

Bidirectional government in strict CV Evidence from English*

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0 Introduction

According to the approach adopted in this paper, phonological and syntactic structures are subject to the same set of principles. The framework is now widely referred to as Strict CV phonology, initiated by Lowenstamm (1996) and developed in various other works, e.g. Lowenstamm (1999), Rowicka (1999), Dienes & Szigetvári (1999), Szigetvári (1999), Dienes (2000), Csides (2001, 2002), Ségéral & Scheer (1999), Scheer (1998, in prep). It must be emphasised, though, that Strict CV phonology is a radical offspring of Government Phonology (GP), initiated by Kaye, Lowenstamm & Vergnaud (1985, 1990), Kaye (1990), Charette (1990), Harris (1990). The theory was further developed and applied to a massive number of languages by – among others – Harris (1992, 1994, 1997), Harris & Gussmann (1998), Brockhaus (1995a, b), Törkenczy (1992), Szigetvári (1994), Cyran (1997), Gussmann (2002), Polgárdi (1998), etc.

In section 1 we will argue against traditional assumptions concerning phonological constituency, tracing the career of the syllable in phonological theory. Section 2 deals with VCV sequences in the light of structural relations proposed to replace traditional syllabic constituents. Section three revisits Csides (2002), and introduces the notion of bidirectional government in phonology along with a distinction between governing relations contracted in the lexicon on the hand, and post-lexically on the other. Section 4 concludes the paper summing the proposals.

1 The rise and fall of the syllable in Generative Phonology

In the following subsections we sketch the development and the demise of the syllable in generative phonology, starting with its 'rise' in classical Generative Phonology, followed by an outline of the basic assumptions of Standard Government Phonology (GP) in 1.2. 1.3 traces the main motivations for getting rid of syllabic constituents.

1.1 The rise: classical Generative Phonology

In SPE (Chomsky & Halle 1968) the concept of syllable enjoyed no theoretical status and phonological generalisations were captured in terms of the re-write rule format.¹ The reason for this was threefold: firstly, finding a uniform phonetic correlate that would correspond to the notion syllable proved to be elusive. Secondly, the shape of possible syllable types is variable from language to language. And thirdly, units larger than a segment were considered to be morphological in nature.

From the mid seventies to the late eighties a radical shift in focus occurred from rules to representations starting with the study of tone languages, Goldsmith (1976), metrical systems, Liberman & Prince (1977), Hogg & McCully (1987), Halle & Vergnaud (1987) and syllable based generalisations Kahn (1976) etc.

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¹ The binary feature [+/-syllabic] employed in SPE separates vowels and syllabic sonorants from all other segments. Therefore, it remains a segmental feature and does not identify the syllable in its entirety.

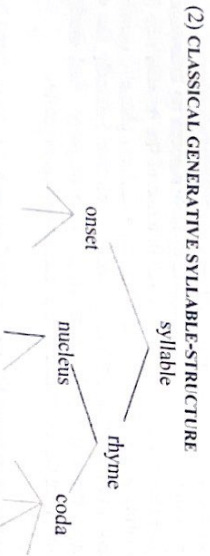
Kahn (1976) claims that a number of generalisations are more elegantly captured if the theoretical notion of syllable is recognized. He claims (1976:20) that 'there exists on the phonetic level, a well-defined unit of perception and production larger than the segment and smaller than the word' and furthermore, that 'this unit plays a very significant role in conditioning distributional statements, sound changes, synchronic phonological rules'. In order to convince the reader Kahn quotes Lightner (1972:333), who observes that rules of the type involving the context in (1) below are common, but C and # do not form a natural class, they involve no common features.

$$(1) \quad \left\{ \begin{array}{l} C \\ \# \end{array} \right\}$$

Kahn rejects Lass' (1971) and Lightner's (1972) proposals to modify the feature system such that the class of consonants and the # boundary would form a natural class because there is no articulatory acoustic/evidence for imposing such features on #. Moreover, a universal set of segmental feature specifications for word-boundary is unrealisable since in English alone there exist both [C, #] and [V, #] rules. Further arguments for not treating boundaries on a par with ordinary phonological segments include the fact that word-boundaries do not appear in focus position in phonological rules. Treating segments and word-boundaries alike would open up the possibility of writing rules that change feature specifications on boundaries.

Kahn (1976:38) introduces a universal convention of syllabic association, which I do not quote here². Kahn has two sets of 'syllabication' rules for English: one for slow speech and another for faster or normal speech, which modifies syllabic structure established during the course of core syllabification in a well-defined way by introducing additional lines of association. Rules capturing phonological generalisations are sprinkled among the syllabification rules proper or ordered after them.

The standard generative format of the (English) syllable that resulted in the wake of Kahn's theory is to be found in, e.g., Lass 1984:252, Durand 1990:204, Giegerich 1992:138, Carr 1993:196, Kenstowicz 1994:253, Roca 1994:141, Blevins 1995:213 and is shown in (2) below.



The works cited above all argue for the necessity of the syllable in as much as they provide a domain for segmental phonological generalisations, rules, constraints, and it is claimed that weight sensitivity of stress systems is more insightfully captured when reference is made to it. Furthermore, many processes were taken to operate in order to

² The interested reader is invited to consult Kahn's original work.

ensure that strings are parsable into well-formed syllables, and some claim that native intuitions also underpin the desirability of the concept.

Several types of syllabic structures have been recognised by authors of various theoretical standing; e.g., a flat structure is argued for by Kahn (1976) and Clements & Keyser (1983), a moraic layered structure by Hyman (1985), strict binary branching of the N-bar kind by Kenstowicz (1994: 253).

Parallel to Kahn, theoreticians investigating phenomena related to stress also criticised the linear, SPE-type approach to phonological processes and strengthened the legitimacy of the syllable as a theoretically desirable, even indispensable construct. Liberman & Prince (1977), Hogg & McCully (1977), Hayes (1982) argue that the re-write rule format fails to capture the generalisation that quantity-sensitive stress systems like English need to make reference to the rhyme. Moreover, they argue that generalisations – like the minimal word constraint in English – which had earlier been captured in terms of morpheme structure conditions, are more insightfully characterised by claiming that the minimal English (content) word must consist of at least a heavy rhyme.

The study of phonotactics and sonority sequencing gave further impetus to the recognition of the syllable. Selkirk (1984:116), e.g., claims that 'in any syllable, there is a segment constituting a sonority peak that is preceded and/or followed by a sequence of segments with progressively decreasing sonority values.'

A number of sonority scales – some universal, some language-specific – have been argued for ever since, all based on different syllable shapes across languages. There have been arguments for deriving such scales in terms of features (Clements 1990), or structurally in terms of unary primes: KLV (1990), Harris (1990, 1994, 1997), Anderson & Ewen (1987). A couple of additional principles of phonology gave further justification for the connection between segment internal organization and syllable shape. The Sonority Dispersion Principle (SDP), Clements (1990), and the Onset Maximisation Principle (OMP) joined Sonority Sequence Generalisations (SSG) in determining possible syllabification and phonotactic constraints.

In the standard generative format, Lass 1984, Anderson & Ewen 1987, Durand 1990, Goldsmith 1990, Giegerich 1992, Carr 1993, Kenstowicz 1994, Roca 1994, Blevins 1995, for example, the length of onsets and codas is rather flexible, syllabification is thus not a trivial procedure. In the vast majority of the works cited above, it is further assumed that the set of word-initial clusters is coextensive with that of legal onsets and the set of word-final clusters coincides with legal codas. Kahn (1976), Blevins (1995). Another tacit assumption behind the standard generative approach to syllabic organisation is the Adjacency Hypothesis, i.e., that surface adjacency necessarily leads to adjacency at all levels of description.

However, Clements (1990) observed that the preferred initial demissyllable maximises the dispersion in sonority, while the preferred final demissyllable minimises the dispersion in sonority. Maximisation of sonority dispersion means that members of the demissyllable are evenly distributed on the sonority scale, i.e., an ideal initial demissyllable is an obstruent followed by a vowel. Minimisation of sonority dispersion means that it is best not to have a coda at all or have very sonorous

segments in it. The OMP is a derivate of the Sonority Dispersion Principle (SDP); it is preferable not to have a coda and also to have an onset and thereby a large, or at least some, sonority distance in the onset-nucleus sequence.

The above-mentioned principles may also lead to conflicting possible analyses. For example, in the case of a sequence like *alla* both the SDP and the OMP dictates *alla*. English, however, syllabifies the sequence as *al.la* since /l/ is not found word-initially and so it cannot be a branching onset. Furthermore, /l/ behaves differently before /l/ and /r/ (e.g. with respect to glotaling). The worst possible parsing is *al.la* as it violates the SSG, the SDP and the OMP at the same time. A natural conclusion then is to abandon the adjacency hypothesis since it ultimately results in dispreferred syllable structure, awkward contacts and an unbelievable complexity and number of syllable types. The price to pay for these simplifications is allowing a tiny bit of abstraction into our model.

1.2. On the decline: standard Government Phonology (GP)

KLIV (1990), Kaye (1990), Charvát (1990, 1991), Harris (1990, 1992, 1994, 1997), Ryan (1998), Brockhaus (1995), Törkency (1992), Szigetvári (1994), Kiss (1997), Kúri (1999) and Gussmann (2002), among others, subscribe to a view that the syllable per se plays no significant role in capturing phonological generalisations.

Although there are syllabic constituents in the framework, there is no independent syllable node since there is no evidence for it, cf. Kaye (1990), and the syllable does not participate in prosodic processes, cf. Takahashi (1993). The fact that in general any well-formed onset may be followed by any well-formed rhyme further undermines the viability of an independent syllable node and is referred to as the principle of free co-occurrence by Kaye (1995).

Harris (1994:42) notes that phonological phenomena are adequately characterized in terms of constituent structure but also that these phenomena make no reference to the syllable node. Moreover Harris (1994:45) claims that 'the quantity facts support the onset-rhyme dichotomy but are silent on the question of whether it is necessary to recognize the syllable as an autonomous constituent'. He also adds that 'in fact none of the phonological phenomena need make reference directly to the syllable node'.

Another argument against the syllable as an autonomous level of linguistic description comes from the fact that in classical generative phonology word-edges were believed to coincide with syllable margins and well-formed phonological words were claimed to be segmentable into well-formed syllables. If, however, syllable structure and word structure coincide so neatly, then either one or the other is absolutely superfluous as a domain of phonological generalisations. This takes us to the famous duplication problem of Occam's razor. Since there is independent morpho-syntactic motivation for word-structure in the form of morpheme structure conditions, it is quite obvious which one of the two must be banished from the phonological vocabulary.

Furthermore, subsequent research into phonotactics has shown that the traditional stance of equating word-structure with syllable structure is untenable anyway, since segmental sequences occurring word-marginally and word-internally do not coincide. One notorious case involves *sC* clusters, cf. Lowenstamm (1981:598). For example,

the conflicting stress pattern in English *Alaska asphaltista* vs. *industry minister* shows that the syllabification of such clusters is not at all trivial. Italian open-syllable lengthening *vīna* as opposed to *vīna. vīsta*, French closed syllable adjustment, e.g. lengthening *vīna* as opposed to *vīna. vīsta*, all seem to support the view. Spanish epenthetic *e* in *extradio* (cf. Italian *stadio*), all seem to support the conclusion that *sC* sequences do not form a branching constituent. This conclusion is further strengthened by the phonotactics of coda-onset type voice assimilation characteristic of *sp. st. sk*, the unprecedented distributional freedom in the second position of *sC* clusters, and also by the fact that *s* blatantly upsets sonority sequencing of any flavour. The homorganicity of *sl* and *sr*, e.g., and the distribution of the complex expression *fur/* in English again bolster the view that *s* is not a very welcome guest as the first member of a branching onset.

These observations have increasingly convinced phonologists to abandon the native view that syllable-initial and word-initial clusters are coextensive. The available phonological evidence suggests that syllable-initial consonants are possible word-initially but the reverse generalisation does not necessarily hold. That is, not all word-initial clusters automatically qualify as sound branching onsets.

As for rhymes, it must be mentioned that the main phonotactic interaction between the nucleus and the following consonant is roughly that of length restrictions. Harris (1990) points out that there are very few qualitative phonotactic restrictions that apply to VC clusters within the rhyme. We find a couple of qualitative restrictions in this context, though, also noted by Szigetvári (2000). For example, no non-coronal clusters is possible after [au] in English, cf. Harris (1990); no non-round vowels may occur before word-final labial nasal+stop clusters in Hungarian, cf. Törkency (1994:338); only [a] is possible before a word-final lateral liquid + palatal stop cluster in Hungarian, cf. Sipár & Törkency (2000). It is generally assumed that the vast majority of such VC restrictions is the result of historical coincidence and cannot be pinned down to any deep-seated phonological generalisation.

There are, however, fairly strong phonotactic dependencies between members of a branching nucleus. Harris (1994) points out that melodic material associated to long vowels is lexically lodged into the left-hand position whence it spreads into the second (rightmost) position. Furthermore, the distributional possibilities in the second position of heavy diphthongs are tightly constrained: in English, for example, only the three off-glides may occur in this context. These two observations mean that the first (dominant) skeletal position of the nucleus reduces the set of possible choices in the second.

Just as the concept of 'syllable' is reduced to the status of an informal label in GP, so does the 'coda' qualify only as an informal label for the post-nuclear portion within the rhyme. Since it never branches, it may not be viewed as a constituent, but forms a governing relation with the following onset consonant. If there is no such onset consonant, the coda position is rendered illegal according to the Coda Licensing Principle, cf. Kaye (1990). According to Harris (1994), in an optimal coda-onset cluster, the first consonant is no less sonorous than the second, and a typical coda-onset cluster displays a falling sonority profile. Furthermore, in a prototypical coda-onset cluster the identity of the second consonant (partially) determines the identity of the first, cf. the case of nasal plus obstruent clusters in, e.g., Kiss (1997).

By recognising the possibility of empty positions on the skeleton, GP opens up the way of analysing consonantal sequences in more than one way. On the one hand, real clusters are claimed to be adjacent both lexically and also at the level of phonetic interpretation. The other possibility is analysing them as non-clusters at the lexical level. Such structural entities are referred to as 'bogus' clusters by Harris (1994), and can be exemplified by *θ*, as in *athlete, catholic* etc. The primary motivation for such onset plus onset sequences is lack of phonotactic interaction between the parties of these surface adjacent consonant sequences. Another motivation commonly invoked in favour of this analysis is the fact that the empty skeletal position deployed in between members of a bogus cluster frequently serves as a site for vowel-zero alternation.

Having made a short excursus on why the syllable is not a serious candidate for official recognition in GP, and having seen some arguments for the possible 'sub-syllabic' constituents, let us summon further arguments against the simplistic view that word margins and 'syllable' margins necessarily coincide.

Turning first to word-final position, one may wonder why not all consonants that may turn up before other consonants word-internally may also turn up word-finally. It is enough to mention but Italian, where there are word-internal, pre-consonantal consonants but no word-final consonants at all. The opposite situation also obtains, this time in English, where, e.g., possible final consonants often may not occupy word-internal, pre-consonantal position, cf. /θ/ and the affricates. Furthermore, Hayes (1982) and Hogg & McCully (1987) observe that word-final consonants do not count for syllable heaviness in the English Stress Rules for verbs, and label the phenomenon 'consonant extrametricality'. Final consonants are also observed not to cause closed-syllable shortening, which also suggests an extra-rhymal position for them. Such extra-rhymal segmenting earned the label of 'extra-syllabic' consonants in syllable-oriented frameworks. The tacit uneasiness of researchers in the urge of finding a theoretically feasible place of abode for word-final consonants have led to the creation of terms such as 'extraprosodicity', embracing both extrametricality and extrasyllabicity. Standard GP has decided to go a step further, unintentionally giving the first serious blow to constituency by denying the codahood of final consonants. This decision is based on the well-founded assumption that extraprosodicity misses the generalization that word-final consonant clusters in English are – with a few exceptions – the same as intervocalic coda-onset clusters. Harris (1994:74), for example, observes that if the second of a two-member word-final CC is made extraprosodic then the grammar duplicates the phonotactic statements on VC, CV and VC<C># clusters.

The stipulative nature of the claim that syllable boundaries coincide with word-margins can be illustrated with the interesting observation made by Szigetvári (2000), namely that nobody seems to protest that, in general, foot boundaries do not coincide with word boundaries. Why should word-boundaries then coincide with syllable boundaries? Moreover, already in classical syllable-based approaches the onset and the coda could be empty but the nucleus could not since it was assumed to be the head of the syllable, and headless syllables were considered to be structural freaks. Interestingly, at other levels of phonological analysis headless feet and headless segments have both been recognized. As we shall see later, empty consonantal

positions will also be recognized in the theory we put forward here and they will facilitate the description of liaison phenomena.

There is also a theory-internal reason for recognizing degenerate syllables alongside degenerate feet. Vowel-zero alternations of the /jæm/alt//jæm/ type and suffixation of the *shage* – *shaping* type would all involve resyllabification during the course of the analysis violating monotonicity and ultimately the projection principle, a basic tenet of GP.

The excessive generative power of a theory having syllables of an unlimited size also prompted a reaction, and ultimately convinced a sizeable portion of the phonological community that the rejection of empty categories is based on tradition rather than argument.

As Harris (1994) points out, however, empty skeletal positions may not be used as convenient 'phonological seasoning' that can be 'sprinkled over representations' whenever the need arises. The deployment of empty positions must be severely constrained. In order to provide such a tool for licensing empty nuclei, KLV (1990) propose the Empty Category Principle (ECP). Below we give Kaye's (1995:295) formulation of the phonological ECP in (3). This is followed by the definition of proper government in (4) taken from the same source.

(3) **EMPTY CATEGORY PRINCIPLE - KAYE (1995:295)**

- A melodically empty skeletal position remains unpronounced if*
- properly governed*
 - domain-final (parametric)*
 - enclosed within an onset-to-onset governing domain*

(4) **PROPER GOVERNMENT - KAYE (1995:295)**

- A nuclear position α properly governs a nuclear position β iff*
- α is adjacent to β on its projection*
 - α is not itself governed*
 - no governing domain separates α from β*

As can be seen, the phonetic interpretation of empty positions depends largely on syntagmatic relations. In fact, one of the ambitious goals of this paper is to reduce the three clauses of the phonological ECP to a single one. Furthermore, the formulation of Proper Government will also be radically simplified and will be shown to be subject to the same set of principles as Metrical Government.

Domain-final empty nuclei are licensed by the second, rather stipulative clause of the ECP in GP. One of its tasks is to express the conviction that domain-final consonants are not syllabified into a coda position. In classical generative phonology syllabifying word-final consonants into codas seemed rather feasible. According to Ito (1986) and Goldsmith (1990) word-internal codas and word-final consonants are weak prosodic licensors since they allow consonant weakening alike.

Kaye (1990:323) claims that having word-final empty nuclei is distinct from having codas, since the two parameters he proposes produce a cross-classification of language types. Some have codas only medially like Italian, some only word-finally

Like Luo, others have them at both locations (English) or neither (Zulu). The existence of four groups of languages provides further evidence for denying the coda status of word-final consonants. Government Phonology thus reduces the cases where consonants are syllabified into the coda and this is entirely in line with the general view that onsets are to be preferred over codas. These observations take us directly to the question of whether or not the coda exists. Since the optimal final demisyllable is one without a coda, it would come as no surprise if we discovered that codas are not legitimate theoretical entities. If some of the clusters are regarded as coda-onset sequences, while others are treated as bogus clusters, there will be indeterminacy as to how the cluster should be syllabified. Nothing will exclude the syllabification of *allia* as *a/lla*, i.e. there will be no way of knowing whether a cluster that satisfies melodic criteria for coda-onset clusters is to be analysed as coda-onset or as an onset-cluster unless melodic criteria are taken to be solely decisive. Another criterion generally invoked is that of syncope, i.e. clusters hosting a vowel-zero alternation site are by definition regarded as bogus clusters. Even more intriguing is the fact that although some clusters are never broken up by an 'epenthetic' vowel, they may only occur word-medially but not marginally. Moreover, the fact that the vast majority of English syncope-created clusters melodically resemble branching onsets shows that a simplistic criterion relying solely on melodic restrictions is simply untenable.

The least one can say is that the theoretical status of codas has been seriously challenged in Government Phonology and markedness universals indicate that this 'constituent' is very much disfavoured by natural languages. The very marked nature of 'codas' may be further illustrated by the observations formulated in (5) below.

(5) THE MARKEDNESS OF CODAS

- (a) onsets are obligatory in some languages and are never impossible
 (b) codas are never obligatory and in some languages may be impossible

In what follows, I will argue against almost all the principles of standard GP: against strict directionality of government, against strict adjacency, against syllable constituents, against binary branching, and will try to reduce the three different clauses of proper government to a single clause. The framework that will ultimately emerge from the discussion in the following sections is based on a fundamental principle of grammar, that of complementary distribution. We will assume – as a working hypothesis – that the governing potential of nuclei is distributed in a complementary fashion amongst different types of vocalic positions on a strict CV skeleton. These different vocalic positions will be able to target different types of consonantal and vocalic position again in a complementary manner. Furthermore, government will be shown to be bidirectional along with the proposal that there is no difference in the mechanisms that regulate metrical government and proper government respectively.

1.3 The fall: Strict CV, a theory of 'syllable unstructure'³

In this section we adduce further arguments against recognising the syllable as an autonomous constituent in phonological parlance. We introduce the basics of Strict

CV Phonology (henceforth, simply CV) initiated by Lowenstamm (1996) and further developed in various works.⁴

As Szigervári (2000) points out, Strict CV-Phonology, cf. Lowenstamm (1996), turns the preference of the SDP into a constraint since in this framework all 'syllables' have an onset but no coda. If the original Kahnian type of arguments for the coda constituent – that of unifying the contexts that pattern together in phonological phenomena – can be expressed in an alternative manner then no viable argument remains for codas. The concept then, remains a shorthand label like *sentence* in syntax, cf. Szigervári (2000). If, however, the term *coda* is swept out of the technical vocabulary, then it makes no sense to talk about onsets either, since onset-nucleus sequences can just as well be referred to as CV sequences. Consider the representations in (6) below.

(6) HEAVY AND LIGHT SYLLABLES IN CV			
a. light syllable	b. heavy syllable	type I	c. heavy syllable
		type II	
C V	C V C V	C V C V	C V C V
α β	α β γ	α β γ	α β γ

The net result of the new approach is that the formulation of the distinction between heavy and light 'syllable' is considerably simplified to the claim that light syllables consist of one, whereas heavy syllables consist of two CV pairs. It also immediately answers the long-standing question of why onsets do not add to syllable weight: since rhymes do not exist, they cannot contribute to weight either. In the realm of English stress assignment, consider the representations in (7) below.

(7) STRESS ASSIGNMENT IN ENGLISH

C V C V C V C V	C V C V C V C V
A m e r i c a	a g e n d a
C V C V C V C V	C V C V C V C V
a r e n	n a

It is obvious from the representations above that – counting empty vocalic positions, too – stress falls on the antepenultimate vocalic position in all the three items. Note that the minimal word-constraint that could earlier be captured only by a disjunction⁵ becomes trivial to express in CV, by claiming that it is at least two CV pairs that may qualify for the status of a minimal content word in English. This necessity may be connected to stress since all content words must have a primary stressed vowel. Stress, however, expresses prosodic prominence reflected in the position's duty to

⁴ These works include, e.g. Lowenstamm (1999), Segéral & Scher (1999), Scher (1998a, 1998b, in prep), Rowicka (1999), Dienes (2000), Dienes & Szigervári (1999), Szigervári (1999, 2000), Balogré (2002), Csides (2000), (2002), Csan (2003), and others.

⁵ Notice that the notion of 'heavy rhyme' also conceals a disjunction, viz., in a heavy rhyme either the nucleus or the rhyme node must branch.

³ The Orwellian Newspeak term 'syllable unstructure' is due to Tobias Scher.

exert its governing potential on another vocalic position. Consider the representations in (8) below.

(8) THE MINIMAL WORD CONSTRAINT IN ENGLISH



As can be seen in (8a) and (8b), the minimal word constraint in English may be reduced to the claim that a minimal English word must contain a governor vocalic position. A governor vocalic position must exert its governing potential on a neighbouring vocalic position. It has two possible choices: either it governs an available full vocalic position (8b), or a following empty vocalic position keeping it silent (8a). In other words, there must be at least one governing relation in a minimal English word.

Lowenstamm (1996:12-13) discusses the issue of closed syllable shortening and comes to the conclusion that the ungrammaticality of *[ka:ɪpɪ] and the grammaticity of [kaɪpɪ] lend themselves to an easier explanation if the Strict CV framework is adopted. (Consider the representations in (9) below.

(9) CLOSED SYLLABLE SHORTENING



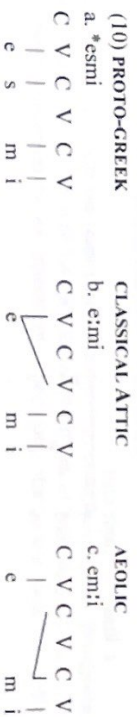
According to Lowenstamm, the second vocalic position of a long vowel is devoid of any melodic content. In order for the second vocalic position to be phonetically interpreted, the melodic content specified in the first position must propagate into the second. The target of spreading – in this framework – must be licensed by proper government, and only right-to-left proper government is possible in Lowenstamm's framework. That is, spreading of melody into the second vocalic position of a long vowel is possible only if the target of spreading is followed by a full vocalic position because only full vocalic positions are able to properly govern. There is, however, a serious theory internal problem with this proposal related to the interpretation of the effects of proper government. More specifically, the phonetic correlate of proper government becomes indeterminate under this proposal, and it suggests that proper government may be invoked whenever the need arises. This is so because the phonetic interpretation of a governed empty vocalic position is silence. Proper government was originally proposed to license empty nuclei, i.e., to legalise the existence of marked vocalic positions. Now, if we are to accept Lowenstamm's idea that proper government may also be invoked to make an otherwise empty vocalic position audible, the phonetic interpreter will find itself in a desperate situation when trying to make sense out of an empty vocalic position hit by proper government. As a result of these observations we will take an alternative route in trying to explain

phenomena related to closed-syllable shortening. Our proposal will be very much like that of Rowicka (1999), and will constitute one of the arguments for the adoption of bidirectional government in phonology.

Szigetvári (2000) also notes that the rhyme maximising analysis of closed-syllable shortening faces a serious challenge if seen as a dynamic process. First, it violates the shortening principle since a coda is not present in the lexical representation and thus projection principle during the derivation. If, however, we cannot create a coda may not be created during the derivation. If, however, we cannot create a coda position in a rhyme containing a branching nucleus, then closed syllable shortening cannot be motivated. This – as we shall see – may be overcome by the CVCV approach.

The CVCV analysis of closed syllables is not fully satisfactory, as it does not show that closed syllable shortening does not take place before any consonant cluster. Clusters created by syncope do not trigger closed syllable shortening, cf. *bakery* [ˈbɛkəri]: according to Lowenstamm's analysis, however, they should, since a coda-onset cluster is never distinguished from a bogus cluster in Lowenstamm (1996). Once again, no shortening applies in English before syncope sites, as is also evidenced by, e.g., *favourite* [ˈfævərɪt]. Furthermore, the occurrence of long vowels before a single word-final consonant, as in Hungarian *csók* [ʃo:k] 'kiss', will be very difficult to explain without resorting to arbitrary devices. Not only is Lowenstamm's account untenable on theory internal grounds but also it is descriptively inadequate.

Lowenstamm claims that abandoning syllabic constituency brings a welcome simplification in the analysis of compensatory lengthening phenomena when the loss of a consonant is made up for by the propagation of adjacent material. Consider the representations in (10) below: (10c) is easy to handle both in standard GP and in CV, (10b) will be problematic for a framework having codas of any kind. The examples come from Szigetvári (2000).



If compensatory lengthening is seen as a dynamic process, then the standard GP account of (10b) will have to switch the coda position for a nuclear position during the course of the derivation in order to accommodate the intruding vocalic material. This constitutes a violation of the projection principle, the possibility of which does not even arise in the CVCV approach.

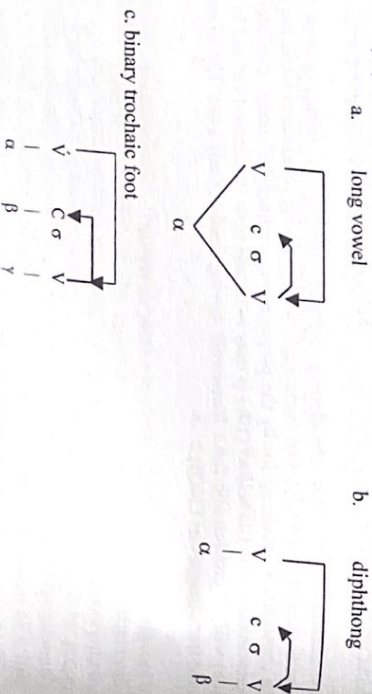
Notice that the rhyme has always been a source of uneasiness in GP, since it is the only constituent that does not exclusively dominate skeletal slots. KLV (1990) reject a branching nucleus within a branching rhyme, a structure that could only exist as a result of a violation of either strict directionality or strict locality in their framework. Harris (1994: 68, 82) relaxes the ban on superheavy rhymes in order to cater for words like *dainty*, *easter*, *basket*, *saint*, *post*, *wild*. All these complications highlight

that either one or the other cornerstone of GP syllabic structure applying to the rhyme constituent must be abandoned in order to attain descriptive adequacy.

The phonetic unity of long vowels has also been invoked as an argument for representing them as binary branching constituents. It must be emphasised here, however, that long (geminate) consonants do not share a constituent but they are parsed into a coda-onset sequence. Therefore, phonetic unity constitutes no argument for parsing long vowels into a branching constituent. Harris (1997) claims that all feet are minimally binary and that the word in many languages consists of a foot'. This suggests that [ataj], [atɛj], [a:ɛj] must all consist of a binary foot and no branching rhyme or nucleus is involved in the latter two examples. It must also be noted in passing that branching constituents are also considered more marked than non-branching ones, in other theories, too.

Theoretical uniformity also requires either the retention of constituency throughout syllabic chunks or the abandonment of constituency. This means that a CVC structure must be attributed to branching onsets, too. Branching constituents will thus be reinterpreted as non-branching consonantal and vocalic positions with structural relations between them. One possible way of representing long vowels, diphthongs and binary trochaic feet in this framework is given in (11) below.

(11) LONG VOWELS AND BINARY TROCHAIC FEET



The importance of the representations in (11) lies in the fact that long vowels, diphthongs and binary trochaic feet will receive a uniform representation.

Following the slow but steady demise of the syllable, the task remains to provide a system of structural relations holding between non-branching consonantal and non-branching vocalic positions on a bare skeleton. These structural relations are generally referred to by the terms *government* and *licensing*, taken over from standard Government Phonology (GP). However, these terms receive a new interpretation in the present paper, based originally on the proposal of Ségéral & Scheer (1999:20), quoted in (12) below.

(12) THE INTERPRETATION OF GOVERNMENT AND LICENSING

a. *Proper Government inhibits segmental expression of its target.*

b. *Licensing comforts segmental expression of its target.*

Dienes & Szigetvári (1999:5) take these proposals of Ségéral & Scheer to their logical conclusion and claim that consonantal positions host segments with consonantal properties, vocalic positions those with vocalic properties, thereby encoding the traditional notion of maximal sonority distance directly in the skeleton. Furthermore, they claim (1999:6) that the 'host of a segment also partly determines its melodic interpretation'. Szigetvári (1999:56) argues that the interpretations in (13) should be attributed to vocalicness vs. consonantalness respectively.

(13) INTERPRETATION OF CONSONANTALNESS AND VOCALICNESS

Vocalicness is loud: V slots of the skeleton aim at being pronounced.

Consonantalness is mute: if nothing intervenes a C position will remain silent.

According to Szigetvári (ibid) 'C positions are not normally left silent because the lexical association of melodic material to a C position means external influence, which normally overrides the slot's inherent affinity to silence'. Szigetvári (1999) also introduces a new definition of government roughly as follows:

(14) DEFINITION OF GOVERNMENT

Government spoils the inherent properties of its target. A governed C position loses its inherent muteness, it loses its structure properties and becomes louder, that is more vowel-like, more sonorous, it undergoes vocalic lenition, whilst a governed V position loses its inherent loudness and becomes silent.⁶

Furthermore, Szigetvári (1999:65) argues that it is an inherent property of vocalic positions to govern and license unless they suffer some unfavourable external influence. Government is seen as a form of external influence and thus a governed vocalic position loses its licensing and governing capacity.

It must be noted here that the term *government* will be used in this sense throughout the present paper. Licensing will have a sole function, that of legalising the existence and phonetic interpretation of consonantal positions that occur before vocalic positions.

These two forces thus regulate syntagmatic relations that replace earlier arboreal configurations and affect the phonetic interpretation of melody occurring under the skeleton.

2 Structural relations & Proper Government

In 2.1 below we present a discussion of Dienes & Szigetvári (1999), Szigetvári (1999) and Dienes (2000), concentrating on CODA MIRROR PLUS as it relates to VCV sequences. The representational issues relating to different types of consonant clusters will not be discussed in this paper since it would take us far afield. In 2.2 we consider trochaic proper government based on the proposal of Rowicka (1999). In that section we propose that the stipulative clause making the direction of proper government right-to-left does not necessarily have to be maintained. Based on a number of

⁶ We will later make a distinction between relative silence and absolute silence.

observations, we will argue that Rowicka's (1999) insight that proper government may well be taken to operate in the opposite direction, is not at all unfounded. This section will provide the backdrop to further discussion of government in section 3.

2.1 VCV sequences

The greatest theoretical achievement of Ségéral and Scheer (1999) is that they are able to unify the effects of proper government as a force applying to both vocalic and consonantal positions. However, Szigetvári (1999) points out that despite its achievements, the theory of CODA MIRROR⁷ predicts lenition in both foot-initial and foot-internal intervocalic positions. However, it is by now a phonological commonplace that foot-initial lenition in the majority of languages including English.⁸ In order to express this fact Szigetvári (1999:79) introduces the ANTIPENETRATION CONSTRAINT given in (15) below.

(15) ANTIPENETRATION CONSTRAINT

Government cannot penetrate a stress domain.

Notice that since Dienes & Szigetvári (1999) – henceforth D&S (1999) – repartition the skeleton into VC units, a stress domain – in their theory – begins with a stressed vowel and extends up to the next stressed vowel, where stressed vowels include tertiary stresses. The constraint is essentially designed to account for the lack of pretonic syncope and foot-initial lenition in English and precludes stressed vowels from being able to govern from right-to-left into a preceding stress-domain. However, since all types of government are right-to-left in D&S (1999), they could just as well claim that stressed vowels are unable to govern. They do not, however, make such a strong claim, probably because it would – in their framework – cause a problem for initial edge-marking empty vocalic positions, introduced by Lowenstamm (1999). More precisely, an initial empty vocalic position followed by a contentful consonantal position does not constitute a stress-domain in D&S (1999), and may therefore be silenced by a following stressed vocalic position. In order to illustrate the problem, consider the representations in (16) below.

(16) a. (atom)	b. (at)(omic)	c. vT(om)
$\begin{array}{c} \overline{\text{V}} \\ \text{C} \Leftarrow \text{V} \\ \\ \text{æ} \end{array}$	$\begin{array}{c} \text{V} \\ \text{C} \Leftarrow \text{V} \\ \\ \text{æ} \end{array}$	$\begin{array}{c} \text{V} \\ \text{C} \Leftarrow \text{V} \\ \\ \text{æ} \end{array}$
$\begin{array}{c} \text{C} \\ \\ \text{t} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{t} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{t} \end{array}$
$\begin{array}{c} \text{C} \\ \\ \text{m} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{m} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{m} \end{array}$
$\begin{array}{c} \text{C} \\ \\ \text{t} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{t} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{t} \end{array}$
$\begin{array}{c} \text{C} \\ \\ \text{m} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{m} \end{array}$	$\begin{array}{c} \text{C} \\ \\ \text{m} \end{array}$

D&S (1999), following Ségéral & Scheer (1999), assume that in words like *atom* (16a), the contentful vocalic position governs the preceding consonantal position since government cannot land on a contentful vocalic position. Recall that it was the main achievement of CODA MIRROR to unify the effects of proper government by claiming that it may hit both consonantal and vocalic positions. More precisely, proper government emanating from a vocalic position always tries first to govern the preceding empty vocalic position (17a). If there is no available empty vocalic

position, as in (17b), government is deflected onto the intervening consonantal position.

(17) a.	b.
$\begin{array}{c} \overline{\text{V}} \\ \text{C} \sigma \\ \\ \alpha \end{array}$	$\begin{array}{c} \text{V} \\ \text{C} \sigma \\ \\ \alpha \end{array}$
$\begin{array}{c} \text{V} \\ \text{C} \sigma \\ \\ \beta \end{array}$	$\begin{array}{c} \text{V} \\ \text{C} \sigma \\ \\ \gamma \end{array}$

Since CODA MIRROR does not take higher prosodic domains into consideration, it predicts consonant lenition in both foot-internal and foot-initial onsets, a prediction prompting a reversion of D&S (1999) in the form of a constraint in (15) above. As a result, proper government is allowed to take place only foot-internally in the latter framework. Furthermore, it is evident from (16b) that the stressed vocalic position of *atomic* may govern neither the preceding vocalic nor the preceding consonantal position, since in order to do so it would have to traverse into a preceding a stress domain.⁹ Proper government and thus silencing of the initial edge marking empty vocalic position is possible in (16c) since – as noted above – the initial empty vocalic position followed by a consonantal position does not qualify as a stress domain in D&S (1999). This is illustrated by the lack of parantheses around VT in (16c).

There is an alternative policy to be pursued: not postulating initial empty vocalic positions. This, of course, is a retreat to the original assumption that skeletons uniformly begin with a consonantal position. If word-initial empty vocalic positions are not there they do not need to be silenced by government and the Antipenetration Constraint can be done away with altogether.

We could then claim that stressed vocalic positions are just as good governors as their unstressed relatives, in as much as they exert their governing potential on other vocalic positions. These vocalic positions will then be identified as unstressed vocalic positions to their right within the stress-domain, call it the foot. This proposal suggests that unlike licensing, government cannot be made unidirectional. Notice that this move is entirely in line with the interpretation of government proposed by Ségéral & Scheer (1999), D&S (1999). Government spoils the inherent properties of its target. Within the foot then left-to-right government by a stressed vocalic position would cripple the inherent loudness of its unstressed peer(s). This type of government may be referred to as METRICAL GOVERNMENT.

(18) METRICAL GOVERNMENT

A governing relation holding between two contentful vocalic positions is metrical government. Metrical government has phonetic effects similar to proper government.

⁹ Stress domains are indicated by parantheses. I fail to see why the unstressed vocalic position followed by a consonantal position should constitute stress domain in *atomic* (16b). If a stress domain begins with a stressed vowel and extends up to the next stressed vowel, the first pair of parantheses should not exist in (16b) since there is no stressed vowel in the first syllable of *atomic*. Consequently, government by the stressed vocalic position should be able to govern the *t* of *atomic*. This, however, does not take place. For further discussion of this constraint cf. section 3.

⁷ The title of Ségéral & Scheer's paper is 'Coda Mirror'. The theory developed therein has also been referred to under this name.

⁸ This does not entail that there are no examples of foot-initial lenition.

The function of stressed and unstressed vowels with respect to V-to-V government is entirely distinct. Stressed vocalic positions govern contentful vocalic positions (left-to-right) within the trochaic foot and silence them relatively (reduction). Unstressed vowels govern (right-to-left) and thus grant legitimacy to their empty relatives (absolute silence), which is the total spoiling of a position's inherent properties. In the case of V-to-C government again, the two types of contentful¹⁰ vocalic positions may be distinguished. Unstressed vocalic positions will govern preceding contentful or empty consonantal positions and make them more vowel-like, i.e., they will spoil their inherent muteness (spirantisation, voicing, hiatus filling), cf. Szigetvári (1999). Making this distinction between the governing potential of stressed vs. unstressed vocalic positions is based on the hypothesis that government cannot be made unidirectional. We formulate this hypothesis as follows.

(19) **DIRECTIONALITY OF GOVERNMENT IN PHONOLOGY**
Government in phonology is bidirectional.

We formulate our observation concerning the governing function of stressed vs. unstressed vowels as (20) below.

(20) **THE GOVERNING FUNCTION OF STRESSED VS. UNSTRESSED VOWELS**

- a. *Stressed and unstressed vowels have complementary governing potential. Stressed vowels govern only left-to-right; they govern their non-empty peers within trochaic feet silencing them relatively (reduction).*
- b. *Unstressed vowels govern only right-to-left. They govern empty vocalic positions (keeping them silent: syncope), and full (non-empty) consonantal positions (foot-internal intervocalic lenition).*
- c. *Lingoverned empty consonantal positions remain silent, ungoverned empty vocalic positions remain loud unless buried.*

There is a generalisation that can be drawn from (20), which we formulate as (21) below, but which will not be discussed here.

(21) **DOMAIN OF GOVERNMENT AFFECTING MELODIC COMPLEXITY**

The domain of government directly affecting melodic complexity is the foot.

Notice that by adopting (20) and (21), the effects of the Antipenetration Constraint are derived from a fundamental principle of grammar, namely, from the concept of complementary distribution. The governing potential of stressed and unstressed vocalic positions is distributed in a complementary way. We formulate this observation as (22) below.

(22) **COMPLEMENTARY DISTRIBUTION OF GOVERNMENT**

The governing potentials of stressed and unstressed vocalic positions are in complementary distribution.

The nature of the intervocalic context will be further discussed in section 3. We will not discuss representational issues pertaining to different types of consonant clusters

¹⁰ Full in the sense of having melodic material, i.e., non-empty or contentful.

in this paper since it is not directly relevant to the discussion. Let us, however, note that we do not recognise C-to-C governing relations of any kind but assume instead that all empty vocalic positions (including statically empty ones) are controlled by government. For the details cf. Csides (forthcoming).

2.2 **Trochaic proper government**

2.2.1 **Introduction**

Rowicka (1999:38) points out that there are a lot of phonological processes that – like proper government – take place at the nuclear projection level but whose head-orientation – the position of the head in relation to the non-head – is not fixed at all. For example, vowel harmony is reported to be head-initial in Hungarian, cf. Vago (1980), Nádassdy and Sipár (1994), Polgárdi (1998), Sipár & Törkenczy (2000), and Turkish, cf. Polgárdi (1998), and head-final in, e.g., Yoruba, cf. Archangeli and Pulleybank (1994). Furthermore, in stress systems both left-headed (trochaic) metrical feet and right-headed (iambic) feet have equally been proposed in the literature. The former is exemplified by English, cf. Liberman & Prince (1977), Selkirk (1984), Halle & Vergnaud (1987), Hogg & McCully (1987), and Dutch, cf. Kager (1989). According to Rowicka (1999), the latter type of stress system is reported to exist in Hikkaryana.

Rowicka (1999:38) also observes that the phonetic correlates of stress are usually considered to be change in pitch, duration and intensity. Moreover, it has also been noted that in the case of trochees the distinction between the head and its dependent is signalled by a difference in relative intensity, whereas in iambic systems the same distinction is reflected in durational terms between the head and the dependent preceding it. This distinction is generally implemented by either lengthening the head or reducing the dependent. Rowicka (1999:ibid) quotes Hayes as referring to this distinction as the **IAMBIC-TROCHAIC LAW**.

Rowicka then goes further to point out that the relation between a contentful vowel and an empty nucleus can be likened to the head and the dependent in a metrical foot, where the dependent is reduced to phonetic zero. It is probably on the basis of these observations that Proper Government has for a long time been viewed as typically iambic. However, a wide range of phonological facts seem to undermine the iambic-trochaic law. Rowicka observes that neither vowel reduction in weak metrical positions nor lengthening in strong positions is a purely iambic phenomenon. Trochaic metrical systems with vowel reduction exist in English, Dutch and late Latin, whereas a paradigm example of a trochaic system lengthening vowels in strong positions is Italian. It must be noted that the status of left-headed feet is more firmly established than that of right-headed ones. This is due to the fact that the trochee is the most common type of foot found cross-linguistically, cf. Rowicka (1999:39). Given these observations, Rowicka (1999:ibid) proposes that an iamb is not a primitive of phonological theory in the way a trochee is, and also that there is no parametric choice between trochaic and iambic feet.

On the basis of the above observations Rowicka concludes that one can expect PG relations also to be left-headed rather than right-headed, contrary to the mainstream GP view of treating this relation as exclusively right-headed, cf. KLV (1990), Charette (1990, 1991), Harris (1990, 1992, 1994, 1997), among others. However, Rowicka notes that Kaye (1986-87) – who himself first uses iambic proper

government in the analysis of Moroccan Arabic data – makes a provision about the parametric nature of head orientation in proper government. Rowicka goes on to propose that proper government is in fact left-headed, i.e. trochaic, and that the new approach associates phonetic interpretation with the head status of surfacing nuclei in PG relations.

2.2.2 Moroccan Arabic and trochaic PG

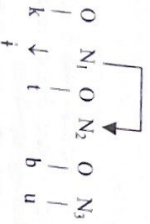
Rowicka (1999:40) introduces Kaye's (1992:151-152) analysis of Moroccan Arabic, which exhibits vowel-zero alternation involving the vowel [ʃ]. Consider the following examples.

- (23) a. [ʃan kiʃb]ʰ 'I am writing'
 b. [ʃan kiʃbu:] 'we were writing'

Whether or not an empty nucleus is realised phonetically depends on the nature of the following vowel. In (23b) the final nucleus is lexically contentful, and therefore the preceding nucleus may remain uninterpreted. On the other hand the initial nucleus must receive phonetic realisation because it is followed by a silent nucleus. This is expressed in terms of PG, where the final contentful nucleus is the governor and the preceding empty one is the governee. Roughly the same analysis applies to the sequence in (23a), where, however, an extra device has to be invoked to control the behaviour of the final empty nucleus. The word-final nucleus remains mum in spite of the fact that it is not properly governed since it is not followed by a contentful nucleus. Recall that the silence of word-final empty nuclei is accounted for by an independent clause of the ECP, the domain final licensing parameter. Being itself empty and licensed, the final empty nucleus cannot function as a proper governor for the preceding nucleus and therefore the medial empty nucleus must surface. Having surfaced, however, it can function as a proper governor of the first nucleus between /k/ and /ʃ/ and the string thus surfaces as /kiʃb/.

Kaye's analysis thus requires two separate mechanisms for controlling internal vis-à-vis final empty nuclei: Proper Government on the one hand, and domain-final licensing on the other. One of the original arguments for recognising domain-final licensing as a licensing mechanism distinct from PG is that in a number of languages final empty nuclei may license types of onsets different from those licensed by domain internal empty nuclei. Such an expectation – as Rowicka (1999:41) points out – is unwarranted in Moroccan Arabic since in this language word-final silent empty nuclei have properties no different from word-internal properly governed ones. This – she points out – suggests a possible analysis of what she calls 'ghost vowels' in terms of trochaic PG instead of iambic PG. She proposes the following analysis for [kʃbu:]

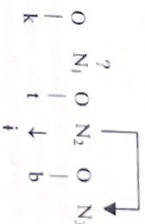
(24)



¹¹ It is Rowicka's (1999) convention to indicate vowels alternating with zero by underlining them.

The plural form in (24) contains a sequence of two empty nuclei: if both of them remain silent such a sequence constitutes a lapse, which can be likened to a stress lapse familiar from metrical phonology, cf. e.g. Selkirk (1984). A nuclear lapse of this sort is ill-formed – according to Rowicka – since there is no way in which both empty nuclei can be properly governed. Therefore, N₁ must surface in order to resolve the lapse and function as a head of a proper governing relation. Unlike in standard GP, Rowicka (1999:42) proposes that 'the empty nucleus which acquires phonetic interpretation is not the one that remains without a proper governor, but the one which itself must properly govern'. Rowicka thus also lines up with the received wisdom that governors in a governing relation must be phonetically present. The singular form in (25) also contains a sequence of three empty nuclei, but this time it is the middle one that is phonetically realised.

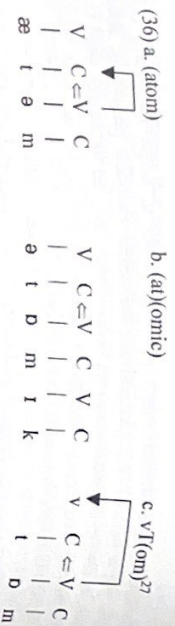
(25)



Rowicka claims that the middle nucleus in (25) surfaces in order to properly govern N₃, the final empty nucleus of the domain. N₁, on the other hand – although remains ungoverned – does not require phonetic interpretation since it is not required to function as a head of a governing domain. This is indicated by a question mark over it. Recall that the standard GP version of the ECP prescribed that every ungoverned nucleus must be audible, and notice that this does not happen to N₁ in (25) above since it has no governing role to assume and therefore no reason to become audible. Moreover, N₁ is not adjacent to any other silent nucleus, it does not create a lapse and – Rowicka argues – that such unpaired empty nuclei may remain silent without being properly governed. Furthermore, the phonetic realisation of the empty nucleus in the middle of the domain is the most economical way of avoiding a nuclear lapse consisting of three empty nuclei.

Rowicka then considers alternative ways of resolving lapses in a three-long empty nucleus sequence, which we will not discuss here due to space limits. Let us conclude this section by noting that the proposal of trochaic proper government sheds light on the fact that right-to-left directionality in the case of proper government is often based on tradition rather than argument.

In the following sections I will try to take a couple of steps further in this direction, and propose that government is indeed bidirectional. This means that we will reject one of the basic tenets of GP, that of strict directionality. In order to be even more heretical, we will also get rid of strict locality in its traditional sense, and will attribute a different interpretation to this notion. Moreover, the arguments to be advanced below are based on the conviction that there is no difference between the principles of metrical phonology and government phonology. Governing relations contracted between vocalic positions may target full and empty vocalic positions alike. The phonetic interpretations of the two relationships will be similar in kind but different in actual implementation, and will boil down to a difference between



In (36a) the foot-internal consonant is both governed and licensed and thus is expected to undergo consonant lenition according to the theory of Dienes & Szigetvári (1999). In (36b) and (36c) the consonantal position dominating the melody represented as [t] finds itself in a strong phonological position. In the former case because the stressed vocalic position (initiating a stress domain) is unable to properly govern (right-to-left) and thus the position remains licensed and ungoverned. In the latter case, although the vowel is stressed again, it is able to properly govern the word-initial empty vocalic position. The idea of the theory of VC phonology that Balogné seems to adopt here is that the word-initial empty vocalic position followed by the word-initial consonantal position does not constitute a stress domain, hence the lack of parentheses around VT in (36c). Recall that if it constituted a stress domain, the vocalic position dominated by [d] would not be able to govern the initial empty vocalic site, since such a move would run against the Antipenetration Constraint (AC) in the framework of Dienes & Szigetvári (1999).

Notice the logical consequences of the proposal: at first sight it would seem that it is only unstressed vowels that have the capacity to properly govern. (36a), whereas stressed ones are deprived of this capacity. (36b). Turning to (36c), however, it turns out that a stressed vowel is also proper governor if not preceded by a stress domain. This means that a stressed vowel can indeed strike out of its own stress domain. In other words, a stressed vowel is capable of governing out of its own stress domain but not into a neighbouring one. To visualise matters, it seems that two brackets (an opening and a closing one) are needed to constitute a buffer to government. Notice that attributing stressed vocalic positions right-to-left proper governing capacity is necessary in this framework, once initial empty vocalic positions are postulated before consonant-initial words that need to be governed in order to remain silent.

Furthermore, Balogné (2002:8ff.) illustrates the shortcomings of the AC by pointing out that stress-sensitivity of flapping vanishes once we extend our investigation beyond the word domain. The data in (37) illustrate that word-final /t/s undergo tapping regardless of whether the next word begins with a stressed or an unstressed vowel. Moreover, word-initial /t/s always remain strong, i.e. aspirated, and word-final /t/s undergo glotalization when they are followed by either a consonant-initial word or a pause. Consider the data taken from Balogné (2002:8).

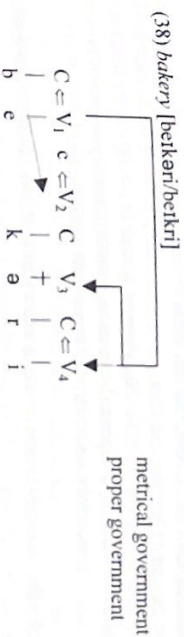
- (37) GA FLAPPING – CROSS WORD EFFECTS
- a. hi[t] Ánna, hi[t] me
 - b. grow [tʰ]omatoes

²⁷ Note that Balogné (2002:7) represents *Tom* as (v)Tom). This representation, however, is not fully consistent with the framework she is describing. Since according to Szigetvári a stress domain starts with the stressed vowel and extends up to the next stressed vowel not including the latter, I fail to see why the entire word *Tom* should be bracketed. Therefore I have chosen to represent *Tom* as VT(om).

- c. a [tʰ]issue, a[t] issue
- d. wait[t] a minute

On the basis of the data in (37), Balogné points out that Dienes & Szigetvári's (1999) theory is unable to capture the fact that the stress sensitivity of flapping disappears beyond the word-domain. She goes on to suggest that it is possible to capture the differences between word-internal and cross-word flapping by assuming that government responsible for flapping (i.e. proper government) operates between melodies. While word internally, this does not hold of a word-final /t/ and a vowel both melodically and skeletally, in the latter case the boundary marker will prevent the two initiating the next word. In the latter case the boundary marker will prevent the two segments from being adjacent on the CV tier. This situation will be illustrated below.

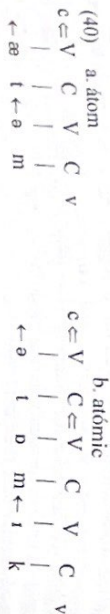
Balogné's second suggestion is that stressed vowels – since they seem to support the melodic make-up of a preceding consonant – prefer licensing to government, i.e. if melodic conditions are met they choose to license. On the other hand, unstressed vowels both conditions are met they choose to license. On the other hand, unstressed vowels are more prone to damage the consonant in their CV units and therefore they prefer to govern. In Csides (2000), I connected this skewed propensity of stressed versus unstressed vowels to govern vis-a-vis licence to the principle of government licensing proposed originally by Charrette (1990) for consonantal governing relations. The application of the idea to proper government should be obvious: very broadly, in languages having trochaic feet, for a vocalic position to be able to properly govern from right to left it must receive licence to do so from the dominant vocalic position within the foot. In other words, unstressed vowels acquire the capacity of being able to govern by virtue of being preceded by a stressed vowel within the same foot. The idea is depicted in (38) below.



The representation in (38) shows how metrical government grants a governing licence to the final unstressed vocalic position, so that it can properly govern the position dominating the alternating schwa inside the foot. The concept of government licensing of proper governors derives the same effects as the ANTIPENETRATION CONSTRAINT but from an already existing principle of grammar – that of government licensing – that has been suggested earlier for entirely different purposes. Furthermore, the representation yields an answer to the question of why vowels do not shorten before a syncope site. Naturally, if V₄ has to control V₃, then the empty V₂ remains unaffected by proper government. An ungoverned empty vocalic position, however, is illegal and therefore an alternative repair strategy is required to save the situation. This strategy manifests itself in the form of melody spreading from V₁ onto V₂. In order to account for the data in (37), Balogné (2002:9) proposes the constraint in (39).

(39) A consonant (including both its melodic and skeletal position) cannot be simultaneously governed and licensed by the same vowel.

The representations in (40) illustrate how Balogné (2002:9) chooses to derive the cross-word lenition effect from the observations mentioned above.



According to the proposal, licensing (indicated by the double arrow) takes place on the skeleton, while government (indicated by the single arrow) is a relation between melodies. The word-initial vocalic position dominating /æ/ in (40a) is stressed, so it will first license the preceding empty consonantal position. Since that consonantal position is empty, i.e., it does not interfere with possible relations contracted on the melodic tier, the vowel has the ability to govern some other consonantal material at the melodic level if one becomes available through concatenation. The second vowel, however, being unstressed, will first discharge its governing potential on the consonantal melody represented by /t/, but having done so, it loses its opportunity to do anything else. This is due to the fact that it could only discharge its licensing potential on the preceding consonantal position, which it also governs. This would amount to a violation of (39) above.

In (40b), however, the same word-initial vowel is not stressed, thus – according to Balogné (2002:9) – it tries to govern first, which will not materialise until the word is put into a context by concatenation with a consonant-final word, e.g. *hiz atómic elemens*. In that case government can reach the underlined /t/ and thus it surfaces as a tap. At the same time, the initial empty consonantal position gets its share of licensing since this will not violate (39). The stressed vowel in (40b), on the other hand, will license the /t/ making it aspirated, but cannot simultaneously govern it in accordance with (39); consequently, its governing power will remain unexploited.

Consider the data in (41) below, which show that function words behave differently.

(41) BALOGNÉ (2002:10)

- a. I want you [r]o help me.
- b. Don't lie [r]o me.
- c. [r]^ho tell the truth
- d. [r]^ho tomorrow
- e. see you [r]o tomorrow

The initial /r/ in *to* is only aspirated when at the beginning of the utterance. (41c), otherwise it is flapped when it is preceded by a vowel-final word and therefore appears in the conditioning environment. (41a-b). The flapping cases are accounted for in the framework sketched out by Balogné in the following manner: she proposes that Lowenstamm's empty cv boundary marker only characterises lexical words to the exclusion of function words. Consequently, so the argument goes, words like *to*

lack it, and that is why ...*lie to*... creates exactly the same context for *t* as *atom* does. Balogné (2002:10) illustrates this situation as in (42) below.



The question as to how the boundary marker appears to the left of function words when they appear at the beginning of an utterance as in (41c) now arises. According to Balogné, there are two ways of explaining away this situation: either – as opposed to Lowenstamm's (1999) claim – there is an empty cv unit at the beginning of all types of words, which is deleted in certain environments, or the empty cv unit is indeed absent before function words and is inserted only utterance-initially.²⁸

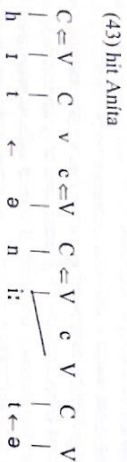
Balogné's (2002) account of the word-initial site needs to be revised for the following three reasons. First, Balogné clearly assumes a temporal sequence of events initiated by vocalic positions, claiming that stressed vowels are prime licensors, which means that only after having attempted to discharge their licensing potential can they govern. In the case of unstressed vowels the opposite situation obtains, viz. they seem to be prime governors, that is, first they try to govern, and only after having attempted to do so are they capable of licensing. It is important to emphasise that her analysis crucially hinges on this distinction. Furthermore, government is assumed to be a relation contracted along the melodic tier, as opposed to licensing, which takes effect on the skeleton. On these assumptions, however, it is difficult to see why (41d) and (41e) should behave differently. More specifically, I do not see why – under the framework outlined above – the initial consonant in *tomorrow* (41d) should not flap. This is because the initial vowel is unstressed in *tomorrow*, which Balogné claims to be a prime governor, i.e. it must first try to govern, and only after having done so should it try to discharge its licensing potential. It comes as a surprise then that the unstressed vowel in the first syllable of *tomorrow* chooses exceptionally to skip the intervening melody of the word-initial /t/, and govern the empty vocalic position of the postulated empty cv unit. What we expect, according to the sketch of the theory, is that the first nonempty (unstressed) vocalic position should indeed govern first, but that the target should be the initial consonantal melody /t/, as government takes place on the melodic tier. This position – being governed – cannot be licensed, since this is excluded by (39) in Balogné's framework. The resulting configuration thus should be one in which the initial consonant of *tomorrow* is governed and unlicensed, and as a result, undergoes flapping */rəmbrou/. This prediction is not borne out, as is illustrated by (41d). Notice furthermore that this prediction is borne out when the same lexical item follows a vowel-final word as in (41e). It is fairly obvious that the conditioning factor has to be searched for in the context preceding the /t/ that shows this anomalous behaviour.

It also remains unclear under the analysis sketched above why the /t/ in the first syllable of *tomato* should be exempt from flapping. Once again, the unstressed vowel

²⁸ Note that in Balogné's framework – as she also points out – a VC analysis fails in either case. This is because in consonant-initial words it is the vocalic position of the first VC unit that functions as a boundary marker (i.e., it absorbs the governing potential of the following nonempty vocalic position). It can never be inserted or deleted, however, since Szegervári (1999) claims VC units to be inseparable.

in the first syllable is a prime governor, i.e., it tries to govern first. Government takes place on the melodic tier, where the vocalic melody is immediately preceded by the consonantal melody of /l/, and thus the latter should be governed, the phonetic manifestation of which is flapping.

Second, if we accept the hypothesis in (39) above, namely that a consonantal position cannot be simultaneously governed and licensed by the same vocalic position, we end up with a configuration in which foot-internal onset consonants will be unlicensed and governed, cf. (40a) above. However, Balogné (2002:6-7) subscribes to the basic tenets of Dienes & Szigetvári's (1999) theory, in which unlicensed and governed consonants should undergo both consonantal and vocalic consonant lenition, i.e., both types of consonant lenition phenomena should be attested in this context. It is worth mentioning here that although Dienes & Szigetvári's theory does not cater for the possibility of consonantal consonant lenition²⁹ in foot-internal intervocalic position, Harris (1994:195) indeed mentions such a system under the heading 'glottaling (wide distribution)':



The third remark is a more general theoretical one, and refers to the requirement of locality in strict CV phonology. It has become a received wisdom amongst CV phonologists that while structural relations are established on the CV skeleton, maximally one position (that of the opposing category) may be skipped, cf. the case of proper government.³⁰ In the case of *hit Anita*, e.g., the two positions, an empty vocalic position followed by the initial empty consonantal position in the next word, will have to be skipped, which represents a departure from the generally recognized notion of locality constraints. Consider to this effect the representation in (43) below.

(43) shows that locality – in the sense introduced above – is lost at the cross-word site above, even if governor and governee are adjacent on the melodic tier. This is not necessarily an unwelcome situation, and I will argue that locality in the traditional sense is simply untenable.

These three observations lead us to modify the analysis proposed by Balogné (2002), incorporating at the same time her insight that governing relations may indeed be established on the melodic tier, and also that a consonantal position may not be governed and licensed by the same vocalic position simultaneously.

3.3 Licence to properly govern

We have seen that both lack of pretonic syncope and absence of foot-initial lenition may be derived from the complementary governing potential of different types of vocalic positions. In any case, a properly governing vocalic position must receive a

²⁹ Recall that this means loss of place contrast without spirantisation or voicing, e.g., glottalization.

³⁰ An exception to this is the case of a closed domain, Scherer (1998), where an entire CVC sequence may be skipped to silence the word-initial empty vocalic position. Cf. also Csides (2000) for a similar approach to both onset and coda clusters.

licence to govern from its prosodically dominant peer within the foot. In other words, it is the recessive vocalic positions that are able to properly govern in the traditional sense, but only by virtue of receiving a licence to do so from their dominant fellow within the foot.

Finally, it must be noted that if these observations are unified with GOVERNMENT LICENSING (Charrett 1990, 1991), the following generalization can be made about phonological strings.

(44) GOVERNMENT LICENSING

All governors must be licensed to govern except the ultimate head of the domain

Let us consider how this proposal can be extended to cover lack of word-initial lenition and the distribution of flapped versus aspirated /t/.

As far as word-internal contexts are concerned we seem to be at ease with the proposal in that proper governors must be licensed to govern by their prosodically dominant neighbours within the foot. The data in (34) above are repeated here as (45) for convenience.

(45) GA FLAPPING – DATASET I

- a. [tʰ] : Tom, tomorrow
- b. [f] : atom, competitive

According to the proposal of licensed proper government, it is easy to see why there is no lenition in (45a). In *Tom*, the stressed vocalic position dominating /b/ can govern only left-to-right (metrical government), and can only license the word-initial /t/. In *tomorrow*, although the first vowel is unstressed, it has no preceding dominant pal which could grant it a government licence and therefore the first /t/ in *tomorrow* can only be licensed, not governed. In (45b) all the three /t/s undergo flapping because all the three /t/s are followed by an unstressed vowel, all of them receiving a government licence from a preceding stressed vocalic position, the head of the foot.

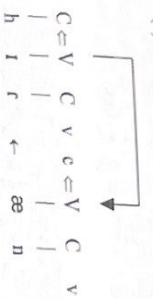
If, however, we extend our investigation beyond the word domain and examine the data in (37), repeated here as (46) for convenience, we have to modify our proposal relaxing the requirement that the government-licensed proper governor should be a recessive position in a trochaic foot across words, too.

(46) GA FLAPPING – CROSS-WORD EFFECTS

- a. hi[r]ʰ ðm, hi[r]ʰ Anita, hi[tʰ] me
- b. grow [rʰ]omatoes
- c. a [rʰ]issue, a[r]ʰ issue
- d. wait[r]ʰ a minute

Examining the first two examples in (46a), we immediately notice that stressed vowels also seem to be able to govern but only in a cross-word context. Consider the representation in (47) below.

(47) (a)



(b)

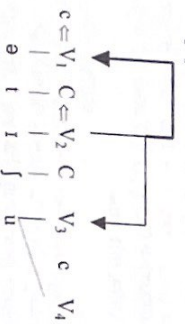


The representations in (47) illustrate government licensing across the word, and subsequent government on the melodic tier. It must also be added that we do not postulate an empty cv unit at the beginning of words. We assume that phonological words begin with a consonantal position, even if that position happens to be melodically empty. This issue will not be investigated in this paper.

Note also that (47) is based on the assumption that government licensing – due to metrical government – is always a left-to-right relationship. There is, however, no reason to maintain this assumption since it would clearly upset the uniform interpretation of government in (47a), where – although post-lexically – the governed vocalic position would be metrically more prominent than its governor. This is clearly undesirable and completely unnecessary in the light of the bidirectionality hypothesis. We will, therefore, propose an alternative analysis to (47) in (51) below, exploiting a distinction between relations contracted in the lexicon on the one hand, and post-lexically on the other.

In order to anticipate further discussion, consider now the items in (46c)³¹ represented as (48a) and (48b) below, respectively, incorporating the hypothesis of bidirectional government on the one hand, and lexical versus post-lexical governing relations on the other.

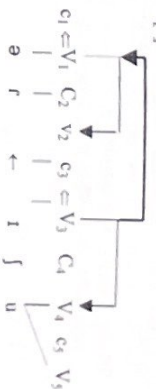
(48)³² a. a [lʰ] issue



³¹ We will examine the item in (46b) later.

³² The bold lines appearing in the representations of (48) indicate governing relations contracted post-lexically.

b. a[lʰ] issue



In (48a) the stressed vocalic position dominating [lʰ] incorporates the first vocalic position of the word-final long [u:] into the metrical hierarchy. Since the second vocalic position of the long vowel is lexically empty and ungoverned, a repair strategy is required to remedy the illegal situation in the form of spreading the melody of /u:/ from V₃ into V₄. Even if the first (stressed) vocalic position could be government-licensed by the vocalic position of the indefinite article, the vocalic position dominating [lʰ] would be a prime licenser since it is stressed. Since this form cannot be treated as a lexicalized sequence the word *issue* will leave the lexicon as an individual item whose initial stressed vowel (not receiving license to govern in the lexicon from a preceding full vocalic position) has by that time licensed the initial consonantal position. As a result, the word-initial consonantal position dominating the melody of [lʰ] leaves the lexicon as a licensed position, and the initial [lʰ] cannot be governed by the following vocalic position, even if that vocalic position would be able to receive license to govern through concatenation. This is due to the fact that the initial [lʰ] is already licensed, and thus cannot be affected by government, since this would violate (39). Notice furthermore, that since the sequence *a [lʰ] issue* may not be treated as a lexicalized form, any governing licensing relation may only be established between article and noun post-lexically. Post-lexically, however, it will be the first vocalic position of the noun (V₂) that will govern the vocalic position of the article (V₁) since the former takes up a more prominent position in the metrical hierarchy. The article – being a sub-minimal form and lacking stress – creates no governing relation in the lexicon. The (V₁) vocalic position of the indefinite article, however, may not properly govern the intervening consonantal position between V₁ and V₂, since the ultimate source of this proper government would be V₂, which has already licensed this consonantal position in the lexicon. Proper government is thus blocked here, since it would lead to a violation of (39) in this extended sense.

In (48b) this problem does not arise, since the skeletal position which is lexically licensed (c₂) and the skeletal position dominating the melody to be governed (C₂) are not identical. As a result, government, i.e. flapping, can take place. Moreover, the intervening empty vocalic position V₂ may also be silenced by proper government coming this time from the contentful vocalic position (V₁) on the left. This latter relationship – as we shall see – is already present in the lexicon.

The item in (46d) is also easy to tackle. The indefinite article between the verb and the noun is unstressed, and forms the recessive position of a binary trochaic foot with the preceding verb (*waitə*). Being unstressed, the second vowel is a prime governor hitting the final consonant of *wait* on the melodic tier. The position dominating this consonant escapes licensing due to (39). Notice that this form may well be treated as a lexicalized item, i.e., the sequence *wait a* may form a trochaic foot established in

the lexicon. However, even if the concept of lexicalization is eschewed, the distinction between lexical and post-lexical government, in tandem with the uniformity principle provide an answer to the question of why encliticisation of the indefinite article to the preceding verb is possible in this case. We will return to this question presently. Consider now the items in (41) repeated as (49) below for ease of reference.

- (49) BALOGNÉ (2002:10)
- a. I want you [f]o help me.
 - b. Don't the [f]o me.
 - c. [f^h]o tell the truth
 - d. [f^h]omorrow
 - e. see you [f]omorrow

(49a) and (49b) work exactly like (46d): (ju:rɛ) and (la:rɛ) form binary trochaic feet in connected speech where flapping will take place according to the mechanism depicted above. Notice that function words like articles, prepositions and infinitival particles leave the lexicon without stress – and hence governing relation – and remain stressless in the connected text. Consequently they are prone to cliticisation and end up glued to the preceding lexical item. In (49c) and (49d) both the vowel of *to* and the first vowel of *tomorrow* are unstressed and hence they are prime governors. According to the system of Balogné, they should indeed govern the melody of the preceding position once government proceeds on the melodic tier. This means that her system predicts lenition in both (49c) and (49d), a prediction which is not borne out by the data. Notice, however, that neither in (49c) nor in (49d) is the unstressed vowel preceded by another vowel which could provide the necessary licence to govern. Thus, neither the vocalic position of *to* nor the first vocalic position of *tomorrow* is able to govern and, as a result, they are allowed to discharge their licensing potential on the preceding consonantal position. These consonantal positions in turn become licensed and ungoverned, i.e. strong, the phonetic manifestation of which is aspiration.

The remaining two items are (46b) and (49e), repeated below as (50a) and (50b) respectively.

- (50)
- a. grow [f^h]omatoes
 - b. see you [f]omorrow

These two items constitute a challenge to theories attempting to account for the distribution of flapped versus aspirated /t/. While (50b) is easily accounted for in the framework we have proposed, (50a) sneaks out of analysis, since the first vocalic position of *tomatoes* is unstressed, and thus counts as a prime governor provided that it is licensed to govern. We have also seen that governing licence may also be provided post-lexically, besides the fact that stressed vowels are unlicensed governors, cf. (48b). As a result, we rightfully expect governing licence to be assigned to the first vocalic position of *tomatoes*. However, as shown by the transcription, aspiration takes place. Notice, however, that (50b) can easily be treated as a sequence stored in the mental lexicon of the speaker. In this case the government-

licensed unstressed vocalic position in the first syllable of *tomorrow* will be able to perform its primary role as a governor flapping the initial consonant.

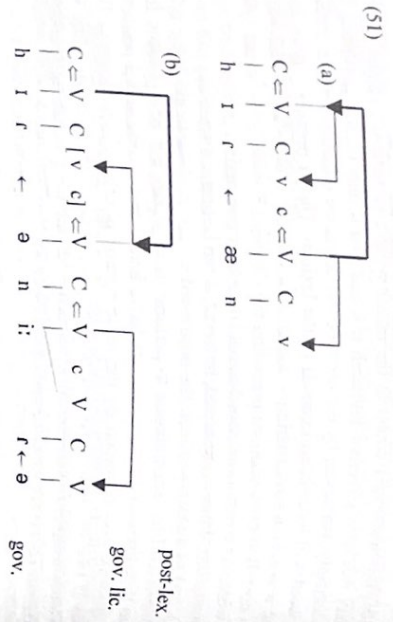
In (50a) the unstressed vowel in the initial syllable of *tomatoes* cannot perform its primary role as a governor although it seems that it may receive governing licence post-lexically. However, by the time the two items are concatenated, the initial [f] of this word will have been licensed in the lexicon. This is because – *grow tomatoes* being a non-lexicalized string – *tomatoes* leaves the lexicon as an individual item with no full vocalic position preceding the unstressed vowel in the initial syllable of the word. As a result, the word-initial [f] escapes government (hence flapping) in the lexicon. Remaining ungoverned, however, it can be licensed since this will not violate (39), and as a matter of fact, the unstressed vocalic position in the initial syllable of *tomatoes* will have the chance to perform its secondary role of a licenser. It is clear from this discussion that the crucial factor here is that a consonantal position cannot be licensed and governed by the same vocalic position simultaneously. This is so even if one of these forces affects the consonant in the lexicon, while the other becomes available post-lexically. In such cases the force becoming available later is blocked. This is a case of phonological blocking.³³

As a consequence of the assumptions made above, the data in (49) are all straightforwardly accounted for. All we need to add with respect to (49a-c) is that since function words do not carry a stressed vocalic position when they leave the lexicon, they need to be incorporated into a trochaic foot. A preceding stressed vowel will provide governing licence to the vocalic position of the infinitival particle, preposition, etc. so that the latter position may properly govern. Note that the sequences [ju:rɛ) and [la:rɛ) are best treated as encliticised strings.

Under the proposal put forward here, however, some of the items in (46) seem, at first sight, to be problematic. The string in (46d) poses no problem since *wait a minute* can be treated as a lexicalized form and (46b) has also been covered above assuming that *grow tomatoes* is a non-lexicalized form. As far as (46c) is concerned, we may again refer the case of *at issue* to lexicalization by assuming that this case is different from *a tissue* in that the latter is not at all lexicalized. *Tissue* leaves the lexicon with a licensed initial consonant, which resists any later government. What needs to be revisited is the items in (46a), namely, *hit Am* and *hit Anita*. The first one of these seems at first sight to be more problematic, since both *hit Am* and *hit Anita* are susceptible to flapping. However, as we have seen above in connection with the data in (49) and (50), in non-lexicalized forms such as *hit Am* and *hit Anita*, both vowel-initial words *Am* and *Anita* contain a licensed empty consonantal position on leaving the lexicon. This licensed empty consonantal position cannot be affected by proper government emanating from the government-licensed first vocalic position of *Anita* – which may receive its governing licence post-lexically – since it would run against (39). Moreover, since this type of government proceeds on the melodic tier, this question does not even arise. Since the initial consonantal position is empty, proper government may reach the word final consonant of *hit* on the melodic tier causing flapping. This does not violate (39) since it is different consonantal positions that are licensed and governed respectively by the same vocalic position. By way of revision,

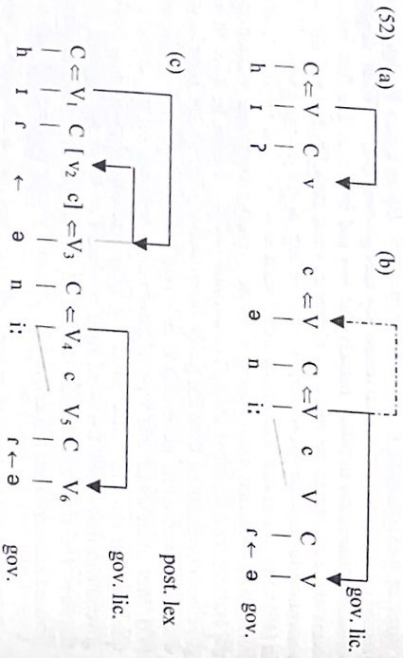
³³ For the concept of blocking in morphological theory, cf. Aronoff (1976).

consider the representation of the two concatenated strings once again as (51) below, which already incorporates the hypothesis of bidirectional government.



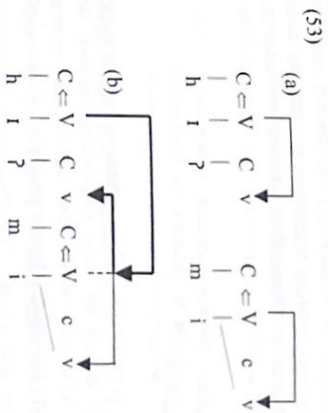
Notice that in the framework we are advocating here neither metrical nor proper government-respect locality in the traditional sense. Although the parties entering into a proper governing relation are adjacent on the melodic tier, they may be separated by more than one point on the skeleton. Furthermore, metrical government incorporating contentful vocalic positions into the metrical hierarchy may skip quite a number of skeletal positions, since stressed vocalic position, for example, seem to target the farthest contentful vocalic position first. Only after having 'killed off' all the contentful vocalic positions can government target vocalic positions devoid of melodic content.

Furthermore, examining (51b) it becomes obvious that *hit* and *Anita* leave the lexicon as shown in (52) below.



Notice that both items leave the lexicon containing a binary trochaic foot. The first vocalic position of *Anita* is left unattended by the metrical structure and receives proper treatment only by default. This default mechanism consists in implicating all degenerate material into metrical structure during the course of phonetic interpretation. This relationship is indicated by the dashed-line in (52b). Post-lexically, however, the default mechanism is not necessarily invoked, since phonology strives to maintain uniform structure wherever possible, in accordance with the uniformity principle. Since the governing relationship indicated by the dashed line is treated as a structural freak invoked only as a rescue mechanism, post-lexically it is shunned by incorporating the initial vocalic position of *Anita* into the degenerate foot containing the contentful (V₁) and the empty (V₂) vocalic position lexically. This does not come as a surprise since a degenerate foot, as is shown by its name, is also tacitly assumed to be a structural torso. The net result of concatenation is depicted in (52c), whereby the governing relation initiated by the vocalic position of *hit* embraces the first vocalic position of *Anita* incorporating the latter into a fully-fledged trochaic foot. The government-licensed V₁ will then govern V₂ and the bracketed sequence remains uninterpreted. Government proceeding on the melodic tier encounters the melody of the word-final /r/ in *hit*, and flapping takes place.

The only item that has been left unattended is the third example in (46a), i.e. *hit me*, pronounced as hi[tʰ]me. The machinery that we have proposed above raises a number of questions in connection with this particular sequence. Consider the representation in (53) below.



The representations in (53a) show how the two items are stored in the lexicon, while (53b) shows the result of concatenation. Since *hit me* is a phrasal category, we would expect the stressed vocalic position of the second item to serve as the ultimate head of the resulting domain. However, since the pronoun *me* is a function word, it lacks lexical stress and behaves like a clitic, so it cannot function as the ultimate head of the domain. Notice that the empty vocalic position – occurring at the end of *hit* – is controlled by government, in any case. Therefore, it loses its licensing potential, leaving the preceding /r/ unlicensed, which in turn may in both cases be realised as a glottal stop, cf. also Szigetvári (1999). A careful inspection of (53b) also answers the question of why /r/ may not be flapped in *hit me*. Although the first vocalic position of *me* is able to properly govern from right-to-left, it may not target the

immediately preceding consonant, since it is already licensed. Furthermore, right-to-left government between a vocalic position and a consonantal position takes place on the melodic tier, and therefore, such a relationship would never reach the final *N* of *hit*, since the intervening melody of /n/ blocks the way.

The above discussion shows that the situation is more complex than it is suggested in Balogré (2002). The representation in (53) above, for example, raises the question of what will ultimately silence the empty vocalic position at the end of *hit*. If proper government proceeds exclusively on the melodic tier, how can it ever access an empty vocalic position, lacking any melody whatsoever? Furthermore, if it is not proper government that silences empty vocalic positions, then what will cater for the silence of these marked skeletal points? The partially modified representations in (47) incorporating the notion of government licensing raise the same questions.

In order to provide for the silence of empty vocalic positions, and to suggest a feasible answer to the distribution of flapping in General American at the same time, we need a more sophisticated network of governing relations. Moreover, a proper distinction needs to be made between relations contracted in the lexicon on the one hand and post-lexically on the other.

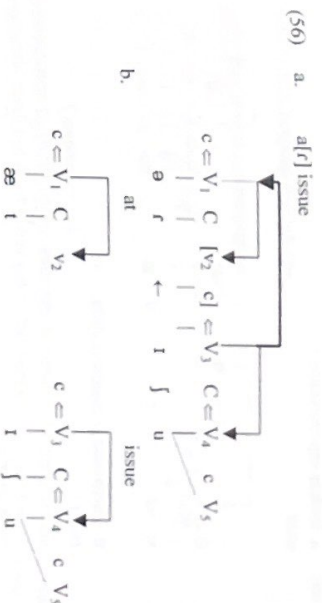
The discussion presented above leads to the conclusion that the adoption of the bidirectionality hypothesis in tandem with the uniformity principle is beneficial for the understanding of the distribution of flapping in General American. Notice also that even the concept of lexicalization may prove to be redundant in capturing the exact distribution of flapping vis-à-vis aspiration. From among the sequences discussed in this section, only in those listed under (54) may reference be made to the concept of lexicalization in capturing the distribution of across-the-word flapping.

- (54) a. al[r] issue
b. wait[r] a minute
c. see you [r]omorrow

Consider furthermore the items in (55) below, whose infinitival particle in (55a) and preposition in (55b) happen to display the same clitic-like behaviour. We shall discuss the items in (54) and (55) together because they highlight the importance of the distinction to be made between governing relations contracted at the lexical versus post-lexical level.

- (55) a. I want you [r]o help me.
b. Don't lie [r]o me.

The string in (54a) has been given an analysis above in (48b). Let us repeat it below as (56a) for the reader's convenience and suppose that the lexical representation of the items comprising the string is as (56b) below.



It is fairly obvious that the right-to-left metrical governing relation – indicated by the bold arrow – may only be established post-lexically, when the two items have been concatenated. This also holds of the proper governing relation between *V*₃ and the final consonant of *at* contracted at the melodic tier. The preposition *at* forms a degenerate foot in the lexicon, and contains a governing relation between *V*₁ and *v*₂ because it is more than a sub-minimal string. The post-lexical metrical governing relation manifests itself in the form of vowel reduction – the vowel of the preposition is reduced – while proper government proceeding on the melodic tier results in tapping the final consonant of the preposition. The government-licensed *V*₁ in (56a) properly governs empty *v*₂ from left-to-right, keeping it silent. It is thus obvious that the correct phonetic interpretation may be derived in the case of (56) without resorting to the concept of lexicalization. Moreover, there are two generalisations to be captured as a result of the above analysis. These are given as (57) and (58) below.

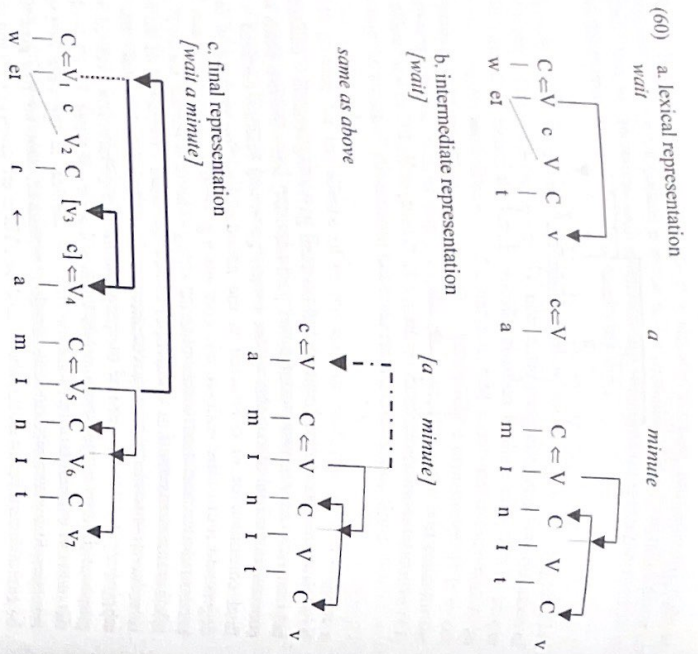
- (57) Government holding between vocalic positions is bidirectional, regardless of whether it manifests itself in the form of proper government or metrical government.
- (58) Governing relations may be established in the lexicon and also post-lexically.

Notice that (58) rejects one of the basic tenets of GP holding that governing relations are established in the lexicon, since, as we have seen, governing relations are also contracted post-lexically.

Consider now the string in (54b) whose lexical and post-lexical representations are given in (60) below. Before turning to phonological relations, consider the syntactic structure of the string in (59).

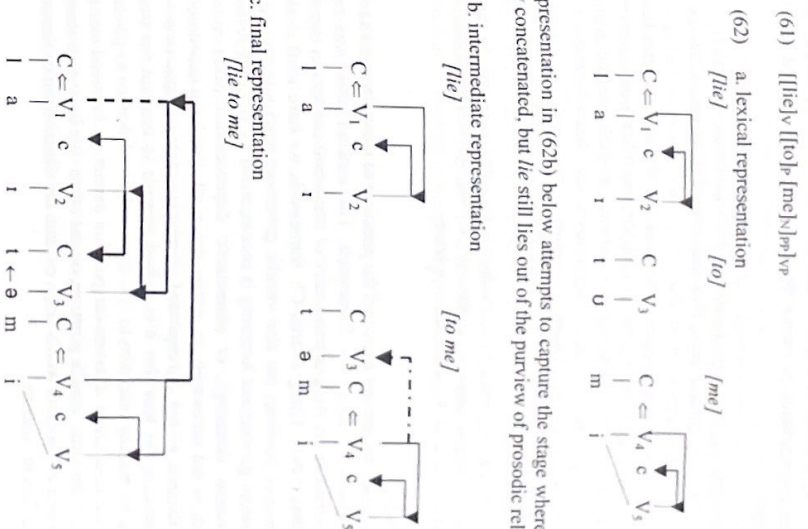
- (59) [[wait]_v [[a] ₀ [minute] _N [wP] _{vP}

Governing relations seem to respect syntactic structure. Consider now (60) below.



The representations in (60a) should by now be obvious. In (60b), the determiner and the noun are concatenated, and a post-lexical default governing relation hits the vocalic position of the article, in order to incorporate it into the metrical hierarchy. This relationship is indicated by the dashed line in (60b). This default relation is not invoked in (60c), since its presence would upset uniformity of foot-types, and another more convenient governor vocalic position becomes available through concatenation of *wait* and *a minute*, i.e. V_1 . This latter vocalic position embraces the farthest available non-empty vocalic position into its foot domain, which in turn will govern empty V_3 keeping it silent. The government-licensed V_4 and the melody of /l/ at the end of *wait* are now adjacent on the melodic tier, and therefore flapping can take place. And ultimately, since *wait a minute* is a VP, the most prominent vocalic position V_5 will incorporate the other foot head into the prosodic hierarchy. Note that while syntactically (prosodically) it is the most prominent vocalic position of the complement NP that assumes the role of a domain head.

In the items given in (55) above, the infinitival particle and the preposition respectively, undergo incorporation into a preceding degenerate foot in quite the same way as it was done above by the indefinite article. This, as we have seen above, is a process of encliticisation. By way of illustration let us choose (55b). Consider now the proper bracketing in (61) and the prosodic representations in (62) below.



The representation in (62b) below attempts to capture the stage where *to* and *me* are already concatenated, but *lie* still lies out of the purview of prosodic relations.

In (62a) we have given the lexical representations of the three respective items constituting the verb phrase *lie to me*. In *lie* the second (glide) portion of the diphthong is distinctively lodged in the second vocalic position, so that the latter is not at all empty. For this reason, left-to-right government may manifest itself only in terms of a metrical relation, since the second vocalic position is not empty. A similar relationship is manifest in the long vowel of *me*. Melody here spreads into the second position of the long vowel from the first one, and only after this process has taken place can left-to-right (metrical) governing relationship be established between the two skeletal positions of the long vowel. This is due to the fact that an empty vocalic position may not be properly governed from left-to-right over an empty consonantal position. The reason for this is quite simple: such a structural configuration would result in an empty cV^{34} sequence, which is a metre lapse. Since an empty consonantal

³⁴ If any appear as a paradox that the second portion of the long vowel is represented by a capital V in the diagrams and yet the final two skeletal positions are referred to as an empty cV sequence. Notice,

position followed by a governed empty vocalic position could only be interpreted as mere silence, the pronunciation of such a structure would amount to a short vowel followed by silence.

In (62b) we encounter again the now familiar default governing relation between V_4 and V_3 indicated by the dashed line. This disfavoured structure, however, is not established in (62c), where a more favourable binary trochaic foot is erected, whereby V_1 incorporates V_3 into a well-formed trochaic foot. Having received licence to govern, V_3 is now able to govern V_2 , the second position of the true diphthong. The phonotactic reflex of this latter relationship is that only off-glides can be inserted into this position, i.e., the distributional possibilities are heavily curtailed here. Furthermore, since V_2 also receives licence to govern, it will strike the consonants on both sides, causing them to lose their inherent muteness. In the case of the empty consonantal position, this loss of inherent muteness will be manifest in the smooth sonorant transition from the first half of the diphthong onto the second. In the case of the contentful consonantal position to the right of V_2 , government contributes to flapping, already initiated by V_3 at the melodic level.

3.4 Conclusions

This section has made an attempt to extend the principle of GOVERNMENT LICENSING to vocalic positions in a strict CV framework. The concept itself was originally proposed as a condition on the grammaticality of consonant clusters in standard GP, cf. Charette (1990, 1991). Using a strict CV framework, we have tried to show that not only consonantal positions but also vocalic governors need a licence to govern. While word-internal government licensing is accompanied by vowel reduction (foot-internal government licensing) or phonotactic dependencies (long vowels and diphthongs), this is not necessarily so across the word. We have accounted for the distribution of flapped, glottal and aspirated allophones of /t/ in terms of government licensing, by pursuing the idea that it is indeed feasible to account for word-initial lack of flapping by making reference to two factors: lack of licence to govern on the one hand, and the idea that a consonantal position cannot be licensed and governed simultaneously by the same vocalic position, on the other. We have also seen how the clitic-like behaviour of function words helps explain the distribution of flapped versus aspirated [t] in different contexts.

We have seen that the proposal that proper government exclusively operates on the melodic tier is untenable because it leaves empty vocalic positions without proper control. Moreover, a distinction between lexical and post-lexical relations of government needs to be made and phonology strives to maintain uniform foot-types all along the skeleton.

Finally, it has been pointed out that syntactic structure also influences the evolution of post-lexical governing relations, by providing a basis on which these algorithms are to be calculated.

however, that the second portion of the long vowel is empty until spreading has taken place, and the diagrams illustrate a stage when this process has already taken place. In other words, the diagrams show the result of phonetic interpretation.

4 Summary

As opposed to currently-held views in the theory of Government Phonology, we have claimed in this paper that government is neither left-to-right nor right-to-left, but is instead bidirectional. The theory advocated here is based on the assumption that there is no difference between the principles governing stress and vowel reduction on the one hand, and the manifestation of empty vocalic positions on the other.

Another proposal of the paper is to extend governing relations beyond the word domain by making a distinction between lexical and post-lexical government. We have seen that governing relations established as a last resort during the course of phonetic interpretations may be altered post-lexically in order to maintain monotonicity of foot types. Governing relations contracted post-lexically are influenced by the syntactic structure of the given string.

In the framework proposed in this paper, governing relations are not subject to the principle of strict directionality, and locality is also considerably reassessed. The latter is defined by syntactic/morphological structure.

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