isn't this alternation:

23) [səpə] vs. [rəbə] 'supper' vs. 'rubber'

The question Pöchtrager asks himself, therefore, is why is it that overlength is not an issue when the word-final nucleus is phonetically realised:

24) [ra:b] vs. [rəbə] 'rub' vs. 'rubber'

24a) [ri:b] vs. [libi] 'rib' vs. 'libby'

24b) [me:n] vs. [meni] 'men' vs. 'many'

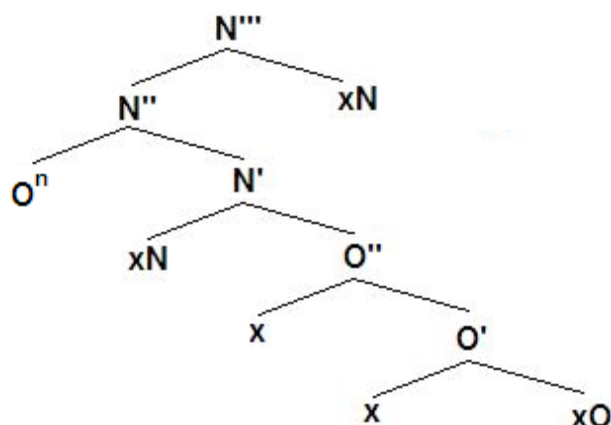
24c) [bi:g] vs. [bigət] 'big' vs. 'biggot'

24d) [le:d] vs. [le:di] 'laid' vs. 'lady'

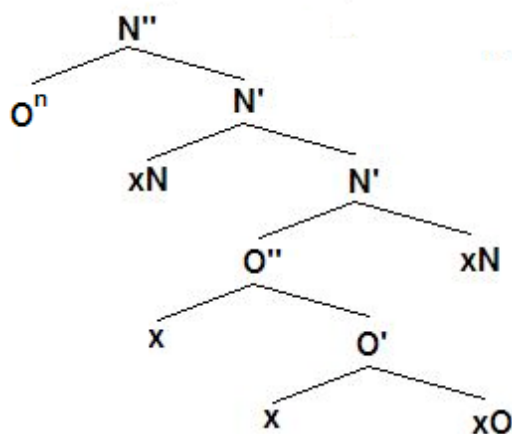
24e) [li:v] vs. [bi:və] 'leave' vs. 'beaver'

Pöchtrager's solution is twofold, firstly, he attributes, the two word-classes separate domain types each with their separate structure, the 'bid' domain and the 'libby' domain.

25) the 'bid' domain



25a) the 'libby' domain

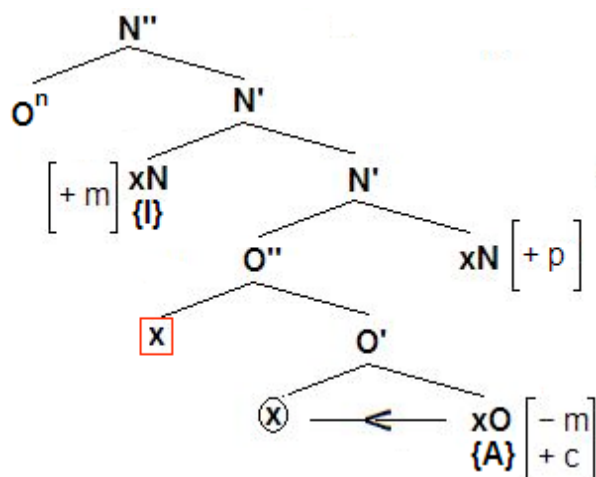


Secondly, in order to understand the length asymmetry between the two structures Pöchtrager states that if the xO in both structures are lenis, ie. not lexically encoded for m-command (Úlfsson 2006:4), then the external licensing of the daughter of O'' will be regulated by closest licenser, in the bid structure we can see that this will be xN1 contained by the node N'. Conversely, in (6a) the closest licenser will be xN2, the word final nucleus. To understand why xN1 becomes longer when licensing the daughter of O'' while xN2 doesn't, Pöchtrager claims that xN1 licenses by the familiar m-command while xN2 (and in tune with sGP) licenses by p-licensing. The latter form of licensing by its nature does not incorporate melody thus no length increase word finally in English [bi:g] vs. *[bigə:].

Any theory will have to understand why the word-final nucleus doesn't incorporate melody while the first xN does, however, we feel that with our definition of *closest good licenser* we can do without the two structures 'bid' and 'libby'.

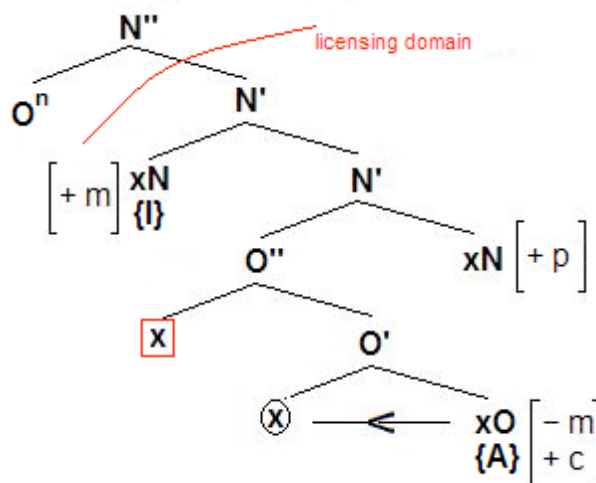
Let us assume that the structure of 'bid' is actually (6a) (contra Pöchtrager 2006):

26) 'bid'



This structure of 'bid' shows how the word-final lenis onset head cannot m-command the un-annotated point boxed. Therefore, local licensing is out of the question, although of course our new understanding is that xO isn't the x's closest *good* licenser. The word final nucleus is the second closest potential licenser but it isn't phonetically realized which means it is p-licensing itself and thus may not p-license x. That is, xN2 may be closer than xN1 but it isn't the closest *good* licenser. xN1 however, is lexically encoded for m-command and phonetically realized, as such this is the closest *good* licenser. The licensing domain therefore is cut beneath the lowest node that encompasses xN and x, that is: N', that is: N' = (max) domain.

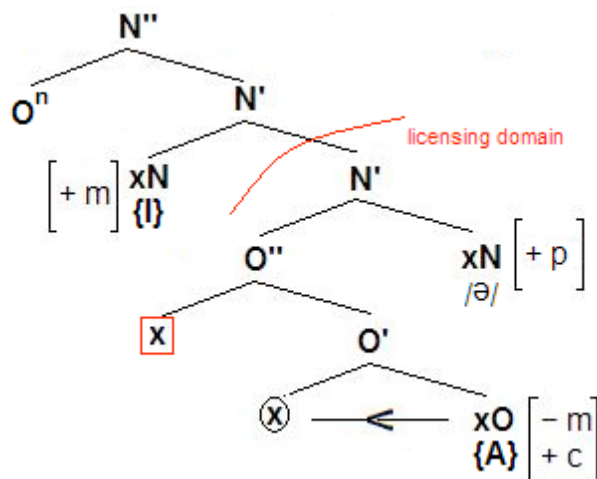
27) N' = (max) domain



If however, 'bid' undergoes some form of morphological process by which the word-final nucleus is phonetically realized, let us suppose by the verb to noun '-er' 'suffix', we will see a perfectly natural consequence to our definition of 'closest good licenser'.

If xN2 is phonetically realized then this becomes the closets good licenser. Again, the xN1 is still a good licenser but it is no longer the *closest* good licenser. As such the licensing domain is cut beneath the lowest node that encompasses both xN2 and x, in this case: N'1.

28) 'bidder' [bidə]



3.1. What we've seen therefore is that the relativisation of the domain may in certain cases follow directly from the principles of phonology itself. In other cases this may not be the case but what our model of relativised constituency buys us, is a unified structure for 'bid' and 'libby' domains, and thus we may attain dynamism between these word-types without violating the *structure preservation principle* (Kaye et al. 1990).

What this means for the ontology of syllables is that they both exist and don't exist. Syllables do have psychological reality but they are just a constituent like any other and thus do not need their little Greek letter. What we are claiming therefore is that syllables are just a particular height in the projection of the nucleus. Specifically: N''' = (max) domain.