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INTRUSIVE LIQUIDS IN ENGLISH

The aim of the paper is to explore two sandhi phenomena of liquid-zero alternations, i.e. linking and intrusion in two varieties of English recorded in southern England and north-eastern United States. Since, however, the analysis of linking/intrusive *r* can be found elsewhere (e.g. Kijak 2009), the main concern here, is the phenomenon of linking/intrusive *l*. We address the questions concerning the distribution, representation and interaction of the lateral with the preceding vowel. We explain the mechanics behind the *l*-zero alternations. Additionally, we explore the problem of lexical representation of etymologically *l*-less and *l*-full forms participating in the linking/intrusion processes.

1. Introduction

The phenomenon of linking/intrusive *r*, which is common to many dialects of English, is one of those processes which are well-documented and have been thoroughly discussed but are still poorly understood. Despite the availability of detailed descriptions (Jones 1989, Wells 1982), there is still lack of agreement concerning the explanation of the alternations in question. The majority of the by now classic accounts both in linear and no-linear models are based on deletion or epenthesis (e.g. Kahn 1976, Gussmann 1980, Lodge 1984, Mohanan 1986). More recent accounts include McCarthy (1991), Broadbent (1991), Harris (1994), McMahon *et al.* (1994), McMahon & Foulkes (1995), and Kijak (2009) among others. In the present paper I look at a similar phenomenon which has been only recently documented and introduced into the discussion of intrusive/linking *r*. The phenomenon in question is known as intrusive *l* and has been discussed in Miller (1993), Gick (1999, 2002), Bermúdez-Otero (2005). The intrusive *l* is a widespread phenomenon in dialects spoken in the Northeast of the United States. It exhibits similar patterns to the aforementioned intrusive/linking *r*. Thus, just like in the case of linking *r*, linking *l* occurs before any vowel, e.g. *cruel* [kruːwə] – *cruel act* [kruːwəl ækt]. The context of the intrusive *l*, similarly to intrusive *r*, is reserved to non-high vowels, however, in the majority of cases the former process occurs after [ɔː], e.g. *law is* [lɔːl ɪz]. Finally, again similarly to the intrusive *r* pattern,

we can observe related processes associated with *l*-intrusion, which is fixed in the familiar order of vocalization, linking and intrusion. As with *r*, the historical vocalization affected pre-consonantal coda *l* leading to many later vocalic developments both qualitative and quantitative. However, in the present paper we do not look at *l*-vocalization which is thoroughly discussed in Kijak (in prep.).[1] Suffice it to say here that *l*-vocalization is evident on the example of 15th century *l*-less spellings, e.g. *behalf* – *behaf* and contemporary pronunciations of words like *stalk*, *walk* and *calve*, etc. Moreover, the 15th century witnessed another historical development known as the diphthongization before pre-consonantal *l* (*l*C), i.e. /a, o, u/ + *l*C > au, ou, as in *balk* > *baulke* 'baulk, balk', *bolster* > *boulster* 'bolster', and *shuldre* > *shoulder* (Wełna 1978). Interestingly, the process of vocalization is active synchronically in one of the contemporary dialects of English, i.e. Estuary English spoken in the London area. In the latter dialect pre-consonantal coda *l* is vocalized which results in forms like [miɔk] – *milk* (see Kijak in prep.).

In this paper I argue that the solution applied to the linking/intrusive *r* phenomenon (Kijak 2009) can be extended to account for the intrusive *l* patterns as well as other related phenomena. More specifically, in this paper I address the questions concerning the distribution, representation and interaction of the lateral with the preceding vowel. I try to explain the mechanics behind the *l*-zero alternations. Additionally, I explore the problem of lexical representation of etymologically *l*-less and *l*-full forms participating in the process of linking and intrusive *l*. The analysis is couched in the recent development of Government Phonology known as the Strict CV model (Lowenstamm 1996, Rowicka 1999, Cyran 2003, Scheer 2004) and the Element Theory which deals with the elemental make-up of phonological segments (Harris 1994, Harris and Lindsey 1995, Cyran 2003). We start the discussion by presenting some basic facts concerning the linking/intrusive liquids in some varieties of English.

2. Liquid-zero alternations

Although linking/intrusive *l* is nearly a copy of linking/intrusive *r*, both processes are recorded in different dialects. The latter is characteristic to non-rhotic dialects (henceforth dialects A) involving southern England, Australia, New Zealand but also some parts of the eastern and southern United States. The former, on the other hand, is a widespread phenomenon in the dialects spoken in the Northeast of the United States (dialects B). As mentioned before, both liquids behave identically alternating with zero. This is a typical sandhi phenomenon where the alternating variants depend on whether a vowel or consonant follows (1).

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[1] For *r*-vocalization and some vowel developments in the pre-*r* context see Kijak (2009).

(1) Linking liquids

a. *hear* [hɪə]   *hears* [hɪəz]   b. *hearing* [hɪə**r**ɪŋ]
    far [fɑː]   *far below* [fɑː bɪˈləʊ]   *far above* [fɑː**r** əˈbʌv]
    sore [sɔː]   *sore head* [sɔː hed]   *saw of* [sɔː**r** əv]

c. *drawl* [drɔː]   *drawls* [drɔːz]   d. *drawling* [drɔː**l**ɪŋ]
    Dahl [dɑː]   *Dahl to* [dɑː tu]   *Dahl is* [dɑː**l** ɪz]
    cruel [kruːwə]   *cruel for* [kruːwə fə]   *cruel act* [kruːwə**l** ækt]

In the dialects in question the linking liquid is not allowed before a consonant and the pause (1a, c); it appears only if followed by a vowel (1b, d). This observation is confirmed by frequent liquid-zero alternations. The approximants *r* and *l* show up whenever the conditions are satisfied both across morpheme-boundary, e.g. *hearing* [hɪə**r**ɪŋ] and *drawling* [drɔː**l**ɪŋ] and word-boundary, e.g. *hear about* [hɪə**r** əˈbaʊt] and *cruel act* [kruːwə**l** ækt]. This process, i.e. the linking *r/l*, has an extension in the form of the intrusive liquid. The process consists in the realization of *r/l* in etymologically liquid-less forms again depending on the following context (2).

(2) Intrusive liquids

a. *drawing* [drɔː**r**ɪŋ]   *draws* [drɔːz]
    idea of [aɪˈdɪə**r** əv]   *idea to* [aɪˈdɪə tu]
    Shah of [ʃɑː**r** əv]   *Shah was* [ʃɑː wəz]

b. *drawing* [drɔː**l**ɪŋ]   *draws* [drɔːz]
    law is [lɔː**l** ɪz]   *law book* [lɔː bʊk]
    *bra is [brɑː**l** ɪz]   *bra cups* [brɑː kʌps]

As Gick (1999: 37) notes 'intrusive *l* usually appears following [ɔː] though it can also occasionally follow [ɑː] or [ə] in some dialects'. On the other hand, in Bermúdez--Otero (2005) intrusive *l* is allowed only after [ɔː]. Hence the last example in (2b) above has been asterisked.

Summing up, some etymologically *r-, l*-full forms represented under (1) alternate between *r-, l*-less and *r-, l*-full variants, e.g. *hear* [hɪə] vs. *hearing* [hɪə**r**ɪŋ] and *drawl* [drɔː] vs. *drawling* [drɔː**l**ɪŋ]. The alternation in question is known as linking *l/r* where the liquid variant shows up pre-vocalically, while the zero alternant appears before a consonant or the pause. Interestingly enough, both liquids are also possible in the etymologically *r-, l*-less forms. Similarly to the linking phenomenon, the present alternation is conditioned by the same trigger, i.e. the presence or absence of a following vowel and arises at the morpheme-boundary, both word-internally and finally, e.g. *drawing* [ˈdrɔː**r**ɪŋ], *draw it* [drɔː**r** ɪt] and *drawing* [drɔː**l**ɪŋ], *law is* [lɔː**l** ɪz]. Crucially, the alternation in question, the so-called intrusive *l/r*, never appears if the morpheme final vowel is high or up-gliding, e.g. *see all* or *say again*, etc. In other words, the occurrence of the intrusive liquids depends on the vowel quality in the morpheme final position, i.e., it must be one of the non-high vowels.

Given the close similarity between linking/intrusive *r* and *l*, it seems obvious that they have the same trigger and should be given the same explanation. Thus, we should

answer the question whether both types of processes, i.e. linking and intrusion, are phonologically different or, more crucially, whether the intrusive liquids are lexically present and if yes, what is their representation? As noted by Gick (1999: 37) it is no longer possible to argue for *r* as the default consonant in the *r*-intrusive dialects. It has been rejected by McCarthy (1993: 190) and is furthered weakened by the fact that *l* can also undergo intrusion. Furthermore, the intimate connection between intrusive liquids and the preceding vowels also calls for an explanation. Note that both intrusive liquids surface after non-high vowels, and although the lateral, in the vast majority of cases, follows [ɔː], it is also reported to occur after [ɑː ə]. The immediate questions would be why the non-high vowels are special in that they trigger intrusion? And what is the connection between the non-high vowels and the intrusive liquids? Before we address the above question, it is crucial to look at the internal structure of segments participating in the processes in question.

3. Elemental make-up of English liquids

The Element Theory holds that phonological segments are built out of privative cognitive units called elements. Elements, unlike the traditional features, are large enough to be phonetically interpretable when they occur alone in a segment. Moreover, elements may combine with one another to form complex structures. Although it is a relatively new approach to segmental structure, and there exist some radically different solutions and views on the character and number of elements, the majority of the researchers agree that the same elements which are used to describe vocalic systems are also active in consonants. Thus, the three resonance elements (I), (A), (U) defining vocalic segments are active place definers in consonantal systems (3a). However, in order to describe consonants some additional primes are required, that is, manner elements (3b).

(3) a. *place elements*   b. *manner elements*
         U – labial, labialised   ʔ – occluded
         I – palatal, palatalised   h – noisy
         A – coronal, retracted (uvular, pharyngeal)   N – nasal
         _ – velar, velarisation   H – voiceless aspirated
                                                                L – fully voiced

Moreover, the elements which build up both consonants and vowels may be affected by the position they occupy in the syllable structure. The elemental make-up of a segment may be altered by adding a locally present element or by reducing the internal composition of a segment. Since, however, our main concern is the analysis of *l*-zero alternations rather than the presentation of the Element Theory basic tenets, we do not pursue these issues any further here. For more information and an ongoing discussion concerning the elemental make-up of phonological segments the reader is referred to, for example, Harris and Lindsey (1995), Scheer (2004), Charette and Göksel

(1996), Cyran (2003), Nasukawa (2000), Ploch (1999), van der Torre (2003), Botma (2004) among others.

Recently, sonorants have been claimed to be much more complex segments than they thought to be in earlier studies (van der Torre 2003, Botma 2004 and Scheer 2004). Moreover, in the latter work, i.e. Scheer (2004), the author argues that the velarity and roundness are two distinct phonological objects expressed by two different elements. This is the result of the observation that [u] and [w] interact both with labials and velars. Thus, in Scheer (2004) the element (U) which defines velarity is present in all velars (rounded and unrounded) and the element (B) describing labiality/roundness is present in all rounded/labial segments, cf. (3) above. Scheer (1996, 1998, 1999, 2004) accumulates some evidence which may support this solution. Coming back to the liquids, Scheer (2004) proposes to represent them by two elements (A) and (I) with the difference that the lateral, as containing a firm contact between articulators, is also defined by the occlusion element (ʔ), hence *r* = (A. I) and *l* = (ʔ. A. I). The velarized version of the lateral, i.e. dark *l*, additionally contains the element (U) but the occlusion element may be lost as the contact between the articulators is relaxed. Note that the latter fact, i.e. the presence of (U) in [ɫ], may explain some historical developments of vowels in the context before dark *l*, *l*-vocalization and contemporary vocalic developments in Estuary English or Cockney (Kijak in prep.). What is crucial for us here, however, is the presence of the low element (A) in the internal structure of both liquids. Note that the non-high vowels are uncontroversially defined by this element. This fact alone sheds new light on the mysterious, intimate relation between liquid intrusion and non-high vowels. In the section that follows, I propose a unified solution to liquid-zero alternations in question.
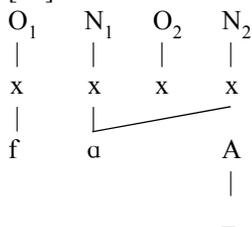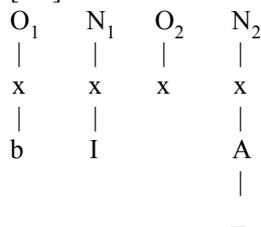
4. Analysis

4.1. Linking

In Kijak (2009) we have analysed a historical development of *r*-full forms in non--rhotic dialects. One of the conclusions we reach there is that the elemental make-up of the historical *r* is still present in one way or another in the lexical representation of the etymologically *r*-full forms (4).

(4)

a. [fɑː]

$$O_1 \quad N_1 \quad O_2 \quad N_2$$
$$| \qquad | \qquad | \qquad |$$
$$x \qquad x \qquad x \qquad x$$
$$| \qquad | \diagdown \qquad \diagup$$
$$f \qquad \alpha \qquad\qquad A$$
$$\qquad\qquad\qquad\qquad |$$
$$\qquad\qquad\qquad\qquad \_$$

b. [bɪə]

$$O_1 \quad N_1 \quad O_2 \quad N_2$$
$$| \qquad | \qquad | \qquad |$$
$$x \qquad x \qquad x \qquad x$$
$$| \qquad | \qquad\qquad |$$
$$b \qquad I \qquad\qquad A$$
$$\qquad\qquad\qquad\qquad |$$
$$\qquad\qquad\qquad\qquad \_$$
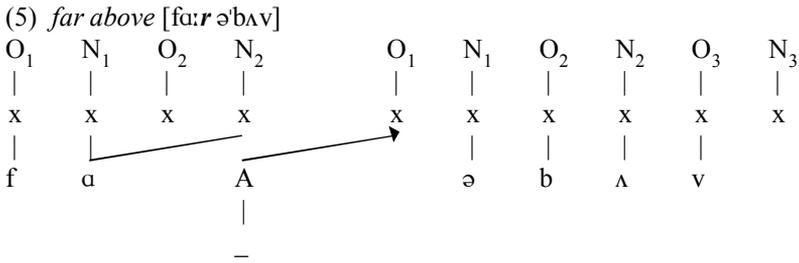
In (4a) the schwa, which evolved from the historical *r* by weakening, is not linked to the skeletal slot and hence not pronounced but still lexically present. In (4b) the material from the historical *r* is attached to the skeleton and surfaces in the clothes of schwa [ə].[2] Crucially, under certain conditions the forms in (4) have *r*-full variants. The alternating *r* variant, recall from (1b) above, occurs whenever the following word/ suffix begins with a vowel. The situation is explained as the spreading of the material from the schwa (previous *r*) to the empty onset position of the following word. Note that in the Strict CV theory the smallest unit that can be manipulated is an O-N sequence. This means that a vowel initial word begins with the empty onset which is a docking slot for the preceding *r*, i.e. (A._), to anchor in. This situation is illustrated in (5) below.

(5) *far above* [fɑːr ə'bʌv]

$$O_1 \quad N_1 \quad O_2 \quad N_2 \qquad\qquad O_1 \quad N_1 \quad O_2 \quad N_2 \quad O_3 \quad N_3$$

x	x	x	x	x	x	x	x	x	x
f	ɑ	A		ə	b	ʌ	v		

The spreading occurs whenever the onset is made available for the defused *r*. In Kijak (2009) it is claimed that the spreading in this context is possible because the onset position O_1 is licensed by the following full vowel N_1. Note that the main reason why *r* weakened in the first place and subsequently spread to the left (merging or not with the preceding vowel) was the inconvenient weak position, i.e. before the empty nucleus which is a weak licensor. As lexically present, the elements (A._) are free to spread to the onset position whenever the conditions are satisfied.
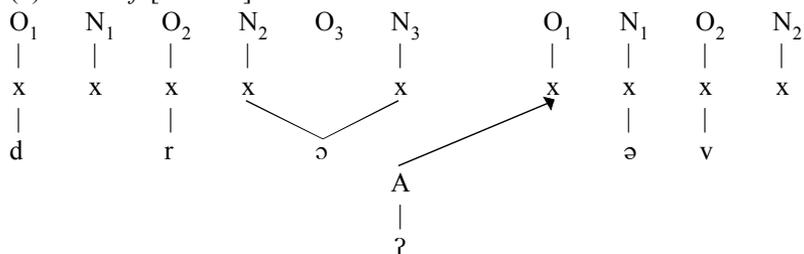
Since the context of linking *l* is identical to linking *r*, it is possible to apply the same analysis to both phenomena. Note however, that in the case of linking *l*, we do not know whether all instances of the lateral in dialect B moved to the left and merged with the preceding vowel. Generally speaking, some historical developments of English support this scenario, e.g. *balk > baulke* 'baulk, balk'. Moreover, due to the lack of examples of linking *l* after high vowels (we have not come across any such examples in the available data in dialects B), we claim here that the delinked lateral migrates to the left and is always placed under the preceding nuclear slot (merged or not with the preceding vowel). It is also possible that, at least, in certain cases only a part of the lateral, for example the element (U) or (A) of the pre-pause dark *l*, is

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[2] Recall from section 3 above that in Scheer (2004) liquids are represented as (A. I) structures. Since, however, identical phonetic objects may have different phonological representations in different systems, the postulation of the element (I) in English liquids would require additional analysis. On the other hand, the element (A) is uncontroversially a part of these segments (Harris 1994, Cyran 2003 and Scheer 2004).

merged with the preceding vowel.[3] A well known fact concerning *r* is that it has a lowering effect on a preceding vowel. The vowel lowering is a welcome effect here as it confirms the presence of the low element (A) in *r*. Since *l* also contains this element, it should exert identical effect on preceding vowels, which is confirmed by some historical developments. On the other hand, if we found examples of linking *l* after high vowels, the representation would have to be slightly modified, at least in those cases. In the latter scenario, the lateral could not be interpreted as part of the preceding vowel (no lowering effect) but rather as an example of the disassociation of the melody from the onset position without the migration to the left. The melody would be re-associated in a situation when the delinked lateral is followed by a vowel-initial morpheme. Note that the latter solution has actually been applied to linking *r* in non-rhotic dialects (Gussmann 2002). However, due to the lack of evidence to the contrary, we stand in a position that in dialects B linking *l*, just like linking *r* in dialects A, always occurs under the preceding nucleus. Needless to say, the more thorough analysis of both historical and synchronic data, especially in dialects B, is needed, which has already been undertaken by the author (Kijak in prep.).
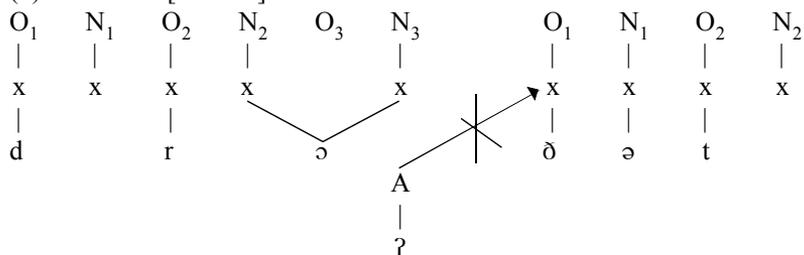
All said and done, we can now propose the representation of the linking *l* in action.

(6) *drawl of* [drɔː*l* əv]

$$O_1 \quad N_1 \quad O_2 \quad N_2 \quad O_3 \quad N_3 \qquad O_1 \quad N_1 \quad O_2 \quad N_2$$

(diagram with x positions and melodies: d, r, ɔ, A, ʔ, ə, v)

Note that when the following word starts with a consonant, the elements (A. ʔ) do not have a chance to dock on to the onset position as the latter is occupied by a consonant (7).

(7) *drawl that* [drɔː ðət]

$$O_1 \quad N_1 \quad O_2 \quad N_2 \quad O_3 \quad N_3 \qquad O_1 \quad N_1 \quad O_2 \quad N_2$$

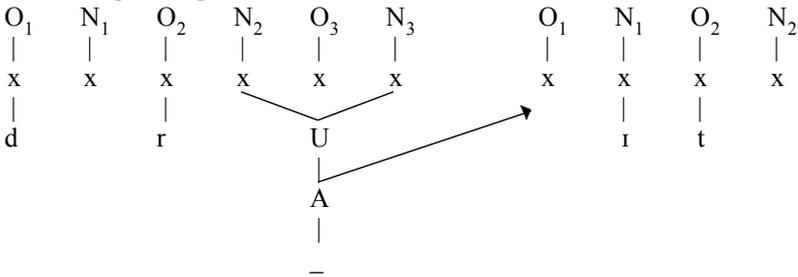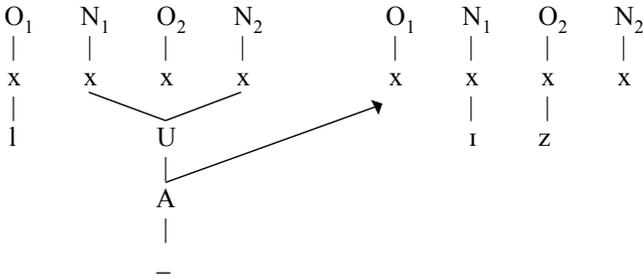(diagram with x positions and melodies: d, r, ɔ, A, ʔ, ð, ə, t)

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[3] A similar solution is applied to the English velar nasal in Gussmann (2002).

4.2. Intrusion

Apart from the linking liquid discussed above, most of the speakers in the dialects in question have yet another type of the liquid-zero alternation, the so-called intrusive *r/l*. These alternations boil down to the realization of *r/l* in the etymologically liquid-less forms. The intrusive *r/l* variant, similarly to linking *r/l*, occurs before a vowel-initial morpheme. Crucially, intrusive liquids arise only after non-high vowels (see the examples in (2) above). It would be rather awkward to postulate the presence of *r/l* in the lexical representation of historically liquid-less forms. The explanation of the link between the context and the process, i.e. intrusion, should be sought for in the elemental make-up of non-high vowels. Note that in the Element Theory applied in this analysis all non-high vowels contain the low element (A), this is also true for the schwa which is defined here as (A._). Therefore, what we claim here is that intrusive *r/l* is a process which consists in the spreading of the element (A) from a non-high vowel including schwa.[4] This solution seems superior to others in that it can do without a somewhat awkward idea of the lexical *r/l* in etymologically liquid-less forms. Moreover, it can explain, in a non-arbitrary fashion, the fact that only non-high vowels participate in this type of liquid-zero alternation. The representation of the intrusive *r* followed by intrusive *l* is given in (8a) and (8b) respectively.

(8)

a. *draw it* [drɔː***r*** ɪt]

$$
\begin{array}{cccccc@{\hspace{3em}}cccc}
O_1 & N_1 & O_2 & N_2 & O_3 & N_3 & O_1 & N_1 & O_2 & N_2 \\
| & | & | & | & | & | & | & | & | & | \\
x & x & x & x & x & x & x & x & x & x \\
| & & | & & & & & | & | & \\
d & & r & & U & & & \text{ɪ} & t & \\
& & & & | & & & & & \\
& & & & A & & & & & \\
& & & & | & & & & & \\
& & & & \_ & & & & &
\end{array}
$$

b. *law is* [lɔː***l*** ɪz]

$$
\begin{array}{cccc@{\hspace{3em}}cccc}
O_1 & N_1 & O_2 & N_2 & O_1 & N_1 & O_2 & N_2 \\
| & | & | & | & | & | & | & | \\
x & x & x & x & x & x & x & x \\
| & & | & & & | & | & \\
l & & U & & & \text{ɪ} & z & \\
& & | & & & & & \\
& & A & & & & & \\
& & | & & & & & \\
& & \_ & & & & &
\end{array}
$$

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[4] Bear in mind that although intrusive *l* is possible after [ə] and [ɑː], it occurs predominantly after [ɔː]. This may be explained by the process of *l*-vocalization and the development of the preceding vowel which in effect winds up as [ɔː] (Kijak in prep.).

Note that the reason why in dialects B the spreading material is realized phonetically as [l] is explained by fact that in such systems the linking segment is always the lateral (historically, this segment has also undergone vocalization). The prototypical alternation is linking *l* which is a higher step or simply the result of vocalization. And intrusion is yet a higher stage where the context is broadened to cover all instances of vowels including the low element (A) responsible for the alternation in question. The element (A) which spreads and docks onto the following onset position is interpreted phonetically as *l*, which simply means that the speakers of dialects B reinterpret the material as (A. ʔ). The phonetic reinterpretation is not an uncommon situation as confirmed by Cyran and Nilsson (1998).

5. Conclusion

In this paper we have explored two phenomena of liquid-zero alternations, i.e. linking and intrusion in two varieties of English recorded in southern England and north-eastern United States.

First of all, both dialects indicate a similar order of processes, i.e. vocalization > linking > intrusion. In dialects A (non-rhotic) the vocalization affected both liquids, i.e. *r* and *l*, however, it is *r* which alternates with zero in those dialects. On the other hand, in dialects B (which are rhotic and hence *r* is realized phonetically in all contexts) the alternation concerns the second liquid, i.e. the lateral *l*. Both liquids behave identically in yet another process known as intrusion. Although both liquids participating in the later alternation have slightly different internal structure, they are the effect of the same trigger – spreading of the low element (A) from a preceding non-high vowel. The explanation of the question why in dialects B this element is realized phonetically as [l], while in dialects A as [r] lies in the phonetic reinterpretation of (A) as (A. ʔ) in the former dialects. This seems to be a natural consequence of the fact that in the former dialects it is the lateral which alternates with zero in a more basic linking phenomenon.

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