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*Vowel breaking in today's English**

0 Introduction

The term ‘vowel breaking’ is used in diachronic linguistics to describe a process whereby a monophthong changes into a diphthong due to the effects of a following consonant. This term is also used in synchronic linguistics (especially in rule-based theories) in reference to the schwa-ending diphthongs of Modern English. However, since this nomenclature suggests the interaction of a vowel and a consonant, there is a risk that we accept this suggestion as an axiom, and treat the phenomenon accordingly. Though this premise is historically accurate, we shall see that when it comes to describing Modern English, such an analysis imposes restrictions on the theoretical possibilities and leaves certain relevant questions unanswered while posing further challenges. If we accept that what is commonly referred to as ‘breaking’ in English is indeed the interaction of a vowel and a consonant, several challenges must be faced. These include the problem of defining the left-environment (i.e. the sounds preceding the schwa), the asymmetry between the behaviour of long and short vowels, and the phonological status of the resulting diphthongs. Furthermore, traditional accounts (e.g. Gussenhoven & Weijer 1990, Krämer 2005, Heselwood 2006, Kijak 2011) often cannot explain why it is the schwa and not another vowel that appears as a result of ‘breaking’.¹

If, however, we treat English ‘breaking’ as the result of the incompatibility of two consonants, the phenomenon can be defined more easily, and the unanswered questions of the traditional accounts can be explained. Although the approach proposed in this paper is not without precedent in the literature (McCarthy 1993, Halle & Idsardi 1997, Orgun 2001), it is included only implicitly, and the argumentation behind the analysis is not made clear. The aim of this paper is therefore twofold. On the one hand,

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¹ Although both Gussenhoven & Weijer 1990 and Kijak 2011 argue that the schwa is the result of spreading, their explanation is not satisfactory, since based on their account, we would expect a low vowel to appear. Even if we accept that the schwa is low, (‘The characterization of [ə] as [+low] will be uncontroversial.’ Gussenhoven & Weijer 1990:320), it is unclear why the schwa and not another low vowel appears. In Kijak 2011, it is the ‘A’ prime that spreads, which is also associated with low vowels.

I wish to demonstrate that the term ‘vowel breaking’ itself is inaccurate and misleading from the point of view of a synchronic analysis of English,² as well as to show that the chosen transcription system confines the analyst, and therefore often ‘the viewpoint creates the object.’ On the other hand, it is my intention to define the phonotactic basis of the phenomenon, which can serve as a starting point for an improved analysis regardless of the theoretical framework. Therefore, the propositions made in the paper are meant to be applicable and understood within the context of a wide range of phonological theories,³ rather than in terms of a single specific framework.

1 ‘Breaking’ in English

There are two kinds of ‘breaking’ in English: pre-L and pre-R breaking. From a diachronic perspective, it means that these consonants changed the preceding vowel into a schwa-ending diphthong. However, not all schwa-ending diphthongs are a result of this historical process. In words like *museum* /mjuˈziəm/, *Ian* /iən/, *messiah* /mɪˈsaɪə/, etc. there is no R or L in the vicinity of the diphthong. This paper is concerned with all of the Vər and Vəl sequences, and the proposed approach covers even those instances that are traditionally not considered ‘breaking’ (e.g. *royal*, *Bayard*, etc.). Therefore, we will use the term ‘breaking’ here in reference to any Və[liquid] sequence. Table 1 shows the environments in which a schwa can appear before R.

(1) Pre-R Breaking in English⁴

	i:	e:	u:/ju:	eɪ	ɔɪ	aɪ	aʊ
_(r)	<i>beer</i>	<i>bear</i>	<i>tour</i>	<i>layer</i>	<i>Moir</i>	<i>tyre</i>	<i>hour</i>
_(r)#	<i>cheerful</i>	<i>bearing</i>	<i>touring</i>	<i>layering</i>	-	<i>tiring</i>	<i>towering</i>
_rV	<i>series</i>	<i>parent</i>	<i>fury</i>	-	<i>moira</i>	<i>diary</i>	<i>dowry</i>
_(r)C	<i>beard</i>	<i>scarce</i>	<i>gourd</i>	<i>Bayard</i>	-	<i>iron</i>	<i>coward</i>

² While the primary concern of this paper is SSBE, other accents of English will also be referred to in order to include those instances of breaking that are unattested in SSBE (see Table 3).

³ Especially the ones that make use of the notion of syllables and syllabic constituents.

⁴ The symbols in the first row represent the vowel before schwa insertion. In Gimsonian transcription, these words would be transcribed as [bɪə], [bɛə], [tʊə], etc., showing the effects of laxing and compression. The purpose of the simplification is to better illustrate that the environment of pre-L and pre-R breaking is the same (see Tables 3 and 4).

It must be noted that the data in the table is subject to variation both in the pronunciation of the schwa and in the pronunciation of the R. In non-rhotic accents (as e.g. in SSBE),⁵ the status of the R is disputable in the words of the first and second rows, since the R is only pronounced if it is followed by a vowel. The first row shows 'breaking' before a pause (||). As regards the realization of the liquid, this environment is equivalent to that of the forms in the second row. Therefore, there is no R in *cheerful*,⁶ but there is in *bearing* or in the phrase *tour is*. Even more problematic are the words in the last row, where the R is not recoverable. This paper is not concerned with the status of R in these words. Nevertheless, the approach put forward here can explain the schwa in these cases too (if an R is hypothesized);⁷ therefore, these examples will be included.

The other variable in the data is the pronunciation of the schwa. If we examine SSBE as spoken today, we must conclude that the majority of speakers (especially the younger generation) does not pronounce a schwa in the words of the first three columns. Therefore the word *beer* (formerly /bɪə/) is pronounced /bɪ:/ today, *bear* (that used to be /bɛə/) is /bɛ:/, and *tour* (/tʊə/), is /tʊ:/ now. To get a clearer picture of the pronunciation of today's SSBE, let us consider Table 2, in which the phoneme symbols of Table 1 are compared to those of the more up-to-date CuBE system (Lindsey and Szigetvári 2013).

(2) Pre-R Breaking and today's pronunciation

Trad.	i:	e:	u:/ju:	eɪ	əɪ	aɪ	aʊ
CuBE	ɪ:	ɛ:	o:/jə:	ɛj	oj	aj	aw
_(r)	<i>beer</i>	<i>bear</i>	<i>tour</i>	<i>layer</i>	<i>Moir</i>	<i>tyre</i>	<i>hour</i>
_(r)#	<i>cheerful</i>	<i>bearing</i>	<i>touring</i>	<i>layering</i>	-	<i>tiring</i>	<i>towering</i>
_rV	<i>series</i>	<i>parent</i>	<i>fury</i>	-	<i>moira</i>	<i>diary</i>	<i>dowry</i>
_(r)C	<i>beard</i>	<i>scarce</i>	<i>gourd</i>	<i>Bayard</i>	-	<i>iron</i>	<i>coward</i>
	no schwa today			schwa possible today ⁸			

⁵ The abbreviation SSBE stands for Standard Southern British English (as spoken today). It is synonymous with CuBE (Current British English), but I will treat them differently in this paper, since CuBE will be reserved for the name of a transcription system, while SSBE will be used in reference to an accent.

⁶ When the whole paradigm is considered, R is present in related forms: *cheering*, *cheery*, etc.

⁷ Otherwise, the schwa must be considered lexical.

⁸ The presence of the schwa is subject to variation. In the case of words like *moira*, where smoothing is not possible, the schwa is less common than in the structurally similar *diary*, which is sometimes pronounced ['daəri]. See 3.1. and Table 6 for further comments on the different behaviours of these words.

Since there is no schwa in the *beer-bear-tour* types of words today (as shown in Table 2), there is no reason to include them in our discussion of ‘breaking’ – at least not in connection with the present state of the language. Therefore, we will confine our investigation to those forms in which a schwa can still be pronounced today, but we will shortly revisit the problem of *beer*, *bear*, and *tour* in 3.2. Let us consider pre-L breaking now in Tables 3 and 4.

(3) *Pre-L Breaking in English*

	i:	eɪ	ɔɪ	aɪ	u:	əʊ	aʊ
_l	<i>feel</i>	<i>fail</i>	<i>foil</i>	<i>file</i>	<i>fool</i>	<i>foal</i>	<i>fowl</i>
_l#	<i>feeling</i>	<i>failing</i>	<i>foiling</i>	<i>filing</i>	<i>fooling</i>	<i>bowling</i>	<i>howling</i>
_lC	<i>field</i>	<i>frailty</i>	<i>spoilt</i>	<i>child</i>	<i>coolth</i>	<i>cold</i>	-

As can be seen, the environment of the pre-L schwa-insertion is the same as that of the dark (velarized) L. It means that in contrast with pre-R breaking, there is no prevocalic position here. It also means that the appearance of the schwa depends on the darkness of the L in the forms of the second row. That is to say, if a speaker pronounces a velar L in *feeling*, then the schwa can appear; if however, the L is clear, there is no epenthesis. The *fool-foal-fowl* types of words in the last three columns may or may not be pronounced with a schwa depending on the dialect. For instance, the schwa in these forms is optional in General American (Wells 2008:103), depends on the sociolect in Scottish English (Wells 1982:412), whereas in other accents (e.g. in SSBE), the schwa is not pronounced. Let us compare the transcriptions of these vowels with the corresponding symbols of CuBE. (Table 4).

(4) *Pre-L Breaking and today's pronunciation*

Gimson	i:	eɪ	ɔɪ	aɪ	u:	əʊ	aʊ
CuBE	ij	ɛj	oj	aj	ɯw	ow	aw
_l	<i>feel</i>	<i>fail</i>	<i>foil</i>	<i>file</i>	<i>fool</i>	<i>foal</i>	<i>fowl</i>
_l#	<i>feeling</i>	<i>failing</i>	<i>foiling</i>	<i>filing</i>	<i>fooling</i>	<i>bowling</i>	<i>howling</i>
_lC	<i>field</i>	<i>frailty</i>	<i>spoilt</i>	<i>child</i>	<i>coolth</i>	<i>cold</i>	-

The symbols used in the CuBE system show clearly that the former high monophthongs ([i:], [u:]) have diphthongized. This is an important difference, since it can now be seen that the schwa-insertion is only possible after a diphthong. Table 5 sums up the relevant data from the previous tables as well as the instances that are to be explained.

(5) *Və[liquid] sequences in today's English*

	Gimson	eɪ	ɔɪ	aɪ	aʊ
	CuBE	ɛj	oj	aj	aw
1	_(r)		<i>Moir</i>	<i>tyre</i>	<i>hour</i>
2	_(r)#	<i>layering</i>	-	<i>tiring</i>	<i>towering</i>
3	_rV	-	<i>moira</i>	<i>diary</i>	<i>dowry</i>
4	_(r)C	<i>Bayard</i>	-	<i>iron</i>	<i>coward</i>

	Gimson	i:	eɪ	ɔɪ	aɪ	u:	əʊ	aʊ
	CuBE	ij	ɛj	oj	aj	ɯw	əw	aw
5	_l	<i>feel</i>	<i>fail</i>	<i>foil</i>	<i>file</i>	<i>fool</i>	<i>foal</i>	<i>fowl</i>
6	_l#	<i>feeling</i>	<i>failing</i>	<i>foiling</i>	<i>filing</i>	<i>fooling</i>	<i>bowling</i>	<i>howling</i>
7	_lC	<i>field</i>	<i>frailty</i>	<i>spoilt</i>	<i>child</i>	<i>coolth</i>	<i>cold</i>	-

2 Environment

2.1 The left environment

If we accept Gimson's phonemes as the starting point of our analysis, we must use at least two features to define the left environment: [non-low] and [long]. If however, we consider the sounds represented by the CuBE symbols, it can be seen that the schwa is always preceded by a glide. It means that the left environment can be defined by making reference to only one feature: [glide].

2.2 The right environment

The right environment of 'breaking' can also be defined in a non-disjunctive fashion. Let us notice that the liquid is followed by a morphological boundary (strong morpheme boundary or word boundary) in rows 1–2 and 5–6 of Table 5. It means that there is reason to believe that the liquid is in the coda in these cases. We have also seen in Table 3 that the environment of pre-L schwa-insertion coincides with the environment of the dark L. In terms of syllabic structure, it means that the L is in the rhyme. Based on these observations, it is not unfounded to hypothesize that the schwa can appear if the following liquid is tautosyllabic.

2.3 A simplified definition of the environment

The environment of the schwa-insertion can therefore be defined as follows: glide__liquid]_σ. The epenthetic schwa between the two consonants is due to the phonotactic constraint blocking tautosyllabic glide+liquid clusters. Such clusters of incompatible consonants are resolved by the insertion of a vowel. English 'breaking' is therefore the resolution of the phonotactic constraint *GLIDE+LIQUID]_σ. The exact constraint can vary depending on the accent. For instance, if an accent has no schwa in *rule*, *goal*, and *foal*, the constraint is *j+LIQUID]_σ.⁹

3 Problems

3.1 Syllable boundaries

If we accept that the schwa appears before a tautosyllabic liquid, one might ask whether the R of words like *diary* is in the coda (/dajr.i/). However, it does not follow from what has been argued earlier. Epenthesis is not the only source of the schwa, it might as well be lexical. The phonotactic constraint only excludes the possibility of an epenthetic schwa in e.g. *joyride*, where the R is clearly in the next syllable.

Syllabic structure can also explain the variation between speakers. Let us consider the word *tiring*. It is pronounced by some as /tajərɪŋ/, while others have no schwa in this word: /tajrɪŋ/. Based on what we have said so far, we can either say that the word contains a lexical schwa in the case of the former speaker, or argue that the word is morphologically complex, and the R is therefore in the coda. Hence, the blocked cluster is resolved by the schwa. For the other speaker, who pronounces /tajrɪŋ/, the word has been lexicalized (become monomorphemic), and based on the Onset Maximization Principle, the R is in the onset of the following syllable. There is no blocked cluster in this case, and therefore there is no need to insert a schwa. Table 6 summarizes the types of words with prevocalic R.

⁹ However, the schwa of *sour* then remains unexplained.

(6) *Words with prevocalic R*

	complex today	historically complex 1		historically complex 2	monomorphemic
Smoothing	Smoothing possible	Smoothing possible but not common		Smoothing obligatory	Smoothing not possible (or vanishingly rare)
example	<i>hiring</i>	<i>prioress</i>	<i>diary</i>	<i>mayor,</i> <i>prayer</i>	<i>virus</i>
schwa	always	always	always	never	old-fashioned
motivation for schwa	R in coda	R in coda	lexical	-	lexical if present

These categories are not deterministic, and words from each group can enter any other group. In the example mentioned above, *tiring* has left the category of morphologically complex words and entered the group of *virus*-types (in which there is no motivation for the schwa, and is therefore omitted.)

3.2 The *beer-bear-tour* types or words

As mentioned earlier, most speakers of SSBE have no schwa in words like *beer*, *bear*, and *tour*. However, the question remains: based on the phonotactic constraint described above, can we explain the schwa if a speaker does pronounce it in these words? Although the theoretical possibility is given, it must be noted that while the phonetic reality is not far from the representations /'bijə/ (*beer*) and /'tuwə/ (*tour*), it would be difficult to argue that *bear* also has a glide: /bejə/. Note that the chosen analysis has no bearing on the question of R-liaison: the simple statement 'an R can appear after long monophthongs or a schwa when followed by a vowel' applies regardless of whether we choose to analyze these words as discussed above or as /bɪ:/ /be:/ /to:/.

3.3 The problem of the diphthongs

We have seen in 2.3 that the schwa appears between two consonants (and this is also what the consonant-letters suggest in the CuBE transcriptions). This raises the question of whether the two parts of a diphthong can be analysed differently. In other words, can we say that the CV skeleton of *fight* is CVCC and not CVVC if we have accepted that the third segment of *file* is a consonant? The discussion of this question is beyond the scope of this paper;

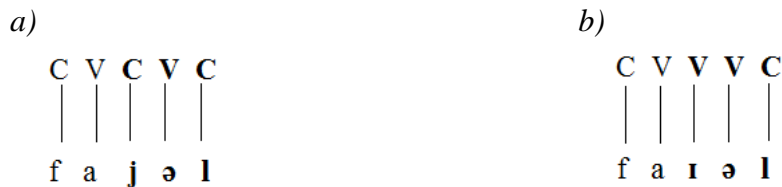
however, we must note that the simple fact that epenthesis is expected between two consonants does not prove that there are no diphthongs in English. We can conceive of such a theoretical framework in which diphthongs are made up of VC and not VV segments. In such a framework, the status of the English diphthongs is not wavered by our analysis. Szigetvári (2015) writes extensively about this problem.

4 Advantages

4.1 Unmarkedness

A universal argument in favour of the approach presented in this paper is that it defines the process as the avoidance of a marked structure (CC). The sequence after schwa insertion (CVC) (7a) is unmarked, whereas the sequence hypothesized in traditional approaches (VVC) (7b) is a marked structure, and therefore markedness has to be explained, which complicates the theory.

(7) Unmarked vs. marked skeleton



If we suppose that the schwa appears between consonants, the motivation of the process is obvious: the underlying marked CV skeleton is ‘repaired’ by the insertion of a V segment between the two consonants, making the structure unmarked.

4.2 The lack of schwa insertion after short vowels

We have seen in 2.1. that ‘breaking’ is traditionally thought to affect long vowels only.¹⁰ However, these accounts provide no explanation as to why there is no schwa insertion in words like *fill*, *fell*, *full*, etc. (i.e. after short

¹⁰ Short vowels before R are either unaffected (in words with $\check{V}_{(la)x}RV$ sequences, a.k.a. carrot-words) or broadened, but never broken.

vowels). In other words, why do these theories have to make reference to a second feature, the [+long] feature? If we treat 'breaking' as described in this paper, the problem can be avoided. It falls out of this approach that short vowels are not affected. To be more exact, no vowels are affected by the process. It is the presence of a glide that triggers 'breaking', and there are no glides in *fill*, *fell*, and *full* that could combine into a blocked cluster with the following liquid. Therefore, the epenthesis is not motivated.

4.3 The quality of the inserted vowel

In traditional accounts of 'breaking', the quality of the schwa is often unexplained. It might as well be the case that the inserted vowel assimilates to the height of the preceding vowel, as happened in Old English (Lass 1994:48). In Modern English, the quality of the inserted vowel is unaffected by the preceding vowel, which also suggests that the vowel has nothing to do with this process. On the other hand, the following consonant is also thought to affect the quality of the epenthetic vowel by some authors (as mentioned in connection with Gussenhover & Weijer 1990 and Kijak 2011), and in these cases, the vowel should 'take over' certain characteristics of the consonant. However, this does not seem to be the case. If we adopt the present approach, there is no need to explain the quality of the schwa, since it is the default vowel of English, and as such, it is the vowel that resolves blocked clusters.

5 Conclusion

In this paper, I have argued that 'breaking' in today's English should be considered the epenthetic resolution of a blocked consonant cluster. Therefore, the term 'vowel breaking' is inaccurate in reference to the present state of the language: the phenomenon is expected in a C_C environment, not in a V_C environment. The approach put forward here enables the analyst to answer the questions that are usually left unanswered in traditional accounts of 'breaking' regardless of the theoretical framework.

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