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SONORANTS CONSPIRACY: A UNIFIED SOLUTION TO VOWEL SYNCOPE AND BOGUS CLUSTERS IN ENGLISH

The aim of the paper is to explore three apparently unrelated phenomena, i.e. syllabic consonants, vowel syncope and bogus clusters and provide convincing evidence for their intimate relationship. Specifically, it is pointed out that all three phenomena have the same origin and stem from the expansionist behaviour of sonorants, which in turn is a reaction of the latter to a positional weakness. We argue that a unified solution for the three structures is possible on condition that in English lexically present nuclei are never properly governed even by the strongest governors, that is, realised vowels. As a result the analysis contributes to the postulation of the governing-ability scale for different types of nuclei in English.

1. Introduction

The major objective of the present analysis is to explain the distribution and the trigger of three phenomena, i.e. syllabic consonants, vowel syncope and bogus clusters. It is our ambition to provide some evidence for their intimate relationship, which will in consequence allow us to offer a unified solution. Since the phenomena in question have always been a source of bewilderment among linguists, the first part of the paper will be devoted to an introduction of the relevant facts and a brief discussion of previous accounts. Unquestionably it is a sonorant which plays a key role in the formation of syllabic consonants, therefore we shall look more deeply at the behaviour of sonorants in similar structures, i.e. vowel syncope and bogus clusters. As for the latter two, it will be pointed out that the result of vowel syncope is the consonant sequence which resembles a bogus cluster, that is, a cluster which is neither a branching onset nor a coda-onset sequence. Moreover, it will become evident that although English abounds in syncope-related and true bogus clusters, their distribution is severely curtailed, that is, they are possible only in the word-internal position. The second part of the paper addresses the questions and problems which are accumulated in the initial sections. It will become evident that all three phenomena, i.e. syllabic consonants, vowel syncope and bogus clusters, have the same origin and stem from the expansionist behaviour of sonorants, which in turn is a reaction of the latter to a positional weakness. Moreover, it will be proposed that in English lexically present nuclei are never properly governed even by the strongest governors, that is, realised vowels. The latter observation contributes to the postulation of a governing-ability scale for different types of nuclei. Additionally, it will be shown that the postulation of the active initial empty CV unit at the beginning of the word in English (Scheer 2004, Kijak 2005) can predict the distribution of the structures in question. Finally, the findings of the analysis point to the possibility for a sonorant to cover a long distance from a syllabic consonant to a governing relation with the preceding consonant.

The analysis is couched in the theory which is the latest development of the Government Phonology (GP) framework, that is, the Strict CV approach (Cyran 2003, Scheer 2004). Additionally, we adopt the lenition theory, known as the Coda Mirror, introduced and developed by Ségéral and Scheer (1999). The discussion begins with the presentation of the relevant facts concerning syllabic consonants.

2. English syllabic consonants

The aim of this section is to present and discuss some basic facts concerning syllabic consonants in English. Although syllabic consonants do not seem to have much in common with both vowel syncope and bogus clusters, some facts related to the latter two phenomena will also be introduced and discussed here.

The most evident and at the same time the most general observation concerning the consonantal inventory of English is the fact that some of the consonants can play a syllabic role. In other words, such consonants take over the vocalic duties. Consonants which are able to function in the way described above are generally referred to as sonorants. It follows that obstruents can never appear in syllabic clothes, at least in the Indo-European languages.[1]

The last few decades witnessed a dramatic shift in the representation of syllabic consonants. In the SPE tradition syllabic consonants were described as consonants which possessed a [+syllabic] feature specification. Together with the development of non-linear frameworks syllabic consonants were perceived as segments which can change the constituent affiliation. More specifically, sonorants were ascribed a special ability to leave the consonantal position and move to the vocalic one. The change of place, however, was possible on condition that the preceding vowel (usually the schwa) had disappeared. In more recent frameworks syllabic consonants are perceived as special in that they are doubly linked. This simply means that while being linked to a consonantal slot a sonorant in certain cases can additionally dock on to the

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[1] Although rare, languages with syllabic obstruents are reported to exist, for example, American native Northwest languages (see Czaykowska-Higgins and Willett 1997, among others).

nuclear position. The double-linking representation of syllabic consonants is especially true in the Government Phonology framework. In the latter model there are at least two theory-internal reasons which call for the representation mentioned above. Firstly, in the Element Theory the realisation of an element depends on the position it occupies in the syllabic structure. This is clearly observable on the example of the element (I), which is realised either as the vowel [i] or the semivowel [j]. The former segment can appear only under a nuclear slot, while the latter one can be linked to a consonantal position. It follows that if a sonorant were able to leave its original consonantal position and dock on to the nuclear one, we would witness a change in the realisation of the sonorant, just like in the [i] and [j] case. Secondly, the change of the constituent affiliation would imply resyllabification, which is banned anyway from the GP framework (1).

(1) Projection Principle (Kaye et al. 1990:221)
'Governing relations are defined at the level of lexical representation and remain constant throughout a phonological derivation'

The Principle in (1) excludes any changes in governing relations during the course of derivation. In other words, resyllabification is prohibited and a melodic unit that is linked to a consonantal position cannot surface under a nuclear slot. Thus, it follows that the optimal representation for syllabic consonants is the one where the sonorant is linked to a consonantal slot, while at the same time it spreads to a neighbouring nuclear position. The idea is further discussed in the immediately following sub-section.

2.1. Some English facts

The general observation emerging from the short introduction above is that in English, just as in several other languages, sonorants are granted the right to dock on to a nuclear position.[2] Moreover, in order to play a syllabic role a sonorant spreads to the left, i.e. to the preceding nucleus. What is crucial, however, is the fact that this analysis requires a vowel to step aside and make room for the following sonorant. In order not to anticipate the discussion which will appear later in this paper, we only note here that the schwa for one reason or another becomes delinked from the nuclear position. In this way a receding schwa enables a neighbouring sonorant to take over its duties. However, it is not true that all sonorants have an equal opportunity to become syllabic. Thus, in English only nasals, the lateral and the post-alveolar approximant can play the syllabic role. Furthermore, the syllabicity of the velar nasal is marginal simply because this nasal never appears after schwa (see Szigetvári 1999,

[2] One may want to include here the forms where the schwa is lost between two obstruents, e.g. *difficult* ['dɪfɪkl̩t] > ['dɪfkl̩t], *potato* [pə'teɪtəʊ] > [p'teɪtəʊ], etc. Since, however, the clusters in question do not contain a sonorant they must be recognised as the instantiation of a different phenomenon, see Abercrombie (1967) and Rodgers (1998).

Gussmann 1998). Thus, every occurrence of the syllabic velar nasal is the result of the process of place assimilation, e.g. *chicken* [tʃɪkən] > [tʃɪkn̩] > [tʃɪkŋ̩]. Finally, it should be clarified here that in the majority of cases the phenomenon in question depends on the tempo of speech. Thus, while in a slow, careful and somewhat learned pronunciation of *arrogant*, for example, the schwa separates the [g] from the final [nt] cluster, that is, ['ærəgənt], in fast, less controlled speech the vowel is lost and the sonorant becomes syllabic ['ærəgn̩t]. Another interesting thing to note is that English does not generally tolerate complex consonant clusters. In the vast majority of cases consonant sequences do not exceed two segments. However, given the double-linking ability of sonorants, English consonant sequences appear to be much more complex, with up to four or even five consecutive segments, e.g. *accountant* [ə'kaʊntn̩t] and *singleton* ['sɪŋgl̩tn̩], respectively. Consider now some more examples of syllabic consonants in (2).

(2) a. *word-internally*		b. *word-finally*		c. *word-initially*	
legend	['ledʒn̩d]	sudden	['sʌdn̩]	until	[n̩'tɪl]
arrogant	['ærəgn̩t]	napkin	['næpkn̩]	balloon	[bl̩'u:n]
cabinet	['kæbn̩ət]	bosom	['bʊzm̩]	convulsed	[kn̩'vʌlst]
cavalry	['kævl̩ri]	gradual	['grædʒul̩]	confetti	[kn̩'feti]/[kŋ̩'feti]
faculty	['fækl̩ti]	rascal	['rɑ:skl̩]		
violin	[ˌvaɪl̩'ɪn]	shrapnel	['ʃræpnl̩]		

A word of clarification concerning the data under (2) is in order here. In his analysis of vowel syncope in English Szigetvári (2002) points out that syllabic consonants arise only when preceded by a consonant and hence there are no word-initial syllabic consonants. Szigetvári (2002) argues his point by indicating that in the majority of cases the unstressed word-initial vowel fails to reduce to schwa and hence cannot be replaced by the following sonorant, e.g. *angelic* [æn'dʒelɪk]. Moreover, in the forms which do contain the word-initial schwa, e.g. *unless* [ən'les], the sonorant never becomes syllabic *[n̩'les]. The same holds true for word-initial open syllables, e.g. *allow* [ə'laʊ], *[l̩'aʊ], *annoy* [ə'nɔɪ], *['n̩ɔɪ]. Finally, Szigetvári (2002) points to the fact that while syllabic consonants can follow unstressed vowels, they do not normally appear after stressed ones, e.g. *casual* ['kæʒuəl] > ['kæʒul̩], *jewel* ['dʒu:əl] > *['dʒu:l̩] respectively. However, the distributional constraints enumerated in Szigetvári (2002) are violated by the examples given in Hammond (1999). Thus, we find word-initial syllabic consonant in *until* [n̩'tɪl], or a syllabic consonant in the word-initial open syllable, e.g. *balloon* [bl̩'u:n]. Similarly, the ban on syllabic consonants after stressed vowels does not seem to hold in *violin* [ˌvaɪl̩'ɪn]. What seems true, however, is Szigetvári's (2002) observation concerning the restricted distribution of the consonants flanking the receding schwa. Note that while the lateral can become syllabic after the bilabial nasal, the reverse order of consonants is not possible, that is, the syllabic bilabial nasal after the lateral, e.g. *camel* [kæml̩] and *column* *[kɒlm̩] respectively.

Excluding the fact that syllabic consonants can appear only in the unstressed syllables, the immediate conclusion drawn from the data in (2) is that there are hardly any restrictions on such structures as far as the position of the word is concerned. Thus, they arise in the word-internal (2a), as well as the word-final (2b) position. They can also appear as the second member of the word-initial consonant sequence or even as the first consonant of the word (2c). Furthermore, given the distribution of the syllabic consonant represented under (2), it seems practically impossible to capture the accurate context of the sonorant in question. Thus, although the syllabic consonant is correctly predicted to occur in the place of the previous schwa, the broader context varies dramatically. Note that the sonorant in question can appear between two consonants, e.g. *arrogant* ['ærəgn̩t], before a vowel, e.g. *cabinet* ['kæbn̩ət], after a vowel, e.g. *gradual* ['grædʒul̩], or even intervocalically, e.g. *violin* [ˌvaɪl̩'ɪn].

The left-branching structure of the syllabic consonant is confirmed by the examples given in (2), where the representation containing the schwa is equally possible, e.g. *sudden* ['sʌdən]. Note that in the latter situation the sonorant is never syllabic. Thus, from what has been said above it follows that the disappearance of the schwa is intimately connected with the appearance of the syllabic consonant. Since it is always the preceding schwa which disappears, the left-branching representation must be correct. The sonorant spreads to the left and docks on to the position originally occupied by the schwa. This situation is depicted in the example of *sudden* ['sʌdn̩] in (3).

(3)	C	V	C	V	C	V
	|	|	|	ǂ		|
	s	ʌ	d	ə	n̩	ø

There are two immediate questions which may occur to the reader. Firstly, is it possible to define the precise context of the phenomenon? Secondly and more importantly, what is the trigger of the expansionist behaviour of sonorants? In other words, why do syllabic consonants appear in the first place? In the remainder of this paper we shall address both questions and suggest a potential solution to the problem.

3. Bogus clusters and vowel syncope

This section aims at presenting relevant data concerning bogus clusters and vowel syncope in English. It will become clear that both structures are very closely related in that they appear in the same position of the word and have identical structure, i.e. a consonant followed by a sonorant. It will be pointed out that even though bogus clusters can be given a uniform account in Government Phonology, the proposal suffers from some weaknesses. The most serious one is the inability to ban bogus clusters from the word-initial position in English.

English may be classified among the group of languages which, in the word-initial position, tolerate only the sonority-rising clusters, that is, #TR.[3] However, it is

[3] Consonant clusters of the s+C(C) type are deliberately omitted here. Such clusters are problematic not only in English but in most of the Indo-European languages.

also true that there exist consonant clusters which are ruled out from the word-initial position but which nevertheless occur word-medially, e.g. [tl] in *atlas* or [dn] in *kidney*. It is worth mentioning that while such clusters are perfectly possible in the word-initial position in some other languages, e.g. Polish, they never start a word in English, or to use traditional terminology, such consonant combinations are forbidden to co-exist in a word-initial branching onset.

The peculiarity of such clusters has long been noted and described in previous studies dealing with English phonotactics, see Giegerich (1992), Harris (1994), Szigetvári (1999, 2002) among others. In the vast majority of cases the absence of such consonant sequences from the word-initial position has been explained by the homorganic ban put on the segments within a branching onset. In other words, identical or nearly identical segments were not allowed to appear in a branching onset. The GP response to this problem formulated by Harris (1990)[4] is much in the spirit of the traditional generalisation. Harris (1990:278) proposes to capture the generalisation in terms of a constraint which forbids segments appearing in a branching onset to be bound for more than one element. The author argues for the presence of the coronal element (R) in the internal representation of the alveolar nasals and the lateral. Since both segments are also specified for the occlusion element (ʔ), the absence of [tl], [dl], [tn] and [dn] clusters occurs naturally as the two segments involved share both elements. Note that the [tr] cluster is correctly predicted to be well-formed as both segments share only one element, that is, (R). If a consonant cluster cannot form a branching onset in the word-initial position, it is perfectly justified to claim that it cannot do it word-medially or in any other position either. Another option available in GP, i.e. to represent word-internal bogus clusters as coda-onset sequences, is similarly doomed to failure. In GP the coda as a separate constituent does not exist. The traditional coda constituent is reduced here to a rhymal complement, which can appear only when it is governed by a following onset (Kaye 1990). In order to establish an inter-constituent governing relation the onset must be occupied by a segment which is at least as complex as the preceding segment in the coda. Thus, it follows that while a [nt] cluster is a perfectly possible coda-onset sequence, the reverse order of consonants, i.e. [tn], never appears in a coda-onset interlude simply because [n] is less complex than the preceding [t]. Since the [tl] clusters are not possible branching onsets or coda-onset sequences, the only logical solution left is to admit that they are spurious or bogus clusters and as such separated by an empty nuclear position. This is actually the stand taken by, among others, Harris (1994), Gussmann (2002), and the Government Phonology tradition.

Admittedly, Strict CV has nothing more to offer in the discussion concerning bogus clusters. Both Government Phonology and Strict CV represent such clusters in a similar fashion. The only difference between the two theories lies in the fact that, while in the former the representation of bogus clusters is the only possible solution, in the latter this is a consequence of the regular syllabification procedures. In Strict

[4] For a similar solution but in a different theoretical framework see Rice (1992).

CV there are no codas or branching constituents at all, hence any consonant cluster is separated by a nucleus. From the above it follows that in Strict CV bogus clusters lose their peculiarity. The most serious shortcoming of the representation postulated by both theories, however, is that we still cannot explain why bogus clusters have a limited distribution in that they never occur word-initially. In other words, if bogus clusters are in fact two onsets separated by an empty governed nucleus, they should be possible word-initially as well as word-medially. There is nothing in either of the two theories which would forbid the existence of the empty nucleus between the first two consonants of the word. Note that if we claimed that the word-internal bogus clusters contract Infrasegmental Government (IG),[5] we would face exactly the same problem, that is, why IG cannot hold word-initially. The conclusion we arrive at, therefore, is that both GP and Strict CV predict word-initial bogus clusters which are not admitted in English. Table (4) offers some more illustration of bogus clusters.

(4)	a[tl]as	A[tl]antic	bu[tl]er
	cu[tl]ass	an[tl]er	mo[tl]ey
	ki[dn]ey	me[dl]ey	mau[dl]in
	chu[tn]ey	a[θl]ete	be[dl]am

Harris (1994) points out that even though such obstruent plus sonorant sequences are of the rising-sonority profile, they are not allowed to co-occur in a branching onset. In fact, they are not truly adjacent and as such constitute bogus clusters. To sum up, in GP bogus clusters cannot be represented as either a branching onset or a coda-onset sequence. They wind up as two distinct onsets separated by the empty governed nuclear position (5).

(5)

$$
\begin{array}{cccccc}
 & & & & \text{PG} & \\
 & & & \downarrow & \longleftarrow & \rceil \\
\text{O} & \text{N} & \text{O} & \text{N} & \text{O} & \text{N} \\
| & | & | & | & | & | \\
\text{x} & \text{x} & \text{x} & \text{x} & \text{x} & \text{x} \\
| & | & | & | & | & | \\
\text{b} & \text{ʌ} & \text{t} & \text{ø} & \text{l} & \text{ə}
\end{array}
$$

Since this representation is problematic for both: Government Phonology and Strict CV, we are all the more obliged to find the solution to this problem. Before we suggest a solution, however, let us turn to the other, no less relevant, phenomenon, i.e. vowel syncope. As already mentioned, bogus clusters are possible in the language due to the fact that the empty nucleus between the obstruent and the sonorant is governed by the following nucleus through Proper Government (PG). As noted by Harris (1994) and Gussmann (2002) the representation of the bogus cluster in (5) is

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[5] Infrasegmental Government is a leftward governing relation between a sonorant (governor) and a preceding obstruent (governee) sponsored by the following phonetically realized nucleus (see Scheer 2004).

plausible as the empty governed nucleus between the consonants is realised in certain dialects. This is exemplified by the word *athlete* which is pronounced by some speakers with the schwa [ə] separating the cluster in question. Thus, both authors report on the existence of the alternative pronunciation, that is, ['æθəliːt]. This fact, according to Harris (1994) and Gussmann (2002), confirms the validity of the representation in (5). Another piece of evidence which seems to support the claim that bogus clusters are in fact two onsets separated by the empty governed nucleus comes from a closely related phenomenon, vowel syncope. This could be compared to regular vowel-zero alternations in Polish, for instance, with the difference that in English this is an optional rather than obligatory situation as it appears mostly in casual speech styles. Thus, as pointed out by Harris (1994:67), there exist forms, like *chocolate* ['tʃɒklət], which resemble the examples in (5) in that they contain identical bogus clusters. The only difference is that, while the [kl] cluster in *chocolate* arises due to the operation of vowel syncope, the one in (5) above never alternates with a vowel. This 'static' versus 'dynamic' opposition is clearly observable in the case of *catholic* ['kæθlɪk] and *athlete* ['æθliːt], where both forms possess an identical word-internal cluster [θl]. Furthermore, Harris (1994) precisely defines the context in which vowel syncope may occur. First of all, the alternating vowel is always some kind of schwa. Secondly, the process occurs in the post-tonic nucleus, which means that the process in question crucially relies on the stress pattern.[6] Finally and most importantly, the syncope depends on the identity of the consonant immediately following the syncope site. Interestingly enough, it is always a resonant. Thus, forms like, for example, ['refrəns], ['tʃɒklət] or ['seprət], etc., satisfy the three requirements. The most remarkable contribution, however, is the latter observation, i.e. the obligatory presence of the sonorant in the second position of the relevant clusters. On the one hand, the presence of the sonorant in this position must be treated as a mere accident as it does not play any active role in either a 'static' or 'dynamic' bogus cluster. On the other hand, however, its presence in this position is obligatory. In other words, bogus clusters are clusters which resemble branching onsets in that they usually consist of an obstruent followed by a sonorant, e.g. ['medli], ['ɒprə], ['tʃɒklət], etc. Note that two-obstruent clusters, even if they satisfy the first two conditions mentioned above, cannot witness a vowel syncope, as is confirmed by the ungrammaticality of the following forms: *bracketing* *['brægktɪŋ], *gossiping* *['gɒspɪŋ], *menacing* *["mensɪŋ].[7] From this it follows that the role played by sonorants is underestimated.

Interestingly enough, Harris (1994) and Szigetvári (2002) point to the fact that besides unsyncopated and fully syncopated variants there is a third option, one which

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[6] Harris (1994) indicates that if the post-tonic nucleus is followed by a secondary-stressed nucleus occurring in an independent foot, syncope does not take place. It follows that the syncope is possible in the adjective ['seprət], but it is not allowed in the differently stressed verb ['sepəˌreɪt], see also Szigetvári (2002).

[7] Recall, however, the forms mentioned above, that is, *difficult* ['dɪfkl̩t], *potato* [p'teɪtəʊ] or *university* [ˌjuːnɪ'vɜːsti].

contains a syllabic consonant, e.g. ['ɒpr̩ə], [ɪ'speʃl̩i], ['pɜːsn̩l̩]. It has already been mentioned in the body of this paper that sonorants have the ability to dock on to the preceding nucleus, giving rise to syllabic consonants. The general ability of sonorants, however, should be increased as they are also responsible for the appearance of syncope-related bogus clusters. Table (6) quoted from Harris (1994:185) and slightly modified offers some more illustration of the facts discussed so far.

(6) a. b.

separate	['seprət]	misery	['mɪzri]
temperature	['temprətʃə]	every	['evri]
elaborate	[ɪ'læbrət]	surgery	['sɜːdʒri]
factory	['fæktri]	century	['senʃri]
boundary	['baʊndri]	nursery	['nɜːsri]
chocolate	['tʃɒklət]	camera	['kæmrə]
mystery	['mɪstri]	prisoner	['prɪznə]
reference	['refrəns]	definite	['defnət]
awfully	['ɔːfli]	opener	['əʊpnə]

c.

rocketing	['rɒkɪtɪŋ]	menacing	['menəsɪŋ]
monitor	['mɒnɪtə]	opacity	[ə'pæsəti]
gossiping	['gɒsɪpɪŋ]	balloting	['bælətɪŋ]

The data presented in (6) is interesting for at least two reasons. Firstly, the examples pinpoint the fact that a syncope-prone schwa can be suppressed not only between two consonants which resemble a possible branching onset (6a), but also between consonants which are not a potential branching onset (6b). Additionally, the forms in (6c) demonstrate the fact that syncope is unable to appear between two obstruents. Secondly, the forms in (6b) contribute to the refutation of the traditional analysis consisting in resyllabification (Harris 1994:186).[8] Note further that GP cannot interpret the resulting clusters in (6b) as either branching onsets or coda-onset sequences. Thus, they are ascribed a different representation: that of a cluster separated by the empty governed nucleus. Harris (1994) concludes the discussion by pointing out that consonants occurring in a syncope-related bogus cluster are not adjacent simply because there is a lexically present schwa which separates both consonants. The schwa is suppressed by the following vowel through Proper Government. Although 'static' bogus clusters are not broken up by the alternating vowel, they are represented in the

[8] Harris (1994:183) points out that the epenthetic solution is impossible as well. Very briefly, the appearance of the same bogus cluster in two different words where only one of them alternates with a vowel makes the epenthetic solution inapplicable. For example, a bogus cluster [dl] can be found in *maudlin* ['mɔːdlɪn] and *pedalling* ['pedlɪŋ] with the difference that the latter, unlike the former, alternates with the schwa ['pedəlɪŋ]. It means that a rule which inserts a schwa in *pedalling* should also put one in *maudlin* which is, however, not the case.

same fashion. In short, both 'static' and 'dynamic' bogus clusters are separated by the empty governed nucleus (7).

(7) a.

			PG				
O	N	O	N	O	N	O	N
x	x	x	x	x	x	x	x
d	e	f	ə	n	ə	t	ø

b.

			PG				
O	N	O	N	O	N	O	N
x	x	x	x	x	x	x	x
	æ	t	ø	l	ə	s	ø

The only difference between the representations in (7a) and (7b) is that in the former the bogus cluster is separated by a lexically present alternating vowel, while the latter is separated by a lexically empty nucleus. However, this solution has some serious flaws. First, note that although Harris (1994) hints at the idea that a syllabic consonant can replace the syncope-prone schwa, he does not pursue this idea any further. Secondly, if syncope is triggered by the following nucleus through Proper Government it means that a schwa flanked by two obstruents should disappear due to the same reason, i.e. the application of PG. Additionally, the theory at this stage is still not able to provide a satisfactory explanation of the absence of both 'static' and 'dynamic' bogus clusters from the word-initial position. Finally, we need an explanation for the behaviour of the lateral [l] in two related forms, that is, *fiddle* [fɪdl̩] and *fiddler* [fɪdlə]. More exactly, why in the former case is there only one option available (syllabic consonant), while in the latter instead of a syllabic consonant we find a bogus cluster? We shall address these questions in the second part of this paper, which is devoted to the analysis of sonorants in the relevant contexts.

To sum up, apart from branching onsets and coda-onset sequences GP is forced to recognise a third possibility, that is, a sequence of onsets separated by the empty governed nucleus. GP makes use of the latter structure to represent both bogus clusters and syncope-created bogus clusters. Crucially, it was noted that there was an attempt to combine syncope-related bogus clusters and syllabic consonants. This line of inquiry, however, rather than being finalised has been abandoned halfway through. Coherent as it is, the solution offered by GP suffers from some weaknesses. The most evident one is the inability to explain the lack of word-initial bogus clusters.

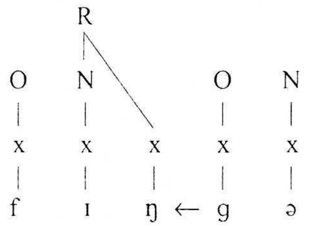
4. Sonorants conspiracy

In this section we would like to propose a unified solution to seemingly unrelated phenomena which have been introduced and discussed above, that is, vowel syncope, bogus clusters, and syllabic consonants. Moreover, we shall address the questions and problems outlined in the first part of the paper. The solution to be offered integrates all three structures and accounts for the traditional problems. We begin the discussion with partial geminates and the syllabic consonants.

4.1. Partial geminates (Scheer 2003)

In all previous accounts of partial geminates it is always the obstruent which is the trigger of the place assimilation process.[9] An identical view is advocated in Government Phonology, which is in fact a welcome result of the governing relations postulated in the model. Note that in the latter theory the nasal (in partial geminate clusters) appears in a rhymal complement and must be governed by the following obstruent onset. In such a relation an obstruent, being a governor, imposes the place of articulation on the preceding governee, that is, the nasal (8).

(8) partial geminate clusters in GP



In (8) the nasal [ŋ] is governed by the following obstruent [g] through the inter--constituent government '←', hence it is the latter which is the agent and forces the preceding nasal to acquire the same place of articulation. Admittedly, this kind of explanation is not possible in the Strict CV model. Recall that in the latter framework the inter-constituent government along with the intra-constituent government are totally dispensed with. In other words, coda-onset sequences and branching onsets do not exist. From the above it follows that partial geminates, similarly to other consonant clusters, are separated by the empty nucleus. The latter fact precludes any kind of relationship between the partial geminates, which apparently constitutes a problem for the Strict CV model. Note that it is not possible to explain why obstruents should impose the place of articulation on the preceding nasals. Both consonants are separate onsets which do not hold any governing relation; they are even not adjacent. The inadequacy of the Strict CV model to explain the phenomenon in question is one of the reasons why Scheer (2003) poses a challenge to the traditional view on the partial geminates. More specifically, Scheer (2003) explores the idea that it is not the obstruent which enforces the place specification on the preceding sonorant. Quite the contrary, it is the sonorant which is an active member of the partial geminate cluster and it takes what it needs from the following obstruent. The reason behind the active status of sonorants lies in the fact that in such clusters they appear in a weak position. Specifically, according to the lenition theory, that is, the Coda Mirror (Ségéral and Scheer 1999), the nasal in *finger*, for instance, appears before an empty nuclear position and this position is identified with the lenition site (9a). The following obstruent, on the

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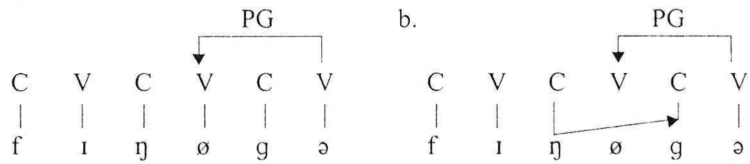
[9] Gussmann (2002:78) uses the neutral term 'nasal place sharing' to stress the fact that neither the nasal nor the obstruent is the dominating member of the cluster.

other hand, occurs after a governed empty nucleus and before a vowel, and this is a typical strong position. The representation of *finger* in the Strict CV model is given in (9) below.

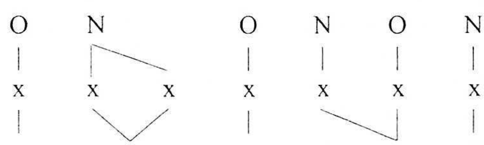
(9) a. b.



The empty nucleus separating the nasal from the plosive is properly governed by the following vowel. Since internal empty governed nuclei cannot dispense government or licensing, it means that the nasal in (9) is neither governed nor licensed. Thus, it follows that the nasal appears in a weak position. The most common response of segments to this unfavourable position is the loss of the melodic material, i.e. lenition. Interestingly enough, in weak positions sonorants, unlike obstruents, have the ability to spread and dock on to a neighbouring position. In this way they gain the stability required to avoid lenition. As depicted in (9b) the nasal can reach the following plosive and dock on to its place of articulation. In consequence, they end up as a partial geminate cluster. Such structures, as pointed out by Scheer (2003), are generally recognised as more stable, geminates being the most stable structures of all. See Kenstowicz and Pyle (1973), Schein and Steriade (1986), McCarthy (1986), Honeybone (2002).

Summing up, the general picture emerging from Scheer's (2003) proposal is that it is a sonorant that is the agent, while an obstruent behaves like a patient. This is, in fact, a welcome situation as sonorants in the Strict CV model play an active role in other structures like in, for example, Infrasegmental Government (see footnote 5). Furthermore, in the vast majority of cases the nasal assimilates to the following obstruent as depicted in (9); there are, however, rare cases like German where the nasal assimilates to a preceding obstruent, e.g. *Wagen* [vaːgən] > [vaːgŋ] 'car'. What is important here is that the result in both scenarios is identical, that is, a nasal acquires the place of articulation of the neighbouring obstruent. Note that the reverse homorganic clusters are problematic for GP as it is the nasal that follows an obstruent. As mentioned above, in the GP model nasals are not complex enough to govern obstruents; in other words, they never contract an inter-constituent government. They cannot constitute a branching onset either. Thus, if partial geminates arise due to the imposition of the place element by the governor on the governee in the inter-constituent government (see (8) above), the answer to the progressive assimilation in German (10) must be sought elsewhere.

(10)



In (10) the reason why the cluster [gŋ̩] is not a possible coda-onset relation is twofold. Firstly, as mentioned above, nasals are less complex than obstruents and so the former never govern the latter. Secondly, and more importantly, the consonants are separated by the schwa, which means that this cluster is not a coda-onset relation. It could be claimed that the syllabicity of the nasal is the key to the explanation of the progressive assimilation. Note, however, that if we followed this line of inquiry, we would obtain the same result, i.e. partial geminates, by means of two totally different mechanisms, that is, inter-constituent government and syllabicity. In his analysis Scheer (2003) argues that the nasal in (10) occurs in a weak position (before the empty nucleus)[10] and in order to survive the nasal spreads and displaces the preceding schwa giving rise to the syllabic consonant. However, syllabicity is not the end of the road for the nasal as it can reach as far as the obstruent to dock on to its place of articulation. In this way the nasal creates a structure which is branching; it displaces the preceding schwa and additionally docks on to the place of articulation of the obstruent.

The general conclusion drawn from Scheer's (2003) analysis is that the formation of syllabic consonants does not depend on the status of the schwa. Conversely, syllabic consonants arise in response to the weak position they happen to appear in. In order to survive the sonorant spreads and replaces the schwa. Additionally, the solution proposed by Scheer (2003) explains why syllabic consonants arise only after a schwa and why they are so common word-finally. As for the former, it is a widely accepted fact that the schwa is the next but last step on the lenition trajectory from a full vowel to zero. It follows that a full vowel, unlike the schwa, is not weak enough to be displaced by the sonorant. The reason why they appear so readily at the right margin is the fact that this is a weak position.

4.2. In search of the unified context of syllabic consonants

Having introduced Scheer's (2003) proposal to explain partial geminates in German, we are in a position to address the questions raised at the end of section 2.1. above. Namely, what is the precise context and the trigger of the syllabic consonants? In what follows we shall apply Scheer's (2003) solution to the English data and see whether it can capture the facts.

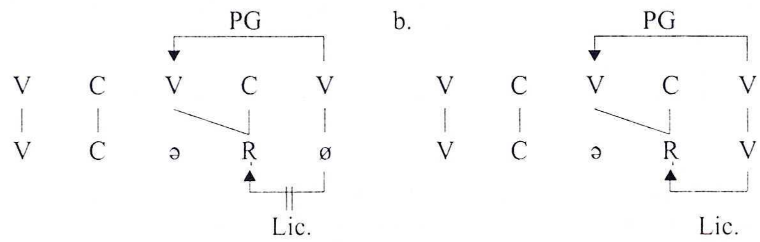
Let us start by pointing out some similarities between German and English. First of all both languages allow for the word-final 'TR' clusters, which are the result of the schwa syncope, e.g. *button*, *happen*, *chicken* ['bʌtn̩], ['hæpm̩], ['tʃɪkŋ̩], respectively. As can be seen in this context the nasal becomes syllabic. Moreover, progressive nasal assimilation, although far less productive, is also admitted in English. Another similarity between both languages is the governing ability of final empty nuclei. Thus, the grammaticality of forms like, for instance, *fact*, *apt*, *lamp*, etc., shows that the

[10] In (10) the nasal occurs in a weak position as it is governed but unlicensed. Note that in German final empty nuclei are sound governors of the lexically empty nuclei only, hence the schwa in (10) cannot be properly governed but disappears due to the nasal spreading.

empty nucleus separating the last consonant cluster in those forms must be governed by the final empty nucleus. Moreover, as will be pointed out below and in the following sections, final empty nuclei are not able to govern lexically present nuclei. To anticipate the discussion below, it suffices to note that although vowel-zero alternations are possible in English and they do appear in the word-final position, they occur only in a highly restricted context, that is, before a sonorant. It follows that if we compare the situation in which the final nasal in the German word *Wagen* 'car' [vaːgən] > [vaːgn̩] appears with that in the English word *chicken* ['tʃɪkən] > ['tʃɪkn̩] we arrive at the same conclusion. Namely, the nasal [n] appears in a weak position, that is, it is governed but unlicensed. In this position a nasal is predicted to react and search for a place to spread on to, which is the case in English as well as in German. In brief, the nasal displaces the preceding schwa and takes over its position. However, this is not the only position in which syllabic consonants appear. It was pointed out (section 2.1.) that there are hardly any restrictions on the distribution of syllabic consonants in English. They can be found not only word-finally but also word-internally and word-initially before consonants, vowels and intervocalically. The only requirement that must be satisfied is the presence of the preceding schwa. This, as was pointed out in the previous section, is a natural consequence of the fact that schwa is the weakest vowel and can be easily displaced by the spreading consonant.

To find an adequate explanation for the syllabic consonant we should, first of all, reject a solution which may seem promising at first sight, i.e. syllabic consonant as the result of the application of Proper Government.

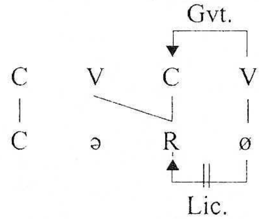
(11) a. b.



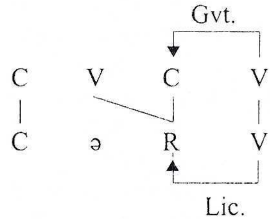
In (11a) the position occupied by the schwa is properly governed by the following empty nucleus. The schwa disappears making room for the sonorant to spread. However, it has been mentioned above that final empty nuclei are not able to govern lexically present nuclei. Thus, (11a) is not a possible representation of syllabic consonants. The impossibility of final empty nuclei to govern lexically present vowels is additionally confirmed by the fact that the schwa disappears only before sonorants and never before obstruents, e.g. *cabinet* ['kæbɪnət], *definite* ['defn̩ət], *barrack* ['bærək], *chocolate* ['tʃɒkᵊlət], *separate* ['sepᵊrət] etc. Nobody would be persuaded of the validity of the claim that final empty nuclei can govern the preceding schwa only if the latter appears before a sonorant and never before an obstruent. The same line of reasoning applies to the word-internal and the word-initial position where a syllabic consonant is followed by an audible vowel (11b). Thus, if a full vowel is able to govern the schwa before a sonorant, it should in principle also govern the schwa before an obstruent. The latter situation, however, is again not admitted in the language. Another consequence of the fact that the sonorant in (11b) is followed by the full vowel is that the former is licensed. Full vowels, unlike empty ones, are sound licensors. Thus, it follows that the sonorant in (11b) appears in a strong position. It escapes government, while being licensed at the same time. If we want to claim that syllabic consonants arise in response to positional weakness, there is no reason why the sonorant should be active in (11b). From the discussion above it follows that both representations in (11) are incorrect. Vowels which are lexically present are never targets of Proper Government in English.

One observation that follows directly from the discussion above is that in English syllabic consonants appear before both the empty and full nuclei. Given the fact that they are always preceded by the schwa, we can conclude that syllabic consonants appear intervocalically. Furthermore, according to the Coda Mirror both contexts, i.e. before the empty nucleus and intervocalically, are weak, hence it follows that syllabic consonants arise in response to positional weakness (12).

(12) a. before an empty nucleus



b. before a full vowel



In (12a) we have the representation of the word-final syllabic consonant. The sonorant is followed by the empty nucleus which is not allowed to govern the preceding schwa. In consequence, the government strikes the sonorant. Additionally, the sonorant lacks a licensor as English final empty nuclei are not allowed to license. This simply means that the sonorant appears in a weak position and in order not to fall prey to lenition it spreads to the left and docks on to the nuclear position. In (12b), on the other hand, the sonorant appears in the intervocalic position, before an audible vowel. The solution we propose here is that nuclei in English, be they empty or full, are not allowed to govern lexically present vowels. It means that the sonorant under (12b) is both governed and licensed. The latter context, like the former one, represents a weak position, and hence the sonorant becomes syllabic. Furthermore, this solution predicts the position in which syllabic consonants arise more frequently. Thus, in the intervocalic position they are optional, depending on the tempo of speech; however, before a governed empty nucleus the sonorant gets syllabic more readily. This fact falls out naturally from the lenition theory, i.e. the Coda Mirror, where the intervocalic position is less 'destructive' than the position before a governed empty nucleus (see Ségéral and Scheer 1999).

It has already been mentioned that the sonorant spreading ability contributes to the existence of heavy consonant clusters of up to even five consonants in a row, e.g. *singleton* ['sɪŋgl̩tn̩]. This is possible since the nucleus invaded by the following sonorant can dispense government just like a regular vowel. It should be borne in mind, however, that neither syllabic consonants nor regular vowels are able to govern lexically present nuclei. To put it differently, they can govern only nuclei which are lexically empty (13).

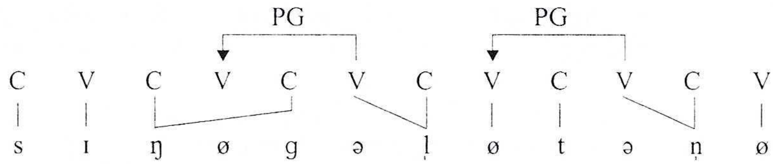
(13)

			PG				
C	V	C	V	C	V	C	V
	æ	m	ø	p	ə	l̩	ø

In (13) the lateral [l] appears before a final empty nucleus, hence it is governed but unlicensed and this, according to the Coda Mirror, is a weak position. The sonorant spreads to the left and displaces the schwa. The nuclear position occupied by the sonorant is not empty, which means that it can function as a governor and govern the preceding empty nuclear position. In consequence we arrive at the three-consonant cluster. Similar examples can be multiplied, e.g. *napkin* ['næpkn̩], *twinkle* ['twɪŋkl̩], *falcon* ['fɔːlkn̩], *husband* ['hʌzbn̩d], etc. As mentioned above, what syllabic consonants, vowels and final empty nuclei have in common is the ability to govern lexically empty nuclei. All three structures, however, never govern vowels which are lexically present. This is clearly observable in the case of *faculty* ['fækl̩ti], *arrogant* ['ærəgn̩t], *cavalry* ['kævl̩ri]. Thus, in such forms a syllabic consonant is not able to govern the preceding nuclear position simply because it is not empty. Furthermore, given the forms containing two sonorants in a row before an empty nucleus, e.g. *shrapnel*, *grapnel*, we should wind up with two consecutive syllabic consonants. This is, however, not the case here as the first sonorant is preceded by an empty position which is properly governed by the second sonorant which is syllabic, e.g. ['ʃræpnl̩] and ['græpnl̩] respectively. In other words, the nuclear position between [p] and [n] is lexically empty, which means that it can be properly governed. This can be done by the nuclear position occupied by the syllabic consonant. In consequence, the nasal [n] appears in a strong position, i.e. it is licensed but ungoverned, and does not have to spread to the left to survive. Note, however, that the solution offered here predicts two syllabic consonants in a situation where both sonorants are preceded by the schwa, e.g. *general* ['dʒenr̩l̩], *marginal* ['mɑːdʒn̩l̩], *personal* ['pɜːsn̩l̩], *national* ['næʃn̩l̩], etc.[11] Two syllabic consonants in one word do appear but in the vast majority of cases they are separated by at least one obstruent. This is illustrated on the example of *singleton* ['sɪŋgl̩tn̩] in (14). Note that this form is interesting for at least two reasons. Firstly, it represents a complex five-consonant cluster. Secondly, there are three sonorants and all of them appear in a weak position, hence are predicted to respond to the positional weakness.

[11] We have not managed to confirm the existence of such forms. In Harris (1994:185) such forms are the representatives of a different phenomenon, that is, vowel syncope, hence they are represented as ['dʒenrəl], ['mɑːdʒnəl], ['pɜːsnəl], ['næʃnəl], respectively. We shall return to such forms in the immediately following sub-section.

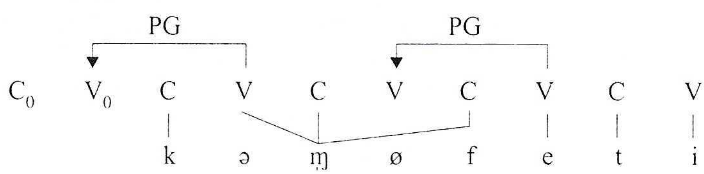
(14)



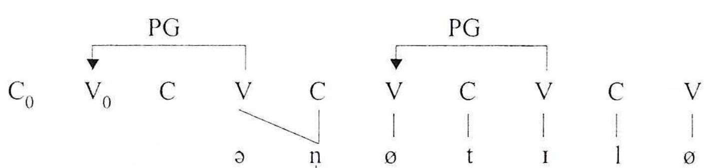
In (14) the final sonorant being in a weak position spreads to the preceding nucleus and docks on to it, replacing the original segment, that is, the schwa. The nuclear position occupied by the sonorant governs the preceding empty nucleus, the one between [løt]. This governed empty nucleus follows another sonorant [l] which, similarly to the final [n], appears in a weak position. The situation here is identical to the one found at the end of the word and so the syllabic consonant governs the preceding empty nucleus. The first sonorant of this word also appears in a weak position. However, being preceded by a regular vowel it spreads backwards and docks on to the place element of the obstruent, that is, [ɡ]. In consequence, both consonants give rise to a partial geminate cluster, i.e. [ŋɡ].

Let us now focus our discussion on the last context in which syllabic consonants arise, that is word-initially. In what follows we provide some evidence demonstrating that syllabic consonants, in contradistinction to bogus clusters and vowel syncope (to be discussed in the following sections), can appear word-initially. Word-initially, just as in other contexts discussed above, one condition which allows the sonorant to spread must be satisfied, namely, the sonorant is preceded by the schwa. This simply means that the initial syllable is unstressed and hence contains the schwa, e.g. *until* [n̩'tɪl], *balloon* [b'l̩uːn], *convulsed* [kn̩'vʌlst], *confetti* [kn̩'feti]/[kɱ̩'feti]. The representation of *confetti* and *until* is provided in (15).

(15) a.



b.



Similarly to other contexts, word-initial syllabic consonants arise in response to the positional weakness. Interestingly, the sonorant in (15a) simultaneously spreads in two opposite directions. It replaces the schwa on the left and docks on to the place of articulation of the following obstruent. In (15b) the syllabic consonant is the first segment in a row. Moreover, it was pointed out (Kijak 2005) that the difference in the phonotactic patterns between English and Polish boils down to the status of the word-initial empty CV unit. Thus, English in opposition to Polish enjoys an active CV unit, which is represented in (15) as CV_0. Since the initial CV unit is a phonological object and is empty it requires a governor. This requirement is satisfied by the syllabic consonant which, recall, is a sound governor and licensor.

To sum up, the analysis of English syllabic consonants confirms the proposal put forward in Scheer (2003). Thus in English, just as in German, the reaction of sonorants to positional weakness is the spreading to the preceding nuclear position if it is occupied by the weakest vowel, that is, schwa. It has been pointed out that syllabic consonants appear in the intervocalic position, i.e. after schwa and before a nucleus either empty or realised. Sonorants react in the intervocalic position due to the fact that vowels in English are not able to govern nuclei with lexically present material. In other words, our stand is that in English Proper Government can hold only between a vowel and a lexically empty nuclear position. In consequence, the sonorant in the intervocalic position is both governed and licensed. According to the Coda Mirror both contexts, i.e. before an empty nucleus and intervocalically, represent weak positions. The general conclusion emerging from the analysis above is that syllabic consonants appear in weak positions. Another consequence of the discussion in this section is that the schwa-zero alternations or vowel syncope in English are never the result of Proper Government but of the sonorant evacuating from the endangered position. Vowel syncope will be discussed at greater length in the following sub--section.

4.3. Vowel syncope

The discussion in section 3 above was confined to the presentation of the phenomenon known in the literature as vowel syncope. We have presented the basic facts and indicated the problematic areas concerning the alternation in question; however, no ready solutions have been offered. In what follows we shall make an attempt to explain the phenomenon of vowel syncope in English. It will be claimed that vowel syncope is related to both syllabic consonants and bogus clusters. Specifically, it will be pointed out that syllabic consonants and vowel syncope have the same trigger (see also Szigetvári 2002). Moreover, the result of vowel syncope is a consonant cluster which is identical to a bogus cluster.

As mentioned in section 3, vowel syncope affects only the weak vowel, i.e. the schwa, and appears in a rigidly defined context – between a consonant, usually an obstruent and the following sonorant,[12] e.g. *company* ['kʌmpøni], *chocolate* ['tʃɒkølət], *separate* ['sepørət], *family* ['fæmøli], *silvery* ['sɪlvøri], etc., where 'ø' denotes the vowel syncope site. The immediate observation is that vowel syncope and syllabic consonants operate on the consonant cluster which can be represented schematically as 'CøR' (an obstruent followed by a sonorant).

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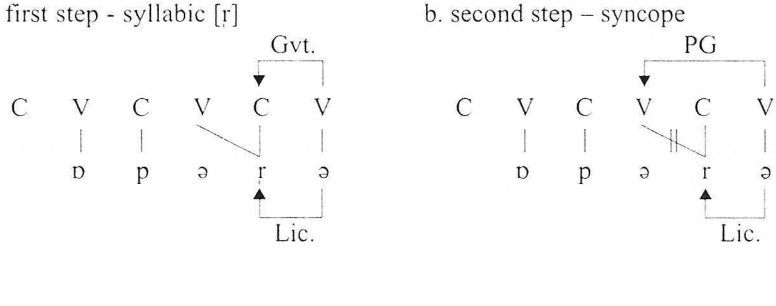
[12] Although in the vast majority of cases it is an obstruent followed by a sonorant, two sonorants are also possible. In the latter case the first sonorant is always a nasal, e.g. *finally* ['faɪnø-li], *general* ['dʒenørəl], *family* ['fæmøli].

As mentioned above, in GP the phenomenon of vowel syncope is perceived as a regular case of the relation between two nuclei, that is, Proper Government. Thus, Harris (1994) suggests that the syncopated schwa is properly governed by the following nucleus. The representation of vowel syncope was illustrated in (7a) above. Recall that this solution suffers from two serious drawbacks. Firstly, it is impossible to explain why vowel syncope occurs only in the 'CR' context. Given the nature of PG the schwa between two obstruents should be in principle as easily syncopated as the one between an obstruent and a sonorant. However, the former context does not witness the alternation in question (see (6c) above). Secondly, a pertinent question to ask is why the vowel syncope never appears between the consonants of the word-initial cluster. Even if PG were the real trigger of the vowel syncope, it would be difficult or downright impossible to ban the application of this mechanism in the word-initial position. The general conclusion emerging from the GP analysis is that the schwa between an obstruent and the following sonorant disappears for two independent reasons. The schwa either disappears and makes room for the sonorant to spread (syllabic consonant), or is properly governed and hence syncopated (vowel syncope).

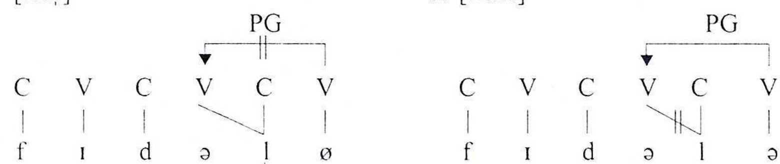
The Proper Government solution offered in GP is not available in the present analysis simply because we have suggested that English vowels do not function as proper governors. In other words, they are not able to govern other nuclear positions unless the latter are lexically empty. In consequence the sonorant following a vowel syncope site appears in the same weak position as the syllabic consonant, that is, it is governed and licensed. This lets us claim that an essential prerequisite of vowel syncope is the syllabic consonant. To put it differently, the syncopated schwa is not properly governed; it is displaced by the following sonorant. This solution is further confirmed by Harris (1994) who points out that vowel syncope has an intermediate variant containing a syllabic consonant, e.g. *opera* ['ɒpr̩ə] > ['ɒprə], *especially* [ɪ'speʃl̩i] > [ɪ'speʃli], *personal* ['pɜːsn̩əl] > ['pɜːsnəl]. The conclusion drawn from the discussion above is that the first step to vowel syncope is sonorant syllabicity. Crucially, this analysis is possible on condition that the nuclear position occupied by the left branch of the sonorant can be properly governed. Our stand is that in English vowels are not allowed to govern nuclear positions occupied by lexically present vowels but they are able to govern nuclei which host the left branch of the sonorant. Thus, it follows that the sonorant displaces the schwa only to be governed by the following vowel, and this situation is illustrated in (16).

(16) a. first step - syllabic [r̩] b. second step – syncope



From the discussion above it follows that both phenomena, that is, vowel syncope and syllabic consonants, have a common trigger, that is, a resonant occurring in a weak position. This proposal results naturally from the observation that in English only sonorants can enjoy a syllabic status. Moreover, this solution resolves the mystery of the context in which vowel syncope operates. It is always a sonorant that follows a syncope site as only sonorants can spread and become syllabic. Interestingly enough, vowel syncope never appears before an empty nucleus; it can only appear in a situation where a sonorant is followed by a realised nucleus (see again (6a–b) above). Thus, in a word *fiddle* ['fɪdəl], for example, the final cluster is either separated by the schwa (in a very slow and careful pronunciation) or the sonorant [l] becomes syllabic ['fɪdl̩]. Note, however, that the schwa separating the cluster is never syncopated. To put it differently, it is impossible to arrive at the situation where the left branch of the syllabic consonant is governed by the empty nucleus, that is, *['fɪdl] (17a). On the other hand, the latter situation is possible if the cluster is followed by a vowel, e.g. *fiddler* [fɪdlə] (17b).

(17) a. [fɪdl̩] b. [fɪdlə]



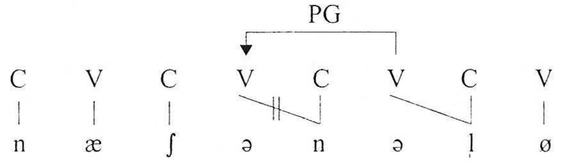
The conclusion at which we arrive, therefore, is that in English different nuclei have different governing abilities. This situation is not specific to English only; on the contrary, it is a cross-linguistic phenomenon (see Cyran 2003). The scale is represented schematically in (18).

(18)

	lexically empty nucleus ø	left branch of syllabic consonants R̩	lexically present vowels V
governing abilities of nuclei			
final empty nucleus can govern	yes	no	no
nucleus occupied by a syllabic consonant can govern	yes	yes	no
realised vowel can govern	yes	yes	no

The above table represents a possibility which has not been discussed yet, namely, a situation where a syllabic consonant governs the nucleus occupied by another syllabic consonant, e.g. *general* ['dʒenr̩l̩], *marginal* ['mɑːdʒn̩l̩], *personal* ['pɜːsn̩l̩], *national* ['næʃn̩l̩]. In principle both final sonorants, as occurring in a weak position, should become syllabic. However, since the nuclei which host the left branch of the syllabic nucleus behave like regular vowels, one more option becomes available, that is, syncope followed by a syllabic consonant (19).

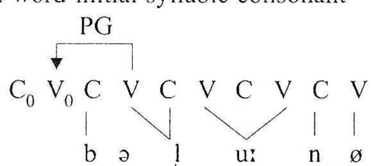
(19)



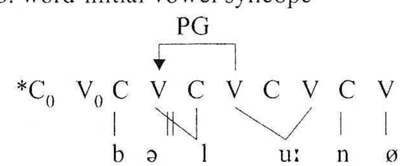
In (19) the final sonorant [l] appears before an empty nucleus, hence it spreads and docks on to the preceding nucleus. It is not allowed to govern vowels which are lexically present, so the government strikes the preceding nasal, which in this situation also becomes syllabic. Only in this situation is restructuring possible, i.e. the syllabic [l̩] can govern the preceding nucleus which host the left branch of the syllabic nasal. In consequence we arrive at the form with a syncopated vowel followed by a syllabic consonant, that is, ['næʃn̩l̩].

Finally, if it is true that the first step to syncope is the spreading of a sonorant, i.e. syllabic consonant, the latter should be found word-initially, while the former should be banned from this position. In the previous section it was pointed out that syllabic consonants do arise word-initially, e.g. *until* [n̩'tɪl], *balloon* [bl̩'uːn], *convulsed* [kn̩'vʌlst], *confetti* [kn̩'feti]. This was made possible because syllabic consonants are able to govern the empty nucleus of the word-initial empty CV unit (see the representation in (15) above). Note, however, that the second step which leads to the vowel syncope is not possible in the word-initial position. In other words, the restructuring from a syllabic consonant to vowel syncope is not admitted word-initially. This follows naturally from the existence of the word-initial empty CV unit advocated in Kijak (2005). Note that if the nucleus hosting the left branch of a syllabic consonant were governed, the initial CV unit would be left out ungoverned. It follows that while *balloon* [bl̩'uːn] is possible in English (20a), [bluːn] is totally ruled out (20b).

(20) a. word-initial syllabic consonant



b. word-initial vowel syncope



What is interesting is that the consequence of the vowel syncope in both (17b) and (19) is a consonant sequence which resembles a bogus cluster. Thus, in the following section we shall look more deeply at the phenomenon described above in section 3, that is, bogus clusters in English.

4.4. Bogus clusters revisited

This section explores a group of consonant clusters which resemble sequences hosting vowel syncope and which have been dubbed bogus (Harris 1994). Due to their similarity the former ones were called 'dynamic' (see sections 3 and 4.3 above), while the latter 'static' bogus clusters. The difference between them boils down to the fact that in 'dynamic' bogus clusters we observe schwa-zero alternation, which is absent from 'static' clusters. It will be claimed below that both types of clusters, i.e. 'dynamic' and 'static', have their origin in the sonorant spreading, i.e. syllabic consonant. Recall from section 3 that such clusters proved problematic to GP. They are not allowed to constitute a branching onset or a coda-onset sequence. The only solution available is to separate both consonants by an empty nucleus which is properly governed (Harris 1994). This solution, however, suffers from two fundamental flaws, namely, it has nothing to say about the ban on such clusters in the word-initial position and the presence of a sonorant in bogus clusters is purely accidental. In short, while word-internally there are a number of [tl] clusters, e.g. *a*[tl]*as*, *bu*[tl]*er*, *mo*[tl]*ey*, this sequence cannot start an English word. If they are separated by the empty governed nucleus word-internally, in principle the same should be possible word-initially. The lack of empty governed nuclei separating the leftmost consonant clusters in English has been mentioned by many researchers, e.g. Harris (1994), Brockhaus (1995), Cyran (2003). In their studies they claim that English is special as it does not allow for empty nuclei at the left-edge of the word and in this way it differs from languages like, for instance, Polish.

One of the main aims of Kijak's (2005) analysis is to prove that the beginning of the word plays a crucial role in syllabification.[13] Thus, what was traditionally a boundary marker is represented there as the empty CV unit. This unit is a fully phonological object and since its nuclear position is empty it requires a governor just like other empty nuclei under this theory. Note that this fact alone can explain the absence of bogus clusters from the word-initial position. If the empty nucleus separating the [tl] cluster is properly governed, it means that such clusters are not possible at the left margin, because the empty nucleus of the initial CV unit would remain ungoverned. This is represented schematically in (21), where 'TR' stands for a bogus cluster and 'V' for a realised vowel.

(21)

$$\begin{array}{cccccccc} & & & \multicolumn{3}{c}{\text{PG}} & & \\ & ?? & & \downarrow & & & & \\ C_0 & V_0 & C & V & C & V & C & V \\ & & | & & | & | & & \\ & & T & \emptyset & R & V & & \end{array}$$

Although this solution is able to explain the absence of the word-initial bogus clusters, it has nothing to say about the nature of consonants constituting such sequences. In other words, the theory should be able to explain the obligatory presence of sonorants in bogus clusters. The latter fact immediately brings to mind the similarity to vowel syncope and syllabic consonants in that all three phenomena operate on

[13] The idea to replace the traditional boundary marker with a truly phonological object, that is, the empty CV unit, originally comes from Lowenstamm (1999).

a similar type of clusters, that is, a consonant followed by a sonorant. On the basis of the analysis in this paper we can suggest a unified solution to all three phenomena. Both 'dynamic' and 'static' bogus clusters arise due to the expansionist behaviour of sonorants. Similarly to the syncope case, the sonorant of the 'static' bogus cluster appears in a weak intervocalic position. In order not to suffer from lenition, it docks onto the preceding nucleus. As argued for in the previous section, nuclei hosting the left branch of syllabic consonants can be properly governed, which is also the case here. In consequence we arrive at the bogus cluster. Synchronically in 'static' bogus clusters, unlike in 'dynamic' ones, there is no trace of the syncopated schwa or the syllabicity of the sonorant. However, as pointed out in section 3, such clusters are in certain dialects broken up by the schwa, e.g. *athlete* [æθliːt] > [æθəliːt].

The solution offered above allows us to capture two peculiarities of bogus clusters, namely, the rigid order of consonants, i.e. a consonant followed by a sonorant, and secondly, their absence from the word-initial position. As for the former, the reason why bogus clusters are always of the obstruent plus sonorant type is explained by the fact that obstruents cannot act as syllabic consonants (at least in Germanic and Slavic languages); consequently, two-obstruent bogus clusters are not admitted in the language, e.g. *[rɒkøtɪŋ]. The reason why bogus clusters are absent from the word-initial position is the active status of the initial empty CV unit. Simplifying, from the three phenomena described here, only syllabic consonants can appear at the left margin. Further restructuring leading to 'dynamic' and 'static' bogus clusters is not possible in this context as it would leave out the initial site without a governor. Moreover, this solution can also explain the absence of bogus clusters from the word-final position. Similarly, to the left margin of the word, word-finally only syllabic consonants are admitted. This results naturally from the fact that neither lexically present vowels nor nuclei hosting the left branch of the syllabic consonant can be governed by the word-final empty nucleus.

Finally, note that although some exceptional cases of the word-initial bogus clusters do appear in English, they are only apparently problematic as they are usually some borrowings like *knish* [knɪʃ], *tmesis* [tmɪsɪs], or *knesset* [knɛsət]. For most speakers, such clusters are realised with a schwa separating the consonants in question, e.g. [kənɪʃ] and [kənɛsət]. Other examples of the apparent word-initial bogus clusters are reduced to a sonorant, e.g. *pneumatic* [nju'mætɪk], *gnostic* ['nɒstɪk], *knowledge* ['nɒlɪdʒ], etc. Such clusters cannot be separated by a properly governed empty nucleus because the government has to reach the initial empty CV unit. However, when such bogus clusters are preceded by a realised vowel, which can satisfy the governing requirements of the initial site, the whole cluster is predicted to appear on the surface. This is borne out by the facts, e.g. *apnea* [æp'niːə], *agnostic* [æg'nɒstɪk], *acknowledge* [ək'nɒlɪdʒ].

Finally, let us briefly note that a bogus cluster (dynamic or static) is not the end of the restructuring road. The consonants in such clusters can go one step farther and reach a final stage which is the Infrasegmental Government relation. As pointed out by Harris (1994:222) in certain contexts the alveolar plosive [t] can be weakened to a glottal stop in forms such as, for example, *pottery* [pɒʔri], *battery* [bæʔri] (in the expression *assault and battery*). However, many speakers differentiate the latter word and *battery* [bætri] (car) in which the lenition does not affect the plosive. Note that both forms involve the vowel-syncope site. In other words, the cluster [tr] is separated by a syncope-prone schwa. Harris (1994) concludes that for speakers who differentiate [bæʔri] and [bætri] a different structure must be assumed. The cluster in the former example is separated by the governed empty nucleus,[14] while the latter must be represented as a true branching onset. In other words, the form [bætri] has been reanalysed as having an internal branching onset. Looking at the situation from the perspective of the findings in this analysis, we can say that the cluster in [bæʔri] is the result of Proper Government which strikes the nucleus hosting the left branch of the syllabic consonant. On the other hand, the cluster in [bætri] has experienced a restructuring into the Infrasegmental Governing domain.[15]

To sum up, from the discussion in this section it follows that bogus clusters and vowel syncope in English are closely related phenomena. Both structures have the same distribution, namely, they are banned from the word-initial and word-final position. They operate on the identical consonant clusters, that is, an obstruent followed by a sonorant. Finally, they have the same origin, that is, a syllabic consonant. The solution proposed in this section resolves two traditional problems, that is, the obligatory presence of sonorants in bogus clusters and the ban imposed on such sequences to appear in the word-initial position. The latter can be explained only if we assume that the initial empty CV unit in English is active. Additionally, we have noted that the extreme point a syllabic sonorant can reach is a governing relation with the preceding obstruent, i.e. Infrasegmental Government.

5. Conclusions

In this paper we tried to integrate three apparently divergent phenomena in which a leading role is played by a sonorant. Thus, we looked at the formation of syllabic consonants and the instances of 'dynamic' (syncope-related) and 'static' bogus clusters. One of the main aims was to explain the peculiar phonotactic behaviour and offer a unified solution to the phenomena in question.

We began by demonstrating the relevant facts concerning syllabic consonants in English. A brief discussion of the earlier accounts and the most serious shortcomings of the previous theories was presented. Specifically, it has been shown that it is extremely difficult to capture the exact context of syllabic consonants as they appear in all three positions of the word, both in the intervocalic and interconsonantal position. Similarly, it is not clear what triggers the formation of syllabic consonants. Additionally, since syllabic consonants, vowel syncope and bogus clusters have one common

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[14] In his analysis of the [t] lenition in different English accents, Harris (1994) indicates that a context in which the stop undergoes glottalisation is always before an empty nucleus.

[15] A similar situation may be found in German word-initial [kn/gn] clusters (see Kijak 2005).

characteristic, i.e. the order of consonants they operate on, we have looked more deeply at the latter two structures. It has been pointed out that vowel syncope and bogus clusters are one and the same phenomenon, with the difference that the former, unlike the latter, involves a syncope-prone schwa. Consequently, they have been dubbed 'dynamic' and 'static' bogus clusters respectively. Just as in the case of syllabic consonants, we have presented the relevant facts and discussed the most serious flaws of the solution offered by Government Phonology. In the second part of the paper the divergent facts have been brought together with the conclusion that syllabic consonants stem from expansionist behaviour of sonorants as a reaction to their positional weakness. This solution has then been extended to cover vowel syncope and bogus clusters in English. Crucially, it has been demonstrated that the explanation of the ban on word-initial bogus clusters (both 'dynamic' and 'static') relies on the idea that the beginning of the word is the empty CV unit. Namely, it has been indicated that the active status of the initial empty CV unit in English successfully predicts the absence of bogus clusters, to the exclusion of syllabic consonants, from the left margin of the word. In the course of the discussion it was pointed out that in English the application of Proper Government is severely restricted. The only nuclei which can be properly governed are those which are lexically empty or hold the left branch of the syllabic consonant. This fact, along with the idea of the active initial CV site, is responsible for the phonotactic structure of English.

References

Abercrombie, D. (1967). *Elements of General Phonetics*. Edinburgh: Edinburgh University Press.

Brockhaus, W. (1995). *Final devoicing in the phonology of German*. Tübingen: Niemeyer.

Cyran, E. (2003). *Complexity scales and Licensing Strength in Phonology*. Lublin: Wydawnictwo KUL.

Czaykowska-Higgins, E. and M.L. Willett (1997). Simple syllables in Nxa?amxcin. *International Journal of American Linguistics* 63, 385–411.

Giegerich, H.J. (1992). *English Phonology: an introduction*. Cambridge: Cambridge University Press.

Gussmann, E. (1998). Domains, relations, and the English agma. In: E. Cyran (ed.). *Structure and interpretation. Studies in phonology*, 101–126. Lublin: Folium.

Gussmann, E. (2002). *Phonology: analysis and theory*. Cambridge: Cambridge University Press.

Hammond, M. (1999). *The phonology of English: a prosodic Optimality-Theoretic approach*. Oxford: Oxford University Press.

Harris, J. (1990). Segmental complexity and phonological government. *Phonology* 7, 255–300.

Harris, J. (1994). *English Sound Structure*. Oxford: Blackwell.

Honeybone, P. (2002). Another difference between prosody and melody: patterns in process inhibition. Paper presented at the 9th International Phonology Meeting, Vienna.

Kaye, J. (1990). 'Coda' licensing. *Phonology* 7, 301–330.

Kaye, J., J. Lowenstamm, and J-R. Vergnaud (1990). Constituent structure and government in phonology. *Phonology* 7, 193–231.

Kenstowicz, M. and Ch. Pyle (1973). On the phonological integrity of geminate clusters. In: M. Kenstowicz and Ch. Kisseberth (eds.). *Issues in phonological theory*, 27–43. The Hague: Mouton.

Kijak, A. (2005). *Polish and English complex consonantal onsets: a contrastive analysis within the Government Phonology framework*. Ph.D. dissertation. University of Silesia.

Lowenstamm, J. (1999). The beginning of the word. In J. Rennison and K. Kühnhammer (eds.). *Phonologica 1996*, 153–166. The Hague: Holland Academic Graphics.

McCarthy, J. (1986). OCP effects: gemination and antigemination. *Linguistic Inquiry* 17, 207–263.

Rice, K. (1992). On deriving sonority: a structural account of sonority relationships. *Phonology* 9, 61–100.

Rodgers, J. (1998). Vowel devoicing in English. Ph.D. dissertation. University of Cambridge.

Scheer, T. (2003). What sonorants do in positional plight. Paper presented at the 11th Manchester Phonology Meeting, Manchester.

Scheer, T. (2004). *A lateral theory of phonology. Vol. 1: What is CVCV, and why should it be?* Berlin: Mouton de Gruyter.

Schein, B. and D. Steriade (1986). On geminates. *Linguistic Inquiry* 17, 691–744.

Ségéral, Ph. and T. Scheer (1999). Is the Coda Mirror a phonological object? Paper presented at the First Annual Meeting of the GDR 1954 "Phonologie" on Lenition and Fortition, Nice.

Szigetvári, P. (1999). *VC Phonology: a theory of consonant lenition and phonotactics*. Ph.D. dissertation. Budapest: Eötvös Loránd University.

Szigetvári, P. (2002). Syncope in English. *The Even Yearbook* 5, 139–149.