What final empty nuclei are good for

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1 Introduction*

Natural language appears to offer a binary choice regarding the syllabic identity of word-final consonants, which may or may not behave like their pre-consonantal peers. In case they show identical behaviour, the pattern at hand instantiates the well-known coda disjunction __{#,C}, and both consonants identify as codas on regular syllabic assumptions. If on the other hand word-final consonants do not produce the same effects as their pre-consonantal peers, they are usually taken to be extrasyllabic. Interestingly, the opposite pattern, i.e. where a coda effect is observed on the final, but not on the internal item of the coda disjunction, does not appear to be on record.

Coda effects may concern the coda consonant itself, but also the preceding vowel, in which case they are usually called closed syllable effects. The vocalic side of the coin has exactly the same properties as its consonantal counterpart: either both vowels before pre-consonantal consonants and before word-final consonants react, or only the former do. The reverse pattern where a closed syllable effect is visible only on vowels before word-final consonants does not appear to exist.

Phonological theory is thus called to express the binary choice at hand by a parameter. This parameter must cover both consonantal and vocalic effects. On the pages below, I discuss three implementations of this parameter: regular extrasyllabicity, the parameterized distribution of empty nuclei in internal clusters as practised in Standard Government Phonology (GP), and the variable lateral actorship of final empty nuclei (FEN) that is proposed by CVCV, a development of Standard GP.

2 Twofold behaviour of word-final consonants: illustration

The literature abounds in phenomena that illustrate the paired behaviour of final and internal codas: the coda context __{#,C} has played a prominent

role in the rehabilitation of syllable structure in the 1970s.[1] On the other hand, the pattern where word-final consonants do not show the same effects as internal codas is discussed in the literature on extrasyllabicity, and also in GP. The latter has concentrated on the accumulation of cases which show that word-final consonants are not just non-codas (i.e. extrasyllabic), but in fact true onsets (more on this literature in section 4).

Below I have chosen two common phonological processes: l-vocalization and closed syllable shortening (or open syllable lengthening, which amounts to the same thing). The former represents coda effects on the coda itself, while the latter makes preceding vowels react. Both processes occur in both flavours: they are either triggered by pre-consonantal and final consonants alike, or only by the former.

2.1 Type A languages: internal ≠ final codas

In the history of French, Latin <l> has a different fate in internal and final codas. The modern French alternation illustrated by *cheval* [ʃəval] - *chevaux* [ʃəvo] 'horse sg, pl' attests a process whereby <l> is vocalized. Note that while l-vocalization is inactive in modern French (cf. recent loans: *carnaval* - *carnavals* "carnaval", *chacal* - *chacals* "jackal" etc.), it was a synchronically active process in Old French.

L-vocalization is a common process that occurs for example in (the history of) Polish, Brazilian Portuguese, (London) English or Serbo-Croatian. Some French evidence appears in table 1 below where in each column, the Latin origin is followed by its French reflex.

Table 1. l-vocalization in French: word-final consonants do not react[2]

onset						coda			
#__		C__		V__V		__#		__C	
lamina	lame	plaga	plaie	vela	voile	sal	sel	alba	aube
levare	lever	flore	fleur	mula	mule	mel	miel	talpa	taupe
luna	lune	fab(u)la	fable	dolore	douleur	fil(u)	fil	poll(i)ce	pouce
lepore	lièvre	C.__		valere	valoir	cabal-l(u)	che-val	sol(i)dare	souder
		mer(u)lu	merle						

L-vocalization thus occurs only in pre-consonantal position. In all other instances, including word-finally, Latin <l> is faithfully restored as such in French.

The vocalic counterpart of this pattern is found for example in Icelandic, as reported by Gussmann (2002: 157-159). Icelandic possesses eight vowels [i,ɪ,ʏ,ɛ,œ,u,ɔ,a] and five diphthongs [e͡i,a͡i,a͡u,o͡u,œ͡i]. Each of the monophthongs and diphthongs appears in its lengthened version under stress when certain syllabic conditions are met. This process is commonly called Tonic Lengthening.

Table 2. Icelandic lengthening: vowels before final consonants do not react[3]

word-internal			word-final	
long VV		short V	long VV	
a. CVVCV	b. CVVTRV	c. CVVRTV	d. CVV#	e. CVVC#
staara	nɛɛp^{h}ja	kampʏr	puu	θaak^{h}
luuða	pɛɛt^{h}rɪ	haulvʏr	t^{h}vɔɔ	hœ͡i:s
fai:rɪ	aap^{h}ril	harka	fa͡i:	k^{h}vœœl

As may be seen, vowels are lengthened if they are separated from the following vowel by a single consonant (2a) or by two consonants that qualify as a branching onset (2b). By contrast, no lengthening occurs in case the two intervening consonants have a falling sonority slope (2c). Word-finally, vowel length freely occurs in absolute word-final position (2d) and before word-final consonants (2e).

2.2 Type B languages: internal = final codas

L-vocalization in Brazilian Portuguese is the same as in French, except that it also goes into effect word-finally. It is a synchronic distributional fact (i.e. surface-true: there is no [lC] or [l#]) as much as a diachronic process: Brazilian Portuguese has the same ancestor as European Portuguese, which has conserved the lateral in all positions.

Table 3. l-vocalization in Brazilian Portuguese: word-final consonants react[4]

a. V__V		b. V__#		c. V__C	
Braz.	Europ.	Braz.	Europ.	Braz.	Europ.
sa[ɬ]eiro	sa[ɬ]eiro	sa[w]	sa[ɬ]	sa[w]-gar	sa[ɬ]-gar
ca[ɬ]adu	ca[ɬ]adu	ca[w]	ca[ɬ]	ca[w]sa	ca[ɬ]sa
ma[ɬ]a	ma[ɬ]a	ma[w]	ma[ɬ]	ma[w]-vado	ma[ɬ]-vado
mu[ɬ]a	mu[ɬ]a	su[w]	su[ɬ]	su[w]co	su[ɬ]co
vi[ɬ]a	vi[ɬ]a	vi[w]	vi[ɬ]	fi[w]tro	fi[ɬ]tro

It may be seen that the lateral vocalizes in both pre-consonantal and word-final position (while intervocalic laterals do not react).

On the vocalic side, table 4 reports on three cases where short vowels are found both before pre-consonantal and word-final consonants (while long vowels appear in open syllables).

Table 4. Closed Syllable Shortening: vowels react before word-final consonants[5]

		open syllable	closed syllable	
		__CV	__R.TV	__C#
a.	Turkish	meraak-~~ɨ~~	merak-tan	merak
b.	Czech	kraav-a	krav-ka	krav
c.	Classical Arabic	ʔa-quul-u	ta-qul-na	qul

The patterns discussed afford the following conclusion: word-final consonants are a locus of variation, but pre-consonantal consonants are not. While the latter invariably produce coda effects, the former may or may not do so. In other words, no case appears to be on record (regarding either consonantal or vocalic effects) where word-final consonants do, but internal codas do not provoke a coda effect. The parameter at hand must thus somehow target the right margin of the word.

Another generalization that appears to hold true (but is not made explicit in the literature as far as I can see) concerns the solidarity of consonantal and vocalic effects. That is, if word-final consonants produce an effect on their own body, preceding vowels will also react, and vice-versa (Palestinian Arabic is a case in point, cf. Kenstowicz 1994: 274-276). Cases where consonantal effects are observed without being paralleled by a reaction of the preceding vowel (if of course there is a relevant process in the language at hand) do not appear to exist.

3 Two implementations of the parameter: extrasyllabicity and GP

Since the reintroduction of syllable structure into generative theory in the late 1970s, the regular way of encoding the parameter at hand is extrasyllabicity.[6] No particular proviso is needed for type B languages: the syllabification algorithm will parse word-final consonants as regular codas; phonological rules that refer to codas and closed syllables then apply to both internal and final locations. In type A languages, however, word-final consonants are lexically marked as extrasyllabic, which leaves them

unparsed by the syllabification algorithm. For example, French *cheval* and Icelandic *θaak*^{h} will be /cheva<l>/ and /θa<k^{h}>/, respectively (where consonants in angled brackets are extrasyllabic). Phonological rules that make reference to codas and closed syllables then apply as before; they will have an effect word-internally, but not word-finally since at that derivational stage there are no word-final codas or closed syllables. Finally, extrasyllabic consonants are "reintegrated" into the Prosodic Hierarchy (since otherwise they would remain unpronounced).

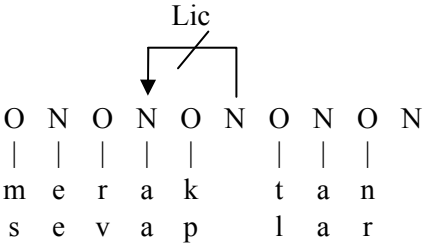
The extrasyllabic idea thus relies on the insight that word-final consonants are temporarily absent from syllable structure, and that syllable-sensitive rules apply precisely at this derivational stage.

Standard Government Phonology has a different take. Kaye (1990) studies closed syllable shortening; he compares type A (English: *keep* vs. *kept*) and type B languages (Yawelmani, Turkish) and concludes that word-final consonants are onsets (of empty nuclei) in all cases. The onsethood of word-final consonants directly explains pattern A: vowels before word-final consonants will never react on closed syllable constraints because they are not followed by a coda.

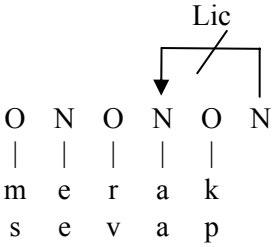
In type B languages, Kaye argues for an entirely different causality: what appears to be closed syllable shortening has in fact nothing to do with closed syllables. Rather, vowels before word-final consonants shorten (i.e. their nucleus cannot branch) because they fail to be licensed by the FEN.[7] The same internuclear relation, then, is responsible for the shortening of vowels before internal clusters, which also enclose an empty nucleus.

Table 5. analysis of type A languages according to Kaye (1990)

a. shortening before internal CCs



b. shortening before C#



Examples are from Turkish. Since in GP strings are fully syllabified in the lexicon, the root /merakø/ ends in a FEN. Computed as such under (5b), the FEN, being empty, fails to license the preceding nucleus, which therefore cannot branch: the result is a short vowel. Under (5a), the last root vowel is

short no matter what the sonority slope of the following cluster: the typical interlude [kt] produces a short result as much as [pl], which looks like a good branching onset. This is the critical observation made by Kaye, which leads him to conclude that vowel length in Turkish has got nothing to do with syllable structure. What all clusters have in common is the presence of an empty nucleus in their midst. The existence of this empty nucleus under (5a) is also guaranteed by the fact that resyllabification does not exist in GP: a root-final consonant that is syllabified as an onset in the lexicon cannot become a coda during a derivation. Hence even when a suffix-initial liquid is concatenated to a root-final stop, the result cannot be a branching onset even though the cluster satisfies relevant sonority requirements.

In sum, thus, GP denies the unity of what looks like one single process on the surface. That is, type A languages disallow long vowels before internal RT clusters because of the universal prohibition of superheavy rhymes: since the first member of the cluster is a true coda, the preceding nucleus cannot branch. We are thus in presence of a regular "vertical" causality, i.e. where the effect observed is a consequence of the arboreal status of a consonant.

By contrast, type B languages have a lateral causality: the reason why vowels are long or short is not the syllabic affiliation of any consonant. Rather, on the backdrop of a monotone sequence of onsets and nuclei without any coda (see table 5), the mechanism that controls vowel length is internuclear licensing: a nucleus may branch iff the following nucleus is contentful and hence able to dispense licensing. In presence of an empty nucleus to their right, vowels are thus short; this is the case before word-final consonants and also, at least in the Turkish example, before any kind of internal cluster.

A critical consequence of this analysis is that it forces all type B languages into the Turkish pattern irrespectively of the morphological status of their internal clusters, and of their sonority slope. That is, the only way for GP to capture pattern B is to apply the lateral causality. This, in turn, means that all internal clusters that cause the shortness of the preceding vowel must be separated by an empty nucleus. This is so even in case they are tautomorphemic (unlike in the Turkish example), and even if they do not host a vowel-zero alternation (as in Yawelmani).

This prediction extends to all type B languages and includes consonantal effects, which are discussed in the following section.

4 Problems with extrasyllabicity and GP-multicausality

4.1 The edge is special because of extra-phonological influence

Both extrasyllabicity and GP are exposed to the following objection: they do not recognize any extra-phonological impact. That is, the solutions proposed are purely phonological: the question why variation is encountered at morpheme-margins, but not morpheme-internally (rather than the reverse), is not instructed. It is quite obvious, however, that this distribution is not accidental – and that the morpheme margin shows variation not because of any reason peculiar to phonology. Rather, morphological rule governs into phonological matters at morpheme edges. That there can be no morpho-syntactic intervention inside morphemes is clear from observation, and also a ground rule in generative theory.[8]

If the extra-phonological causality of right-edge variation is admitted, solutions such as extrasyllabicity and GP must be on the wrong track since they encode the parameter without any reference to extra-phonological forces. That is, both approaches would still work if the locus variationis were found to be morpheme-internal (more on this in Scheer 2004: §378).

4.2 GP-consequences on the vocalic side: massive allomorphy

In order to further evaluate the solution proposed by GP, its consequences need to be made explicit. For one thing, items that show type A alternations cannot be derived from one another. The example discussed by Kaye (1990) is the pair *keep* [kiip] - *kept* [kɛpt]. Recall that type A alternations are due to a true coda effect: the vowel in *kept* cannot be long because it is followed by a coda consonant, while the vowel in keep may be long: it is followed by an onset. As a consequence, the stem-final consonant *-p* has two distinct syllabifications in *keep* and *kept*. Given that resyllabification is prohibited in GP, both items cannot be derived from one another: they must represent two distinct lexical entries that are related by an allomorphic relation (of the type *go* - *went*). In the particular case of the pair *keep* - *kept*, this is indeed quite plausible a scenario: children have to learn irregular past tense forms by heart and may well regularize them in case they are not kept in memory by high token frequency (*drive* - *drived* etc.).

It is important to understand that GP enforces this allomorphic relationship for all type A alternations irrespectively of their morphological status. One has then to be prepared to accept that entirely regular

alternations that involve inflection are the result of allomorphy, rather than of phonological derivation. This is actually the case of Icelandic, as reported in great detail by Gussmann (2002: 163ss; 2006: 36ss): stem-final vowels must be onsets after long vowels as in *heim* [hei:m] "world ACCsg", ljúf [ljuuv] "dear, fem", but codas when following short vowels elsewhere in the same inflectional paradigm: *heim-s* [heims] "id., GENsg", *ljúf-ri* "id., DATsg".

Hence the GP analysis of pattern A is at the expense of massive allomorphy even within inflectional paradigms. To say the least, this is rather suspicious on current non-lexicalist assumptions of syntactic theory.

4.3 GP-consequences on the consonantal side: type A languages

Let us now turn to consonantal effects of pattern A. In the Old French alternation *cheva[l]* - *cheva[w]-s* "horse sg, pl", the original lateral must belong to an onset in the former, but to a coda in the latter form: effects of pattern A are due to the codahood of pre-consonantal consonants. As before, thus, a close grammatical relationship, regarding number this time, must be declared allomorphic.

But on the consonantal side things are actually worse: cases are on record where a type A language shows the consonantal effect also on the first member of tautomorphemic clusters which enclose an empty nucleus (that is established on the grounds of a vowel-zero alternation). This situation is predicted not to occur since coda effects due to empty nuclei are precisely the definition of pattern B.

Polish illustrates the pattern described (see Scheer 2004: §579): the palatal nasal /ɲ/ implodes and surfaces as a nasal glide [j̃] in pre-consonantal position. This statement is surface-true (i.e. there are no *[ɲC] sequences at all).

Table 6. Polish: implosion of the palatal nasal in pre-consonantal position[9]

	__#		__C		__C#		__V		__øC	
a.	koń	kɔɲ	koń-ski	kɔj̃ski			koni-a	kɔɲa		
	drań	draɲ	drań-ski	draj̃ski			drani-a	draɲa		
b.			drań-stwo	draj̃stvɔ	drań-stw	draj̃stf				
			hań-ba	xaj̃ba	hań-b	xaj̃b				
c.			tańczyć	taj̃t͡ʃit͡ɕ	tańcz !	taj̃t͡ʃ	tan-iec	taɲɛt͡s	tań-c-a	taj̃t͡sa
			kończyć	kɔj̃t͡ʃit͡ɕ	kończ !	kɔj̃t͡ʃ	kon-iec	kɔɲɛt͡s	koń-c-a	kɔj̃t͡sa

That Polish is a type A language appears when the bare stem of nasal-final items such as *koń* "horse" is compared with forms that take vowel-initial and consonant-initial suffixes under (6a). The nasal remains undamaged in the former two cases, but implodes in the latter. (6b) shows that the nasal also implodes before word-final consonants. Finally, (6c) provides the critical evidence: following regular vowel-zero alternations that are found elsewhere in the language (as well as in other languages), the *-ie-* is present before a word-final consonant (*taniec*), but absent if that consonant is followed by an (inflectional) vowel (*tańc-a*). In GP, this necessarily means that the cluster in the latter form is separated by an empty nucleus; its first member therefore is an onset: /taɲøc-a/.

In type A languages where coda effects are due to the codahood of pre-consonantal consonants, this pattern is predicted not to exist. It ruins the alleged distinction between the true-coda- (pattern A) and the empty-nucleus causality (pattern B).

4.4 GP-consequences on the consonantal side: type B languages

The typological split proposed by GP also has unwarranted consequences for type B languages. The effects in these, recall, have got nothing to do with the codahood of consonants; rather, they are due to the action of an empty nucleus. On the vocalic side, it is the inability of empty nuclei to dispense internuclear licensing that does not allow the preceding nucleus to branch; this is true word-finally (e.g. Turkish /merakø/) as well as word-internally (/merakø-tan/), and should also apply to monomorphemic clusters: there are no long vowels before any kind of consonant sequence in Turkish (e.g. *orkinos* "tunny fish", *kudret* "power", i.e. /orøkinos/, /kudøret/). Even though there is no positive reason for a CøC analysis of monomorphemic clusters, the fact that long vowels never occur in this environment would have to be ascribed to a strange lexical accident on a branching onset analysis.

On the consonantal side, however, even strange lexical accident does not allow to elude the conclusion that all clusters enclose an empty nucleus, irrespectively of their sonority slope and of whether they are mono- or heteromorphemic. For example, if the uniform cause of l-vocalization in Brazilian Portuguese, a type B language, is the presence of an empty nucleus to the right of the lateral, the bare stem *sa[w]* "salt" (European Port. *sa[ɫ]*) must have been /sałø/ when the lateral vocalized, *sa[w]-gar* "to

salt" (European Port. *sa[ɬ]-gar*) was /sałø-garø/, but /ɬ/ must also have been followed by an empty nucleus when involved in monomorphemic clusters: *ca[w]sa* "trousers" (European Port. *ca[ɬ]sa*) was /całøsa/.[10]

In the GP perspective, thus, the parameter that we are after separates languages into two distinct syllabic patterns: word-internal monomorphemic RT clusters are true coda-onset sequences in type A languages (their first member is the coda that causes the effects observed), while they are separated by an empty nucleus in type B languages (where this empty nucleus is responsible for the effects observed). In other words, the behaviour of word-final consonants decides on the syllabification of internal monomorphemic RT clusters: in case they behave like an onset (type A), internal RTs are true coda-onset clusters; if it patterns with codas (type B), internal RTs are fake clusters.

Hence the syllabic identity of a cluster does neither depend on its sonority slope nor on its own behaviour; rather, it is deduced "at distance" from the behaviour of word-final consonants. This result is certainly unwarranted. Given the lexical recording of syllable structure, nothing in the theory prevents the two patterns that the type A - type B dichotomy excludes to exist: (some) word-internal monomorphemic RTs could well be separated by an empty nucleus in type A languages, and (some of them) could well be true coda-onset clusters in type B languages.

4.5 Instead of extending Kaye (1990) to consonantal effects, GP denies the existence of pattern B

But anyway, the whole discussion regarding the position of GP with respect to consonantal effects of the type A - type B parameter appears to be fictitious. For the entire GP literature since Kaye (1990) that is concerned with coda effects was exclusively after showing that word-final consonants are onsets because they behave as such. Examples are Harris (1992; 1994; 1997), Gussmann and Harris (1998; 2002) and Gussmann (2002). These authors have accumulated evidence for pattern A in order to assess the idea that all word-final consonants in all languages are onsets. Strangely enough, pattern B – where word-final consonants behave like codas – has not been given attention. Rather than applying Kaye's (1990) multicausal view of the parameter to consonantal effects, the GP literature has always tried to deny the existence of pattern B: the evidence (which abounds in the literature and in textbooks) was simply ignored, or it was attempted to

discuss away the data, or putative coda analyses were doomed misanalyses. The following quotation from Harris' (1994) textbook provides illustration.

> "Underlying particular analyses of lenition is a more general assumption that melodic restrictions on domain-final consonants closely match or duplicate those operating in domain-internal codas. If this were true, it would provide some support for the view that both contexts are codas. It certainly is the case that there can be distributional overlap between the two positions, which co-occur in many classic examples of lenition and defective distribution. However, this evidence cannot be considered sufficient to clinch the case for the coda assignment of final consonants. Even if we set aside the theoretical reasons we now have for rejecting this analysis, it is flatly contradicted by the substantial body of other empirical evidence reviewed in 2.2.4.
>
> In any case, the distributional relationship between internal codas and final consonants is by no means as close as is often supposed. The evidence discussed in 2.2.4 shows that, in this respect, the two contexts are in fact quite different in English. Moreover, some of the best-known examples from other languages which supposedly demonstrate the relationship turn out, under close inspection, to be rather less than convincing." (Harris 1994: 202)

Hence Harris denies the factual reality of pattern B, even though he admits some "distributional overlap".[11] He also adopts the black-or-white attitude that runs through the entire GP literature: either final consonants are onsets, or they are codas, and there is no possible parametric variation across languages (other illustrations: Gussmann and Harris 1998: 141; 2002: 4ss). It is hard to see why the parametric option, which is admitted for exactly the same pattern on the vocalic side, is denied for consonantal effects. In fact, another property of the GP literature on the onsethood of final consonants is that no parallel is ever drawn between the consonantal facts studied and the vocalic effects of the same pattern that were at the origin of the entire GP venture regarding final consonants (i.e. Kaye 1990).

An earlier version of this article has argued that Standard GP is unable to account for pattern B since word-final consonants are always onsets and hence can never pair with internal codas. Two anonymous reviewers have correctly pointed out that this is not quite true: Kaye (1990) introduces a parameterization regarding vocalic effects that relies on a multicausal analysis of what appears to be uniform phenomena. This could well be applied to consonantal effects as well.[12]

The trouble is that this *could* indeed be done – but it never *has* been done, even in those articles that focus on the status of word-final consonants and their behaviour with respect to internal codas. The consequences of the hypothetical solution have been pointed out above: they are not really enjoyable, to say the least; also, the Polish pattern (consonantal effect before empty nuclei in a type A language) flatly contradicts the multicausal perspective.

Beyond the empirical issue and the trouble mentioned, denying the factual existence of pattern B on the consonantal side is inconsistent with the simple observation that codas may produce effects on their own body as well as on preceding vowels. And hence that a unified treatment is in order.

5 Lateralization of structure and causality

I argue in Scheer (2004: §166) that the core contribution of Government Phonology to phonological theory is the lateralization of structure and causality, which are understood in terms of lateral, rather than vertical (arboreal) relations.

The introduction of empty nuclei in Standard Government Phonology has lateralized structure: preceding consonants were considered codas before (e.g. *-t* in *sit*), but now are onsets, to the effect that the rhyme does not branch anymore. Also, closed syllable shortening in type B languages, which is due to a branching rhyme upon regular analysis, becomes a lateral phenomenon in GP: rather than the presence of a coda, the inability of a following empty nucleus to establish an internuclear licensing relation causes the shortening of the preceding vowel.

When looking back at the coda phenomena discussed, it appears that three out of four patterns have already been lateralized in Standard GP (regarding both structure and causality): in type B languages, both internal pre-consonantal and final consonants have a lateral identity (they are followed by an empty nucleus), and their (consonantal or vocalic) effect is due to a lateral relation that the following empty nucleus cannot dispense. In type A languages, word-final consonants have a lateral identity (they occur before an empty nucleus), while internal pre-consonantal consonants conserve an arboreal definition (they are true codas). Also, the (consonantal or vocalic) effects associated have a vertical causality: something (does not) happen(s) because of the codahood of a consonant.

Government Phonology has thus introduced the lateral idea into phonological theory. Its application, however, has only concerned selected pieces of syllable structure, and the causality of some phenomena. That is, the first implementation of the lateral perspective has produced a hybrid model, Standard Government Phonology, where more or less important vertical residues were conserved. The kind of trouble that is encountered when vertical and lateral philosophies cohabitate in the same grammar is pinpointed in Scheer (2004: §165). The most dreadful consequence is certainly the one that Takahashi (1993) has pointed out as early as in 1993: if, as proposed in hybrid GP, arboreal constituent structure is a consequence of the lateral relations among segments, it just restates these lateral relations and thus is entirely redundant. Having arboreal and lateral structure cohabitate is making the same generalizations twice.

CVCV is a development of Government Phonology that completes the lateral programme which was initiated by Kaye, Lowenstamm and Vergnaud (1990): constituent structure boils down to a sequence of strictly alternating non-branching onsets and non-branching nuclei, and the only causality of phonological processes are the lateral forces government and licensing. CVCV has been introduced by Lowenstamm (1996) and is currently entertained in various brands.[13]

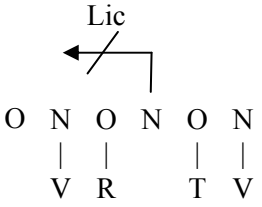
In the following section I show how a fully lateral perspective where no arboreal residue is left in either structure or causality is able to do away with the shortcomings that the hybrid Standard GP solution suffers. Indeed, a novel way of expressing the parameter at hand appears when the last piece of vertical syllable structure is also lateralized.

6 Licensing ability of FEN parameterized

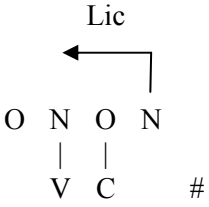
On the Standard GP analysis word-final consonants in all languages as well as the first member of RT clusters in type B languages are onsets of empty nuclei. Only the R of monomorphemic RT clusters in type A languages is a true coda.[14] Suppose that, following CVCV, an empty nucleus also separates RT clusters in type A languages.

Table 7. type A vs. type B languages in CVCV

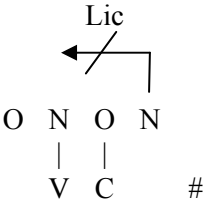
a. word-internal situation (type A and B)



b. word-final situation (type A)



c. word-final situation (type B)



Let us first note that the coda disjunction __{#,C} has a non-disjunctive identity: consonants in this position occur before an empty nucleus.[15] Internal empty nuclei enclosed by RT clusters are always governed by the following vowel (a relation not indicated in 7a). Following GP standards, governed nuclei are unable to dispense lateral relations. The empty nucleus under (7a) is thus unable to license, as indicated (and also to govern).

The relevant lateral force for coda phenomena is licensing: the coda Mirror (Ségéral & Scheer 2001; 2005) has disentangled government and licensing, which were confused in Standard GP (where for example government was a form of licensing).[16] In CVCV, lateral forces are defined according to their effect: government inhibits the segmental expression of its target, while licensing backs it up. Hence segments that fail to be licensed are weak and potential candidates for lenition. By contrast, licensed segments are supported and therefore shielded against lenition.

As a consequence, neither vowels preceding RT clusters nor the first members of these clusters will be licensed in any language.[17] Word-final consonants are not weak in type A languages, and long vowels occur to their left. This indicates that they receive licensing. By contrast in type B languages, they do react just like their internal peers, which means that they fail to be licensed. The parameter that we are after in this article thus concerns the ability of FEN to license.

Table 8. CVCV: parameter distinguishing between type A and type B languages

a. type A (internal, but no final reaction):	FEN are able to license
b. type B (both internal and final reaction):	FEN are unable to license

The parameterization of the lateral actorship of FEN needs more discussion than can be provided in the frame of an article. One take on the question is

elaborated in Scheer (2004: §524), and a more evolved version is to appear in Scheer (forth).

7 Conclusion

Encoding the parametric variation displayed by type A and B languages in terms of the ability of FEN to license does not suffer from the problems mentioned in section 4. Vocalic and consonantal coda effects are monocausal: segmental reaction is due to the absence of licensing. Also, extensive allomorphy is not needed, and the Polish pattern whereby a consonantal coda effect occurs before an empty nucleus in a type A language is now harmless: coda effects are due to the inability of following empty nuclei to license in all languages, type A and type B alike.

Making FEN the vector of the parametric choice also promotes the genuine idea of Government Phonology, which was only half-heartedly applied in Standard GP: the parametric variation at hand is now a matter of a lateral relation, rather than of contrasting syllabification. This way of looking at parameters was introduced by Kaye (1990) (parametric licensing of FEN) and has been further developed by Charette (1991; 1992; 1998; 2003), Harris (1994), Scheer (1998; 2004: §426; 2006) Cyran (2001; 2003a) and Rizzolo (2002).

The solution proposed also responds to two requests that have been worked out earlier in this article: on the one hand, consonantal and vocalic coda effects should have the same causality and parameterization; on the other, the fact that the locus of variation is found at the edge of the word (rather than in internal position) is not fortuitous: it reflects the intervention of morphology, which can only target morpheme edges. On the account proposed, then, just as all other (internal) empty nuclei (patterns A and B), FEN are unable to license (pattern B). It is only upon extra-phonological intervention that they acquire the ability to license (pattern A).

As indicated by its title, the purpose of this article is to show what FEN are good for in a context where they have come under fire: Szigetvári (1999; 2001) and Polgárdi (1998; 2003) do away with them altogether (though for different reasons), while Piggott (1991; 1999) admits their existence, but only *à la carte* (i.e. in some languages). The foregoing pages may have shown the advantages of considering FEN the locus of the parametric variation that distinguishes type A and type B languages. This of course supposes their presence in all languages.

Notes

* This article has greatly profited from four anonymous reviews. It was originally written in 2003, but the final revision was only made in October 2007. In the meantime, Scheer (2004) has been published, which features an extended version of the original text (§524). The present article is thus a revised version of the book chapter which, on account of the anonymous reviews, tackles the question of what the actual Standard GP attitude regarding consonantal effects of pattern B is.

1. See the evidence for example in Ewen & Hulst (2001: 123ss), Kaye (1989: 70ss), Carr (1993: 198ss), Roca (1994: 134s), Goldsmith (1990: 103ss), Lass (1984: 250ss), Blevins (1995: 209).
2. Note that the lateral combines with the preceding consonant after syncope in case a good branching onset is produced (*fab(u)la* > *fable*), but ends up in post-coda position when the result does not allow for the constitution of a solidary cluster (*mer(u)lu* > *merle*). Glosses (of the French part): #__ 'blade, to lift, moon, rabbit'; C__ and C.__ 'wound, flower, fable, blackbird'; V__V 'sail, mule, pain, to be worth'; __# 'salt, honey, thread, horse'; __C 'dawn, mole, thumb, to weld'. Spelling in internal codas: Modern French <au> is [o] and represents the merger of former [aw], which is still visible in Occitan. Modern French <ou> is [u] and results from the merger of former [ow]. In all cases, thus, the modern (vocalized) representative of Latin <l> in spelling is <u>.
3. "R" is shorthand for sonorants, "T" for obstruents, and "RT" refers to coda-onset sequences (hence subsumes RT, TT and RR). Glosses (left-to-right, up-down): '1) stare, bad weather, comb, estate, roof; 2) halibut, better, half, two, head; 3) opportunity, April, severity, I get, torment'.
4. Glosses (left-to-right, up-down): '1) salt cellar, salt, to salt; 2) who is silent, lime, trousers; 3) suitcase, badly, nasty; 4) mule, South, furrow; 5) town, mean, filter'.
5. Data from Kaye (1990) (Turkish), Scheer (2006) (Czech), Taki (1995) (Classical Arabic). Glosses (left-to-right, up-down): '1) curiosity NOMpl, id. possessive, id. NOMsg; 2) cow NOMsg, diminutive NOMsg, GENpl; 3) say ipf act 1sg, id. ipf act 2pl fem, imperative 2sg masc'.
6. E.g. Hall (1992: 122ss), Rubach and Booij (1990). Scheer (2004: §339) provides an overview of extrasyllabicity in phonological theory.
7. The internuclear relation at hand was left unnamed in Kaye (1990). Yoshida (1993) identifies it as government-licensing; Kaye (1995: 299-300) agrees.
8. Structuralism allowed for juncture phonemes inside morphemes (e.g. Harris' 1951: 87s analysis of final devoicing in German: the identity of *Teil* "piece" is

/d#eil/, and "final" devoicing then applies to /d/ before #). The historical development of morpho-syntactic intervention inside morphemes up to the present day consensus is described in Scheer (forth).

9. Words appear in spelling and are followed by IPA transcriptions. Glosses (left-to-right): "horse NOMsg, of the horse (adj), horse GENsg, rogue NOMsg, of the rogue (adj), rogue GENsg, meanness NOMsg, id. GENpl, shame NOMsg, id. GENpl, to dance (inf), dance (2sg imperative), dance NOMsg, id. GENsg, to finish (inf), finish (2sg imperative), finish NOMsg, id. GENsg".
10. There is a tendency in GP to reject diachronic evidence out of hand. The argument goes that we cannot control what has really happened between stage X and Y, hence this uncontrolled area may have contributed critical elements to the output, which then bias the analysis. For one thing, GP practitioners that reject diachronic data often do not observe the ban on diachrony themselves. For example, any kind of comparison between dialects should be forbidden since the only thing that unites them is a common ancestor. Also, the study of diachronic evidence over the past 150 years or so has shown that what is met in this area (objects and processes) is not really different from what is encountered in synchronic variation. Not to mention the task of telling synchronic from diachronic processes. Be that as it may, a consequence of the ban on diachronic evidence, were it applied, is that monomorphemic clusters are lost for phonological analysis forever (Harris 1994: 165 is explicit on this). Since they are not subject to any alternation due to morphological activity, nothing but their eventual origin proves that something has happened to them: Braz. Port. *ca[w]sa* could just be /cawsa/, while *sa[w]* and *sa[w]-gar* could be /sałø/ and /sałø-gar/, respectively. The only synchronic process, then, would be the regular type B vocalization before empty nuclei. This is obviously not what happened diachronically, but that fact would be irrelevant.
11. This notion is explained in his footnote 95: in Lardil (native Australian), both internal codas and word-final consonants are restricted to coronals; the former, however, admit only coronal sonorants, while coronal stops are also found in the latter. The denial of the existence of pattern B runs through the entire GP literature; examples are Gussmann (2002: 106), Gussmann and Harris (2002: 21ss) and Harris (1992: 6; 1997: 324). Harris (1997: 324) writes: "Assumption (12a), that a word-final consonant occupies a coda, sits uneasily with the observation that this position systematically fails to display characteristics associated with codas which can uncontroversially be identified as occurring word-internally".
12. Two anonymous reviewers mention another way out for GP when it comes to the reduction of the coda context __{#,C} to a non-disjunctive statement. Reference could be made to "positions that are not directly licensed by a filled nucleus". Rather than a positive identity ("things happen in positions that have property X"), this is a negative solution: "things happen in positions that do not

have property X". For one thing, negative statements are unwarranted and artificial when phonological processes make positive reference to the environment at hand: this is massively the case for the coda context. But also on this count, the disjunctive character of the coda context in a linear SPE environment could also be discussed away: items concerned are "consonants that are not followed by a vowel" (with a proviso regarding the sonority slope of CC clusters, which is needed anyway for the formulation of the basic __{#,C}). If negative and positive statements are equivalent, the history of phonology will have to be rewritten: the argument in favor of autosegmental structure that builds on the coda disjunction would turn out to be vacuous. This perspective cannot be seriously entertained; only a positive description of disjunctions captures the fact that the positions at hand are phonologically active (see Scheer 2004: §556).

13. Work in CVCV includes Bendjaballah (1999), Cyran (2001; 2003a,b), Rowicka (1999), Szigetvári (1999; 2001; 2007), Polgárdi (2002; 2003), Scheer (1999; 2000; 2004), Ségéral and Scheer (2001; 2005), Szigetvári and Scheer (2005).
14. To be precise, except the first member of *tl*, *dl* (*atlas*), *ks* (*text*) and non-homorganic NC clusters (*seemed* [siimd]).
15. If TR clusters, i.e. classical branching onsets, also enclose an empty nucleus (i.e. identify as /TøR/), the definition needs to be refined: in Scheer (1999; 2004: §14) I argue that empty nuclei in TøR clusters are silenced not because they are governed, but because of a lateral relation contracted by the flanking consonants (Infrasegmental Government). A coda consonant, then, occurs before a *governed* empty nucleus. Another option is to consider TR clusters monopositional, i.e. a kind of affricate. This position is held by Lowenstamm (2003) for all languages with concatenative morphology (i.e. which are not of the Semitic kind). Ségéral & Scheer (2005) argue for a possible affricate status on a case-by-case basis: some TR clusters (e.g. in French) behave as anything but single consonants and therefore must be bi-positional.
16. The confusion at hand is discussed at length in Scheer (2004: §136). The status of coda consonants in terms of the Coda Mirror is more complex than what can be reported here. More detailed discussion is available in Ségéral & Scheer (2001; 2005), Scheer (2004: §110; forth).
17. As in Standard GP, TR clusters may of course be analyzed as non-solidary /TøR/ if there is good reason to do so (as in Semitic for example, or in Turkish heteromorphemic TR clusters for that matter). Also, the precise representation of long vowels in CVCV is not relevant for the present discussion (Scheer 2004: §220 provides full discussion). It is enough to understand that just as in Standard GP, vowels can only be long if they are licensed.

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