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Ungrammaticality and descriptive adequacy in English pronunciation: the case of syncope*

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RÉSUMÉ

Cet article contribue à la compréhension de la grammaire d'un sous-ensemble des alternances voyelle-zéro en anglais, à travers les résultats d'une enquête phonologique descriptive sur le statut de la syncope en anglais parlé contemporain (Turcsan, Carlotti & Mortreux 2009, 2010). Le corpus comprend 15 heures de conversations informelles de 30 locuteurs de trois variétés d'anglais (Californie, Lancashire et Ayrshire) et la lecture d'un texte avec 40 mots trisyllabiques incluant des sites potentiels de syncope. L'analyse quantitative des données montre que presque la moitié des synopes produites par nos locuteurs sont considérées comme agrammaticales par les dictionnaires de prononciation. Le but de l'article est de comprendre comment un tel décalage est possible entre la grammaire descriptive et l'usage, en focalisant sur des cas problématiques. Une analyse qualitative indique des régularités de surface intéressantes : la chute de la voyelle n'entraîne pas de resyllabification, par conséquent, il n'y a pas de destruction de la structure sous-jacente. Les locuteurs semblent adhérer au principe de la monotonie et laissent des traces phonétiques fines pour marquer la non-adjacence, aidant ainsi l'interlocuteur à reconstruire la forme pleine. La grammaire traditionnelle semble ne pas incorporer la notion des noyaux vides et la non-adjacence sous-jacente, alors que les locuteurs les intègrent parfaitement dans leur système.

ABSTRACT

This paper looks at the grammar of a subset of vowel-zero alternations in English using findings from a large-scale descriptive project on syncope in contemporary spoken English (Carlotti, Mortreux & Turcsan 2009). The data consist of 15 hours of casual conversations representing some 30 speakers illustrating 3 varieties (California, Lancashire & Ayrshire) and a reading task comprising 40 trisyllabic words with potential syncope sites. The quantitative analysis of the data indicates that more than half of the actually occurring cases of syncope are deemed to be impossible / faulty by the major pronunciation dictionaries thus ungrammatical. The paper addresses the question of how such a big gap seems to exist between descriptive grammar and usage by concentrating only on the 'illicit' cases. A closer qualitative analysis reveals interesting surface patterns: the deletion of the vowel does not lead to resyllabification i.e. destruction of structure but, following the computational principle of monotonicity, leaves behind phonetic traces that point to non-adjacency, clearly allowing speakers to reconstruct the vowel-full form. Traditional grammar seems to have a problem with emptiness and underlying non-adjacency while speakers seem to incorporate these easily in their grammar.

Mots clés: grammaticalité, syncope, anglais parlé, adjacence, monotonie

Keywords: grammaticality, syncope, spoken English, adjacency, monotonicity

1. Introduction

This paper discusses the notion of ungrammaticality in pronunciation, illustrated by the phenomenon of syncope (also called compression or vowel deletion in the literature) in contemporary spoken English. My aim is to discover the status of grammatical / core vs.

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ungrammatical / peripheral syncope in contemporary spoken English based on corpus data and to try to understand the considerable discrepancy between grammar and usage. As the discussion unfolds, it becomes clear that the traditional analysis, reflected in pronunciation dictionaries, hinges crucially on the notion of re-syllabification. However, the corpus data clearly show that speakers do not re-syllabify. In the end, we will see that better grammars can incorporate both dictionary and usage data.

Section 2 gives a brief overview of how grammaticality translates into the description of pronunciation. Section 3 looks at the traditional description of syncope in English, followed by the presentation of Dalby (1986) in Section 4, the most comprehensive study on syncope usage to date. Section 5 presents some of the interesting findings of the PAC (Phonologie de l'anglais contemporain) project with respect to syncope. The PAC project (Durand & Przewozny 2015, 2012) is a large-scale collaborative enterprise to create a corpus of English spoken in the world, using the same protocol: <http://www.projet-pac.net/>. Section 6 concentrates on the ill-behaved cases and looks at how fine phonetic detail may help to understand speakers' behaviour. Section 7 concludes the discussion.

2. Grammaticality & pronunciation

The notion of grammaticality is central to morpho-syntax: we may say that a good sentence has to meet at least two conditions: i. the string is parsable into well-formed constituents and ii. nothing is missing. The situation is somewhat different when we get to the utterance level and grammaticality may seem less essential for pronunciation. The reason is probably because oral productions are inherently variable linked to pragmatic situations, style, tempo and the speaker's sociolinguistic background while written productions are more standardised. Yet, expected norms for individual words have been coded in dictionaries for centuries and, for the utterance level, widely discussed in phonology textbooks and in ESL material at least for decades. Nevertheless, ESL research in pronunciation has been lagging behind other skills like reading or writing, see Murphy and Baker (2015). Phonology, in the sense of 'grammar of pronunciation' follows syntax in trying to define grammaticality as parsability or analysability into well-formed constituents. For phonology, these constituents include segments, syllables, feet, phonological words, phonological phrases, tone units, etc. Parsability or a theory of representations has to be combined with a theory of processes that may apply to these representations, for instance with a parameterised ban on deletion (Harris 2011) of phonological material or at least the marking thereof in constraint-based accounts, see Gouskova (2009).

Thus, grammaticality issues surrounding spoken expressions, like the ones depicted in examples 1 and 2 below, are perhaps most obvious with inherently variable pronunciation patterns involving the presence or absence of speech sounds. The challenge for grammars then, among others, is to define a set of contexts where deletion is forbidden, allowed or compulsory. For instance, any phonological grammar of French has to define when 'liaison' (forward linking of an otherwise final silent consonant) is compulsory, forbidden or optional:

- (1) a, compulsory: tout_homme
b, forbidden: *un président_américain
c, optional: %trop_important

English also displays a wide array of consonant-zero alternations, some lexical, others post-lexical which certainly present a challenge for grammar:

- (2) a, veh~~i~~c~~l~~e / vehic~~u~~lar vs. I met h~~i~~m / the book was his
b, list~~e~~n, soft~~e~~n, % often vs. %last night, %roast beef
c, sand~~w~~ich, hand~~e~~kerchief vs. %lend me / %kindness

This article looks at a subset of vowel-zero alternations in English and hopes to answer the question whether we really need a separate utterance grammar to account for widespread productions or just better grammars.

3. Syncope in English Grammar

Syncope, alternatively also vowel-zero alternation, compression or schwa deletion, refers to the variable elision of a weak, unstressed vowel, be it post-tonic like in 'boundary or pre-tonic as in pho'netic or pa'rade. The treatment of the phenomenon vacillates between an unpredictable matter of performance and an optional casual and/or fast speech post-lexical process showing certain regularities. Most standard textbooks ignore it or just mention it like Jones (1918), Gimson (1962) or Chomsky & Halle (1968). The performance interpretation and the variability of the phenomenon may call for an analysis of syncope in terms of two conflicting constraint sets. The first set includes constraints on phonotactic well-formedness and parsability into syllabic constituents (Harris 1994) while the second set refers to rhythmic well-formedness via the parsability into binary feet, preferably trochees and the erasure of unfooted syllables, see Hammond (1999). Earliest accounts in the generative tradition (Zwicky 1972, Hooper 1978) all rely on dictionary data while corpus-based accounts like Dalby (1986) either fail to systematise or stay in the phonetics and look for remnants of schwa like Patterson *et al.* (2003). More recent phonological accounts of syncope like Szigetvari (2002) or Harris (1994) concentrate on formal representations of the phenomenon and not so much on usage. The next section contains a brief overview of the conditions surrounding syncope in the Zwicky and Hooper tradition.

3.1. Grammar of post-tonic syncope

Post-tonic syncope transforms a strong-weak-weak pattern into a strong-weak trochee by deleting the vowel immediately following the prominent syllable. Hooper (1978) distinguishes several subsets according to probability of syncope, the examples as well as the notions 'common' and 'sporadic' are hers. The example sets below are taken from Hooper (1978) without modifications. Most of these forms are synchronically productive alternations, especially before /r/ in 3, the most common syncope site in the literature. The syncopated vowel is in bold:

(3) separate (adj.), elaborate (adj.), lateral, misery, reference, impoverish, memory, authoring

The second most common syncope site is before another liquid, /l/:

(4) pedalling, erratically, desolate (adj.), easily, especially, finally, Emily

The third most common syncope site is 5a, with a following /n/. The nasals do not form a natural class with respect to syncope since deletion is sporadic in 5b with an /m/ and absent with /ŋ/, given that there are no schwa-/ŋ/ sequences in the lexicon anyway. Moreover, the presence of a preceding nasal seems to block deletion in 5c, presumably in order to avoid nasal-nasal sequences:

(5) a, national, fortun**ate**, fattening, definite, traditional, seasonal, marginal, misogyny
b, %unanimous, dec**imal**, mathematician
c, %feminine, geminate (adj.) German**y**, nominal, voluminous, hom**iny**

The decreasing probability of syncope between sets 3, 4 and 5 according to the nature of the following sonorant ($r > l > n > m$) fits in nicely with the sonority scale (Parker 2011): the more sonorous the following consonant, the higher the probability of syncope.

The examples below in 6 are different insofar as these forms are said to lack productive synchronic alternating forms, although for some, a schwa-full variant is claimed to be possible in the *Cambridge Pronouncing Dictionary*. Regardless of the exact status of these forms, they indicate that syncope may go through a lexicalisation process. What is disconcerting about these forms is the

apparent lack of unifying phonological properties that would explain which items may start to lexicalise. Although most of the examples below belong to the well-behaved syncope site inasmuch as the consonants following the site are in the /r/, /l/, /n/ set, in the case of *vegetable*, /t/ is clearly not a good right-hand context for syncope to happen. Note that while forms like *every* or *business* lack derivational paradigms where the schwa-full variant would surface following stress-shift, others like ‘*family* ~ fa’miliar or ‘*mystery* ~ mys’terious do participate in productive alternations.

(6) *vegetable*, *every*, *family*, *general*, *chocolate*, *mystery*, *Barbara*, *factory*, *mackerel*, et cetera, *camera*, *celery*, *business*

The examples in 7 display forbidden syncope sites, also labelled impossible, substandard or regional. For instance, Hooper claims that ‘such pronunciations are stigmatized as substandard regional pronunciations, while deletions of the above [examples 3-5 in the text] type are well accepted in American English’ (Hooper 1978:191). What unifies these examples is the presence of an obstruent consonant following the putative syncope site:

(7) **picketing*, *rocketing*, *balloting*, *panicking*, *candidate*, *monitor*, *voracity*, *pomposity*, *opacity*, *capacity*, *gossiping*

Apart from melodic conditioning, syncope shows sensitivity to rhythmic structure and prominence levels even below primary and secondary stress. The examples in 8 below, in American English, block syncope in the forms marked by an asterisk. A possible explanation would be a ban on consecutive prominent positions no matter the degree of prominence. The schwa-full form ensures regular footing into strong-weak positions:

(8) **degeneràte* (v.) vs. *degenerate* (adj.)
 **imàginàry* vs. *imagining*
 **mémorize* vs. *memory*

Finally, the examples in 9 belong to the ‘dubious’ acceptability set: the syncope site is preceded by a consonant cluster that may block elision:

(9) %*factory*, *adultery*, *hindering*, *blunderer*, *dangerous*, *infinite*, *Lancelot*, *chancellor*, *director*, *pardoning*,
coordinate, *personal*, *arsenal*, *larceny*

3.2 Pre-tonic syncope

Pre-tonic syncope transforms a weak-strong-weak pattern into a strong-weak pattern (wsw → sw) or even a weak-strong pattern into a strong pattern (ws → s). This kind of syncope is different from the post-tonic cases in that it seems to operate freely in some registers without phonotactic restrictions the like of which we see in examples 7, 8 and 9. Thus, pre-tonic syncope looks more like a genuine performance ‘accident’ due to rhythmic constraints, a typical post-lexical phenomenon, hence the scarcity of phonological studies. We can find mostly phonetic studies that go counter to the syncope account as a phonological on/off deletion, with the investigation of “remnants” of schwa, for a discussion, see Davidson (2006).

(10) *terrific*, *phonetic*, *potato*, *tomorrow*, *parade*, *polite*

4. Usage data 1: Dalby (1986)

Perhaps the most comprehensive study on syncope and vowel deletion in recessive positions is Dalby (1986). The rationale behind a quantitative, corpus-based approach is stated by the author below:

(11) ‘It is easy to disagree with Zwicky’s intuitions of ‘acceptability’ for some of the examples cited. [...] As useful as intuitions of grammaticality or ‘acceptability’ are in linguistic inquiry, there is a point at which they become very

difficult to make or, if clear to one investigator, sure to provoke controversy. [...] To determine what the facts are, an examination of a corpus of naturally occurring speech is called for.'

Dalby's corpus contains several types of data. First, the instrumental analysis of what he calls 'casual conversations' in the shape of 196 minutes of tape recorded television interviews. Then, two reading tasks with 3 subjects reading a list of 183 sentences with a total of 900 unstressed vowel environments: i. slow, careful reading and ii. fast reading, which he defines as follows: '[...] and then as fast as they could say them and still produces utterances they feel were possible and acceptable in a context in which they might be speaking rapidly'.

Dalby's findings, the summary of which is displayed in Table 1, indicate that the phenomenon of schwa-zero alternations in English is a more complex issue than intuitive data might suggest. Also, there seems to be a difference between conversations and the two types of readings indicating that syncope is indeed style and tempo dependent: in fast reading the rate of pre-obstruent syncope is rocketing, with stops scoring better than fricatives, while in the slow reading task post-syncope obstruents and sonorants have the same score. In conversations, following stops seem to trigger syncope more:

| | TV sample | | fast reading task | | slow reading task | |
|------------|-------------|------------|-------------------|------------|-------------------|------------|
| | before sync | after sync | before sync | after sync | before sync | after sync |
| sonorants | 1 | 2 | 1 | 3 | 1 | 1 |
| fricatives | 2 | 3 | 2 | 2 | 2 | 3 |
| stops | 3 | 1 | 3 | 1 | 3 | 2 |
| T_T | 12% | | 45% | | 6% | |
| CC_CC | 5% | | 39% | | 5% | |

Where: 1 = highest syncope rates, 3 = lowest syncope rates, T = obstruent, CC = consonant cluster

Table 1. Dalby (1986) corpus data

The most striking result, in total contradiction with prescriptive data is that with the exception of the slow reading task, following obstruents (consonant un-sonority) seem to favour syncope. Also, while it is true that unstressed vowels are more likely to be omitted if there are no consonant clusters next to them it is a gross exaggeration to claim that neighbouring clusters block syncope. The putatively best context for syncope (see chapter 3), namely an obstruent to the left and a sonorant to the right of the syncope site, rates even lowest in the fast reading task.

Manner features of consonants flanking the syncope site seem to have a significant effect: for preceding consonants the preference ranking is sonorant > fricative > stop. Interestingly, for following consonants the ranking is just reversed in the TV-sample: stop > fricative > sonorant. Table 2 shows that, all in all, sonority difference between members of the secondary cluster following deletion strongly favours syncope with a sonorant-obstruent cluster predicting the highest rate, just the opposite of traditional descriptions. The arrows point towards higher probability of syncope:

| | sonorants | fricatives | Stops |
|------------|-----------|------------|---------|
| Sonorants | | | Highest |
| Fricatives | | | |
| Stops | Lowest | | |

following consonants →

↑ *preceding consonants*

Table 2. Triggering contexts

Intriguing as these results may be, they are difficult to interpret for an in-depth study of syncope in English. The data not only contain post-tonic and pre-tonic sites but the fate of all non-stressed vowels. Phonological control in terms of context may be missing: the effect of neighbouring consonant clusters is discussed without specifying the nature of these consonants. The analysis of secondary clusters resulting from syncope is only partial. Finally, the corpus is not available for consultation. For all these reasons, a new corpus-based syncope study was called for, hence the rationale of the PAC syncope project, discussed in the next section.

5. Usage data 2: PAC Syncope Project: Turcsan, Carlotti & Mortreux (2009, 2010)

The major aim of the project was to test the predictions of both dictionary descriptions and corpus descriptions on PAC (Phonologie de l'anglais contemporain, <http://www.projet-pac.net/>) corpora in a more phonologically controlled way. For the purposes of testing syncope productions, we picked three corpora: Lancashire (11 speakers) and Ayrshire (10 speakers) in the United Kingdom and Santa Barbara (10 speakers) in California, USA. According to the PAC protocol, the tasks include: i. a word list only containing disyllabic items thus not used at this stage of the project, ii. a reading task of a one page text looking like a press article, and iii. conversational data of 10-15 minutes per speaker, transcribed orthographically and aligned with the signal under Praat, totalling 480 minutes of conversation. Since the PAC protocol does not contain fast reading, we decided to complete the data with the recording of the PAC reading text by 7 language assistants working at the University of Provence in both tempos (5 females / 2 males, 4 UK/3 USA).

We only looked at words that were trisyllabic or longer and excluded apocope (deletion at word edges). We also excluded sequences of schwa plus potential syllabic consonant because of the constant to-and-froing between CəC / CC / CC realisations: instead of a syllabic consonant it is always possible to pronounce a schwa plus an ordinary consonant. Owing to the difficulty of phonetic control over the data we preferred to discard these productions. All three authors listened to productions separately and looked at sonagrams for the dubious cases. We classified contexts in terms of i. the number and the quality of preceding and following consonants, ii. (putatively) possible / *impossible syncope following traditional descriptions and dictionaries and iii. phonological parsability of secondary clusters (following syncope) into well-formed English syllables according to Harris (1994).

Some of the major results of the survey are displayed below, bearing in mind that the aim of this paper is not to give an account of syncope in English but to discuss the (un)grammaticality of non attested forms in dictionaries. Let us consider the reading task first. Table 3. shows the total number of syncopated forms by context and corpus, the second number preceded by an asterisk indicating the putatively ungrammatical forms.

| | California | Ayrshire | Lancashire |
|--------------|---------------|---------------|--------------|
| _r | 21/*0 | 39/*2 | 24/*7 |
| _l | 30/*0 | 18/*0 | 11/*0 |
| _n | 12/*0 | 26/*13 | 14/*2 |
| _m | 6/*6 | 10/*10 | 14/*14 |
| CC_ | 16/*2 | 21/*11 | 16/*15 |
| _C obstruent | 21/*17 | 9/*9 | 3/*3 |
| _CC | 0/*0 | 7/*0 | 7/*7 |
| pre-tonic | 26/*26 | 22/*22 | 1/*1 |
| TOTAL | 132/*51 = 38% | 152/*67 = 44% | 90/*49 = 54% |

Table 3. Results for reading task (PAC)

For instance, 21 pre-r syncopated forms occur in the California corpus reading task and they are all attested in dictionaries, while in the Lancashire corpus, 7 instances of the 24 pre-r syncopated forms are not attested in dictionaries. The ‘total’ figures illustrate the proportion of agrammatical (i.e. not listed as possible forms in dictionaries) forms with respect to the totality of syncopated forms in the reading. Clearly, these figures should be taken at their face value: they indicate rough tendencies but they cannot be used for any serious statistical analysis, given the relatively small number of word tokens and speakers.

Surprisingly though, between one third and half of the productions are illicit in grammatical (dictionary) terms, even in a relatively formal task like reading. The sonority based generalisation (see 3.1) about the propensity of syncope according to the following consonant (r>l>n>m) is partly borne out. As in Dalby’s data, consonant clusters do not inhibit syncope, although preceding CC_ fares better than following _CC. Pre-tonic and pre-obstruent grammatically marked syncope is more frequent in the American English and in the Scottish English corpora.

The results for fast reading, displayed in Table 4, partly confirm Dalby’s observations:

| a. figures | | | b. individual items, syncopated vowel in bold | | |
|------------|-----------|----------|---|--------------|-------------|
| Context | Fast | Normal | CPD | *NORMAL | *FAST |
| _r | 24 / *9 | 35 /*4 | evangelist | television | interview |
| _l | 21 / *2 | 11 / *1 | families | avenue | criticize |
| _n | 17 / *3 | 16 / *2 | reverend | dilemma | society |
| _m | 8 / *8 | 3 / *2 | indifference | fingernails | reality |
| CC_ | 38 / *24 | 11 / *7 | possible | estuary | forthcoming |
| _C | 31 / *23 | 6 / *10 | evenly | christianity | february |
| _CC | 11 / *9 | 2 / *3 | scarily | understand | hospitals |
| P & T_T | 4 / *4 | 0 | business | testament | activity |
| | 154 / *82 | 84 / *29 | fashionable | directors | enemies |
| | 53% | 34% | fashionable | direction | |
| | | | generally | | |
| | | | generally | | |
| | | | temporary | | |

Table 4. Results for fast and normal readings: figures

Table 4a shows that tempo has a significant influence on both the overall number of syncope and the proportion of ungrammatical productions. Curiously enough, least marked pre-r syncope decreases in fast reading while illicit, pre-obstruent and pre- and post-cluster syncope is rocketing. Table 4b lists the set of individual items that syncopate. The first column corresponds to items where the syncopated variant is said to be grammatical in CPD, the Cambridge Pronouncing Dictionary. One can indeed find all the vowel-less forms in the speakers’ productions plus ten other forms, displayed in the second column *NORMAL, not registered in dictionaries. In fast reading, labelled *FAST, another nine lexical items join the syncopated set., Table 4 illustrates the discrepancy between forms labelled ‘grammatical’ and reality, discrepancy which is further widened in a fast tempo.

Table 5 summarises the behaviour of trisyllabic words with respect to syncope in the informal conversation part of the corpus. The figures in Table 5 highlight the huge difference between written and spoken English. The reading part of the corpus, displayed in Table 4, contains quite a few trisyllabic words while speakers seem to avoid using them in informal conversations. The data in Table 5 correspond to some six hours of conversations, bearing this in mind, the number of longer words stays anecdotal. In a random sample of free conversations, out of these longer words, only a relatively limited set of items and their derivatives are recurring: interest, different, general,

actually, typically, family, company, comfortable, probably. Clearly, word-frequency seems to play a pivotal role in the probability of syncope although the general paucity of trisyllabic tokens in our conversations does not allow us to link our tokens with lexical frequency figures. Nevertheless a quantitative, frequency based account of syncope is totally sound, see Bybee (2000) for instance.

Similarly to the read productions, between one third and half of attested syncope forms belong to the ‘ungrammatical’ set in our conversational data as well. Other similarities with the read corpus include the sensitivity to the sonority level (r>l>n>m) of following consonants: the more sonorous the following consonant, the more syncope is likely to happen, the sonority prediction is well borne out. As in the reading, surrounding consonant clusters do not inhibit syncope, although preceding clusters fare better than following ones. Finally, pre-tonic syncope is also more widespread in American English regardless of phonotactics, in Scottish English it is limited to well formed secondary clusters (obstruent + sonorant) while in Lancashire it is more sporadic.

| Context | California | Ayrshire | Lancashire |
|-----------|--------------------|--------------------|-------------------|
| _r | 26/*3 | 42/*2 | 47/*9 |
| _l | 28/*11 | 16/*1 | 22/*10 |
| _n | 6/*6 | 8/*6 | 6/*4 |
| _m | 1/*1 | 0/*0 | 2/*2 |
| CC_ | 14/*8 | 11/*5 | 34/*15 |
| _T | 4/*2 | 12/*4 | 15/*0 |
| _CC | 4/*3 | 6/*3 | 13/*3 |
| Pre & T_T | 9/*9 | 1/*1 | 1/*1 |
| Pre & T_R | 14/*7 | 11/*9 | 1/*1 |
| Pre & R_T | 1/*1 | 0/*0 | 0/*0 |
| Pre & R_R | 2/*2 | 0/*0 | 0/*0 |
| | 109/ *53 49,00% | 107/ *31 29,00% | 141/ 45 32,00% |

C=any consonant, T=obstruent, R=sonorant, Pre=pre-tonic

Table 5. Conversations

6. Usage and Grammar

The two previous sections show that there is indeed a considerable gap between speakers’ productions and predictions of descriptive grammars, expressed in pronunciation dictionaries and earlier generative accounts. This gap is both quantitative and qualitative: nearly half of syncope forms fall outside the official grammar of English. Moreover, as far as contextual preferences are concerned, usage-based accounts point to totally different, sometimes mirror-image phonological contexts. Now, there are at least two questions that come to one’s mind: i. How come this considerable discrepancy may persist between usage and grammar as far as syncope is concerned, and ii. What is the basis on which the grammar of syncope has been established, if not usage?

The official grammar of syncope, reflected in pronunciation dictionaries, relies crucially on implicit claims about deletion and syllable structure, inherited from 19th century philology. In other words, syncope would be conditioned by the possibility of resyllabification. According to the resyllabification account, members of the resulting secondary cluster are adjacent and need to be analysed either as complex onsets (his.try, di.frent) or coda-onset domains (fam.ly, cel.ry).

In fact, phonotactic regularity and phonological parsability are not a pre-requisite *per se* for syncope to take place, see for instance Harris (1994). A discussion of phonotactic well-formedness of consonant clusters is clearly beyond the scope of this paper, but in a nutshell, Harris (1994) recognises two phonotactic domains for C-clusters: complex onsets and coda-onset intervals. In complex onsets, sonority should increase whereas coda-onset intervals display decreasing sonority.

Now, while it is true that most licit or, descriptively speaking, core syncope sites are well-formed sequences in English and many illicit / marginal ones are not, we do find allowed syncope sites with bad phonotactics (favourite [vr], travelling [vl], happening [pn], pedalling [dl]) and disallowed ones with good phonotactics (*correctly [kr], *reality [lt], *celebre [lb]) in dictionaries. The examples in 12 below give distributional evidence against the re-syllabification account, where 12a corresponds to ‘grammatical’ syncope resulting in good syllabification, 12b shows ‘grammatical’ syncope with bad secondary phonotactics and finally, 12c displays ‘ungrammatical’ syncopated forms with otherwise good syllabification:

(12) syncope sets according to phonotactic parsability

| a. parsable | b. unparsable | *c. parsable |
|-------------|---------------|--------------|
| sep(a)rate | ev(e)ry | c(o)rrectly |
| choc(o)late | trav(e)lling | real(i)ty |
| ref(e)rence | fam(i)ly | cel(e)brate |
| fact(o)ry | pers(o)nal | s(u)ppose |
| bound(a)ry | cent(u)ry | rock(e)ting |

Ultimately, it seems that the notion of grammaticality is strongly tied to the explanatory power of grammar at a given time. In reality, distributional evidence and opaque surface phonotactics show that the resyllabification analysis may be flawed and speakers seem to obey monotonicity principles after all by trying to maintain underlying contrasts in surface productions. Monotonicity is expressed in (13) below:

(13) monotonicity

$$(p \rightarrow q) \Rightarrow ((p \& p') \rightarrow q)$$

(13) states that in a given system, the addition of new axioms should not diminish the set of valid inferences, it can only extend the set. Clearly, saying that monotonicity is a feature of natural languages is a strong hypothesis about grammar but at the same time, it constrains grammar construction in a felicitous way and it is also crucial for learnability issues. Now, pure deletion goes counter to this principle. The examples in (14) below correspond to speakers’ productions from the PAC Syncope data. All these examples belong to the otherwise ungrammatical set. The striking features of these productions are hidden in phonetic detail. Allophony, conditioned by immediate context, tells us a lot about structure and serves as a trustworthy litmus test for adjacency. It so happens, that for our speakers, even without a pronounced vowel (the syncopated vowel is in bold), the consonants flanking the syncope site do not become adjacent:

(14) surface opacity, PAC conversations

| a, aspiration | b, tapping | c, voicing | d, gemination |
|--------------------------------------|--------------|------------|----------------------|
| su [p^h] ose | li[r]erature | po[z]itive | pro[bb]ly (probably) |
| [k ^h]o n nections | ca[r]alog | | lib[rr]y (library) |
| [k ^h]o l lected | ca[r]ering | | |

The pronunciations in (14) are all opaque: the allophony clearly hints at non-adjacency while in reality, there is no vowel separating the consonants. For instance, in (14)a, we can find aspirated plosives which, all other things being equal, should be followed by a vowel and never preceded by /s/. Let us consider the first example su**[p^h]**ose where aspiration should not occur in the vowel-less form, as in the pronunciation of the minimal pair my s[p]ouse this is indeed the case: /p/ remains plain

before /s/. The fact that speakers do aspirate in a string like I su^[p^h]ose, even without a pronounced vowel indicates that /s/ and /p/ do not become adjacent, that speakers do not resyllabify and that monotonicity works well in this case. Given that there is no destruction of structure, the putatively ill-formed surface string does not seem to bother speakers, aspiration ‘standing for’ the deleted vowel. Similarly, aspirated [k^h]onnections indicates an underlying vowel as aspiration should not happen before an adjacent consonant.

There are many other pieces of fine phonetic detail that help to keep contrasts between a vowel-less and a vowel-full form. In the American English productions of (14)b, we can find a flapped /t/ in the string catering [keɪtɹɪŋ] even though the vowel is deleted, contrast this with a string like Catrine [kætrɪn], where /t/ and /r/ are genuine adjacent consonants and the [r] is devoiced and fricativised accordingly. (14)c and (14)d give further examples of strange, opaque surface structures resulting from syncope, such as the presence of voiced fricatives before voiceless obstruents in (14)c, a state of affairs which never happens in monomorphemic English words. (14)d, with surface geminates, clearly indicate non-adjacency as well, knowing that there are no lexical geminates in English, except perhaps in analytic prefixation un#natural.

The examples in (14) also raise an interesting issue with respect to the notion of grammaticality and help to answer the following question, crucial for any grammatical analysis: can phonologically bad surface strings survive or do they necessarily have to be repaired? If we accept that phonologically complex, marked or even non-parsable surface structures in utterances translate directly into complexity via non-adjacency the answer is no: if there is presence of an underlying empty nucleus or domain boundary, then there is no need for repair. The examples below in (15) are all syncopated forms from the PAC Syncope corpus with extremely marked consonant sequences:

(15) some phonologically non-parsable sequences via syncope

descriptions, mathematical, comfortable, library, cultural, actually, happening, independent, company

Incidentally, these formative-internal surface strings are very similar to what we have in lexical and post-lexical complexity resulting in non-parsability. Non-parsability often reflects morphological complexity, see Kaye (1995). The examples below in (16) all illustrate non-repaired bad word phonology and at the same time stand for acceptable strings:

(16)

- a, Lexical insertion: Tess thinks *[sθ]
- b, Composition: arm+chair *[mtʃ], forth+with *[θw], particle+board *[klb]
- c, Word-level affixation: seep+ed *[i:pd], ,de+’bug *[secondary stress + primary stress], un+nerved *[nn], dream+*[mz], six+th+s *[ksθs]

The strings between brackets are all ungrammatical in mono-morphemic English words, yet, they are not repaired following lexical or post-lexical operations. Complex, uninterpretable, marked structures have a purpose: they are parsing cues for speakers. These cues indicate underlying non-adjacency. Non-adjacency may result from i. syncope, ii. some morphological operation or iii. lexical insertion.

7. Conclusion

Syncope in English is a much more complex issue than intuitive or standardised data might suggest. In the two spoken English corpora presented in this paper roughly half of syncope sites fall outside the ‘official’ grammar of English, represented in pronouncing dictionaries. The grammar of dictionaries relies heavily on the conception of syncope as full vowel deletion. However, actual language data show that the deletion account is flawed: the resulting surface consonant clusters do not become phonologically adjacent: grammars may delete, speakers do not. Ultimately, grammars are closely linked to our capacity to describe utterances at a given time: what

we can describe with our current tools is good *i.e.* grammatical what we cannot describe should be ungrammatical. Emptiness is one conceptual example of how better understanding of phonological patterns may lead to better grammars. Non-parsable structures need not be repaired when they indicate non-adjacency.

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