A U-turn and its consequences for the history of final schwa in English

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Abstract

This paper traces the reversal in the trajectory of the phonotactic history of schwa in final unstressed syllables (/ə#/) in non-mono-syllabic words. It is the first full empirical account linking all stages in the history of final schwa in English. The first stage involves ubiquitous loss of the unstressed vowel at the right word boundary culminating c. 1400–1450. The second stage initiates an incipient reversal of the loss in a severely restricted subset of the lexicon. The next phase is a gradual, and as yet incomplete, reanalysis of the functions of right-edge schwa. In a macro-perspective, the history of the change plots as a continuous, but apparently non-repetitive, U-curve.

The account identifies and compares the properties of final schwa before and after the middle of the 15th c. with a view to its future. Phonologically, the turnaround was robust, complete, and apparently categorical, allowing us to predict its continuity in the phonological system with confidence, at least for this century. However, the data-survey reveals developments in other parts of the grammar: morphology, prosody, pragmatics. In some of these areas schwa’s future is still in the balance and has to be treated as aleatory. The spread of /ə#/ beyond the original narrow loanword lexical range led to a previously non-existent involvement of /ə#/ in limited gender marking, it continues to be associated with nounness, and it may even be a candidate for a peripheral/pseudo-suffixal status. It contributes to the hybridity of the PDE prosodic system. Only one of the non-phonological parameters of pre-1400 /ə#/ its unrestricted use in all registers, accompanies the U-curve, and even that pragmatic aspect of /ə#/ may be “in progress”, depending on education, regional demographics and rate of speech. The lesson to be learned from this history is that even a statistically “perfect” change can be reversed, with unpredictable consequences outside its domain.

1. Introduction. Final-vowel apocope in Old English

Historical data are essential to the success of any predictive model. In phonology, as well as in any other area, envisaging the future can benefit from knowledge of the origins and development of a particular process.

Synchronic studies of language change usually look at what is changing, where the change originates, who propels the change, how a change is diffused. A user-oriented micro-perspective provides invaluable information on the agents, rates, and mechanisms of innovations in progress, and the way these innovations become the norm. The longer and deeper the historical perspective, the less likely it is that we can come up with meaningful answers to questions related to users and usage. In English macro-diachronic studies, details on the “movers” of change and the mechanisms of diffusion, the who and also the how are much less accessible. On the other hand, a perspective that stretches for well over ten centuries and includes reversals and recurrences that can be contextualized historically, offers a different angle on predictability, and can be a warning that a well-motivated, fully developed process may not amount to a reliable predictor of future changes. Put differently, and clichéd as it
sounds, it is a good strategy to learn from history before we try to predict the future.

The trajectory of modern usage-based studies of change is most often unidirectional, plotting, roughly, an S-curve from initiation to full embedding, see Denison (2002) for a review of the history and a critique of the application of the term to language change. The famous S-curve is not the only option, however. This paper is about a different trajectory emerging from the phonotactic history of schwa in final unstressed syllables in non-mono-syllabic words. It is the first full empirical account linking all stages in the history of final schwa in English. The first stage of the process involves loss of the unstressed vowel at the right boundary of all English words culminating c. 1400–1450. The second stage marks the reappearance of the same vowel in a significantly restricted subset of the lexicon – its renewed presence is limited to loanword vocabulary. The next phase is a gradual, and as yet incomplete, reanalysis of the functions of right-edge schwa. In a macro-perspective, the history of the change can be plotted as a continuous, but apparently non-repetitive, U-curve.

The paper starts with a brief outline of the history of final unstressed vowel schwa in English nouns from its ubiquity in late Old English (OE), through its demise in Middle English (ME). Sections 2 and 3 survey the factors involved in the loss and document the analytical rationale for the focus on nouns. The reinstatement of final schwa -- enabling factors, consequences, and diagnostics -- are the topics of sections 4–6. Section 7 covers the special status of names, and section 8 relates the change to parallel phonological developments in post-15th-century English. Section 9 turns to the latest trends in this long history, and section 10 offers some tentative predictions and points out which aspects of the process have to be treated as aleatory. The lesson to be learned from this history is that even a statistically “perfect” change can be reversed, with unpredictable consequences.

The system of free pitch accent characterizing Proto-Indo-European was replaced in Germanic by main stress on the first syllable of the word root. The association of the highest level of prominence with the first root syllable entails a less forceful realization of the vowels in inflectional syllables, suffixes, and the second roots in compounds. Like the rest of the Germanic languages – the details differ – in pre-OE all final vowels lost a mora. Some short vowels were apocopated, and original long vowels were shortened. The reconstructed set of unstressed vowels in early OE (Campbell 1959: §§ 369, 371; Reszkiewicz 1973: 89–99; Hogg 1992: 119–122) shows only four vowels in the so-called ‘little’ vocalic system:

(1) The unstressed vowels of early OE (pre-c. 700):

<table>
<thead>
<tr>
<th>Front</th>
<th>Example</th>
<th>Back</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i/</td>
<td>yrm 圌 ‘wretch’</td>
<td>/u/</td>
<td>faru  ‘journey’</td>
</tr>
<tr>
<td>/æ/</td>
<td>lybbæþ  ‘live’</td>
<td>/ɑ/</td>
<td>bana ‘killer’</td>
</tr>
</tbody>
</table>

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1 This is a simplification. Prefixes other than ge-, be-, for- could attract main stress in nouns, adjectives, participles (see Minkova 2008 for a full discussion).
2 In accordance with common conventions, slashes / / enclose broad phonemic representations, angle brackets < > are used for orthographic units, and square brackets [ ] refer to allophonic realizations. Word boundaries are marked by the number sign #. A superscript asterisk * indicates a reconstructed form or a constraint violation.
In the front, unstressed /i/ and /æ/ are posited on the basis of orthographic <i-/> and <œ/> in inflections; they do not appear word-finally in native monomorphemic words. After c. 700 the two front unstressed vowels were merging into a mid vowel, usually written <œ>, and reconstructed as some kind of /e/, possibly in the range of [e]-[e]-[ə]. The <i/> in derivational suffixes (-ig, -ing, -is) does not participate in the merger, most likely due to the retention of secondary stress, and it is thus exempt from the more aggressive reduction and subsequent loss of unstressed final vowels. In the back series, the high back vowel <u> in word-final position was probably lowered to a mid-back vowel in the range of /o/, since its spelling alternates with <o>: byldu~bielde ‘boldness’, daru~daro ‘injury’, fyllu~fyllo ‘fullness’. A further coalescence affects the low back vowel and the (high) mid-back vowel, possibly in the range of [ɔ]-[ʌ]-[ə], indicated by spelling variation <o> ~ <a>. In Late West Saxon, therefore, it is likely that there was only a minimal and unstable contrast of two word-final unstressed vowels, one front, one back, with overlapping allophonic realizations of [ə].

By the time of the 1066 Conquest, the “official” end of the OE period, it is safe to reconstruct advanced neutralization of the height and backness specifications of final unstressed vowels. Phonologically, this translates into a merger into a single schwa /-ə/, using /a/ as an umbrella identification consistent with a wide range of articulations in different environments. The diagnostic of this process is the orthographic replacement of all earlier vowel-letters by <œ>. Such replacement is attested both in the unstressed syllables of monomorphemic words and in inflections. Some examples are <assa> ~ <asse> ‘ass’, <racu> ~ <race> ‘rake’, <fana> ~ <fanu> ‘vane’, <eahtæ-eahte~eahtæ-eahtu~ehto> (Late North.) ‘eight’; such words must have been pronounced with a type of /ə/-compatible vowel in the second syllable.

Among the earliest, and much discussed instances of apocope in OE is the loss of /-i/ and /-u/, treated under the larger rubric of High Vowel Deletion. This is an early pattern of loss of unstressed high vowels after heavy stems or stems of two light syllables, whereby nom. acc. pl. *wordu > wordo ‘words’ (compare scip, nom. sg. scipu, nom. pl. ‘ships’), and *weorodu > weordø ‘troops’ (compare tācen, nom. sg. tācnu, nom. pl. ‘tokens’). The loss is best analyzed as prosodically conditioned, though there are additional morphological factors involved. Of relevance in the context of the current study is that the apocope of inflectional /-i/ and /-u/ may be taken as the precursor of things to come. By the end of OE the neutralization of unstressed vowels noted above led to the next step, namely instability and loss of non-high vowels. Good evidence for

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3 Inflectional <œ/> for nom. acc. pl. of neuter a-declension nouns tends to be stable in Early West Saxon.

4 The reference to a ‘generic’ /ə/ is in recognition of the potential for unstressed vowels to be realized in a variety of ways, not just in OE, but throughout the history of the language (see Lass 2009). I will continue to use “schwa” as the cover label, though see fn. 26 on the special properties of final schwa in PDE.

5 High Vowel Deletion (HVD) may result both in apocope and in syncope. The prosodic conditioning of syncope and apocope of unstressed vowels in Germanic and early OE is a complex and much discussed topic (see Lass 1994: 98–102; Hogg 2000; Fulk 2010; Hogg and Fulk 2011; Thompson 2012; Bermúdez-Otero 2015). Synchronically for early OE, HVD in final position is practically limited to inflectional /-i/ and /-u/. By all accounts, HVD was no longer a synchronic phonological process by the beginning of the 11th c. Since my data-base in this study consists of base/uninflected/dictionary entry forms, there will be no further discussion of this topic here.
this is the appearance of doublet nom. sg. noun forms with or without a final vowel. The examples in (2) illustrate the variability of the final vowel in nouns – all base forms are recorded in the Dictionary of Old English (DOE), or in Bosworth and Toller (1955).

(2) Final vowel instability in monomorphemic nouns in OE:

- **adela~adele~adel** ‘filth, addle’
- **bann~banne** ‘command’
- **cat~catte** ‘cat’
- **dil~dili~dile** ‘dill’
- **gicel~gicela~gicele** ‘(ice)icle’
- **balc~balca~balce** ‘ridge’
- **cǣ~cǣgē** ‘key’
- **delf~delfe** ‘ditch’
- **drync~drynca** ‘drink’
- **dyne~dynn~dyn** ‘din’
- **rīce~rīc** (Northumbrian) ‘kingdom’

The vowel-final forms in some items in (2), as in **cat~catte** ‘cat’, **cǣ~cǣgē** ‘key’, **drync~drynca** ‘drink’, are classified as belonging to a different (weak) declensional class, with the <-e> forms spreading from the 9<sup>th</sup> c. onwards and becoming dominant in Late West Saxon. Such rival paradigms, often involving unetymological insertion of <-e>, support the observation that the <-e> ~ Ø variation in the spelling reflects an ongoing phonological change, which ultimately led to apocope. Tracing the chronology and the dialectal distribution of the process in OE is not an easy task; the completion of the DOE might make quantification feasible, but for now it is sufficient to recognize the wide-spread variability of /-ə#/Ø.

2. Factors influencing the course of schwa loss

The full extent to which the prosodic structure of the string preceding the final vowel influenced the rate of schwa loss has not been documented. General typological considerations, as well as the residual pattern of inflectional High Vowel Deletion, would make it likely that /-ə#/Ø would be more advanced after heavy stems or after two light syllables. It is indeed the case that early orthographic loss of the final vowel is attested mostly in words with the structure -VVCə: dēop/dēop-dēop ‘abyss’, fēol/fēol-fēole ‘file’, or in -VCCə strings: æsp-æspe, bell-belle, but we do find -VCə base forms alternating with -VCØ, as in bac-becce ‘stream’, dil-dile ‘dill’, dyne-dyn ‘din’, swic-swice ‘deceit’. Whether the more frequent occurrence of the alternation /-ə#/Ø after heavy stems is prosodically conditioned, or whether it is the statistically predictable consequence of the imbalance of light (17.8%) and heavy (82.2%) stressed syllables in disyllabic words in OE remains to be explored. It can be safely assumed, however, that the schwa in -VCə forms such as ealu-eale ‘ale’, folæ-folæ ‘foal’, nama-name ‘name’ was there at the incipient stage of the ME lengthening of the stressed vowels (see Minkova 2014: 220–224). It must also be noted that at the other chronological point of final schwa loss, late 14<sup>th</sup> c. in southern ME, as reconstructed from Chaucer’s admittedly

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6 See the discussion of this inflectional variation, especially with historical feminine i-stems in Hogg and Fulk (2011: § 3.32-35, 3.41, 3.77) and references therein.

archaic use, the findings contradict the expectations; i.e. [ə] is preserved more regularly after heavy stems.\(^8\)

Some favorable conditions for the initiation of schwa loss have been identified and discussed in the literature (Minkova 1991: 55–75). The change may have started in connected speech when two unstressed vowels appeared back-to-back, so that their realization would involve hiatus. Though tentative, there is some evidence from OE meter suggesting that inflexional final vowels could be elided before another vowel, as in Beo 517b he be æt sundæ oferflæt ‘he thee at swimming overcame’, a type of verse which would be a vanishingly rare type if the sequence ...sunde oferflæt... is scanned as four syllables.\(^9\) Elision before a vowel or weakly stressed <h> is testable in early ME metrically regular verse compositions, and therefore such hiatus-avoiding adaptation is assumed to have been part of the spoken language. It is also the case that the final vowel of the first elements of compounds, generally held to be stable until ME, is in fact missing in many OE compounds, as in cēap-mann-cýpe-mann ‘purchase-man, merchant’, dyrn-lícgan-dyrne-licgan ‘commit adultery’, stíccemálum-stícmealm ‘piecemeal’. Predictably, schwa loss occurs early in unstressed words (butan-bute/bote-bot ‘but’ < OE butan\(^10\); bane-bane-ban ‘then’, adv., < OE bonne.\(^11\) Also, /æ/-Ø alternations occur in native words of more than two syllables, usually derivatives, as in beorc scepe-beorcscip ‘beer-ship’, gebiddende-gebiddend ‘worshipper’.

Clearly the roots of the pervasive ME schwa loss are in evidence in OE, and since this development is a turning point in the reorganization of the phonological and morphological structure of the language, it is also symptomatic of the beginning of the ‘middle’ period in the history of English.\(^12\) No matter where we draw the line between “Old” and “Middle” English, however, there is no scholarly disagreement on the full-blown progress of final schwa loss from the 12\(^{th}\) century onwards. Not all contexts were equally conducive to reduction. Inflectional final vowels are more prone to reduction and apocope. There are significant dialectal differences: the loss of schwa in word-final position, both inflectional and stem-final, was more advanced in the northern dialect areas, where by the mid 14\(^{th}\)-century its realization would have been an archaism.\(^13\) The

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\(^8\) This line of inquiry is open. For the suggestion that Chaucer’s usage reflects a different treatment of VC\(\text{a}\) (variable realization of [ə]) and VVC\(\text{a}\) and VCC\(\text{a}\) (schwa counting in the meter) see Fulk (2012: 49).


\(^10\) This study excludes vowel-final monosyllabic content words, in which the final vowel is always long. The vowel in function words can be shortened and reduced, but it is lost only in hiatus.

The earliest form of OE butan without a final <e> is found in London, British Library, Cotton Titus D.xviii, fols. 127r-133r: Wohunge of ure lauerd, C13a2 (1240-50), cited in LAEME, but not recorded in the OED.


\(^12\) See Malone (1930) for the point that incipient schwa loss dates the beginning of ME to c. 1000. A question not pursued here, but deserving further discussion: was schwa loss the trigger, or the consequence of inflectional loss? Blythe and Croft (2012: 295) state: “In language change, according to the Labov/Croft hypothesis, variants are generated by processes that are ultimately phonetic in origin (for sound change) or semantic/pragmatic (for grammatical change).” Can schwa loss be generated both phonetically and pragmatically, rather than the either-or dichotomy of origin?

\(^13\) See Minkova (1991). The earlier loss of schwa in the north is commonly assumed to be the consequence of more extensive Old Norse–Middle English language contact in those areas, but it should also be noted that the density of identifiably northern texts in the ME corpus is significantly lower than that
insertion of unetymological <-e> is a good test for the instability of base-final <-e>. The *Ormulum*, an autograph manuscript dated c. 1180, written in Lincolnshire, shows a number of nominatives in <-e> in nouns which had no final <-e> in OE: *axe* < OE æx ‘axe’, *blisse* < OE bliss, *wunde* < OE wund ‘wound’.

In the southern dialects apocope spread more slowly, with inflectional <-e>’s leading the way. Chaucer, whose reconstructed pronunciation shows other conservative features, resorts to final schwa for metrical purposes, but his usage is more constrained than the ubiquitous /-ə/ of early ME: for nouns it is consistent only in monosyllables in prepositional phrases. The dialectal details are much discussed in the literature, see Minkova (1991: Ch. 2), Fulk (2012: § 30). Of interest in the context of the overall history of the change is that by the beginning of the 15th c. the realization of schwa in word-final position in the base forms of nouns in all dialects had become obsolete. This allows us to posit an active constraint on the distribution of /-ə/ as defined in (3):

\[\text{(3) */-ə#/}: \text{Avoid the realization of schwa in word-final position}\]

3. Why focus on nouns?

The data for this study were collected specifically for nouns, although ME final vowel loss affects all parts of speech. Why focus on nouns? The only partially facetious answer to this question is “because the light there is better”. The choice of nouns as a representative subset of the lexicon undergoing the change is motivated by several considerations. First, there is an implicational relationship between the sociolinguistic setting and the central role of nouns of the process. It is a widely shared scholarly consensus that the time-line of the loss of final vowels in English must be related to language contact: the loss occurred when it did largely because of direct contact between speakers of two Germanic languages, OE and Old Norse. In such situations, especially when the social status of the speakers is comparable, the borrowing tends to be that of words for new or unfamiliar objects, mostly nouns. The borrowing is likely to go in both directions, and it involves leveling of differences in phonological and morphological form.

The centrality of nouns in the Scandinavian portion of the ME vocabulary is clear from the data shown in Fig. 1a and 1b:

![Figure 1a: Parts of speech in the Scandinavian portion of ME up to c. 1500 (OED)](image)

![Figure 1b: Parts of speech in the Old Norse portion of early ME, counts from Dance (2003)](image)
The OED ([http://www.oed.com/](http://www.oed.com/)), the source of the data in Fig. 1a, does not have a single label for the etymological identification of what is commonly referred to as “the Scandinavian” element in English. The numbers shown conflate the results of three separate “Language of Origin” searches: North Germanic, Old Norse, and Scandinavian. It is reassuring to find a strikingly similar distribution of the parts of speech in the loans from Old Norse in Early Middle English, shown in Fig. 1b, using numbers from Dance (2003: Ch.4).

Support for focusing on nouns comes also from the density of nouns in the English lexicon at any stage. The chart in Fig. 2 represents the dominant presence of nouns in the OE lexicon.

![Figure 2: Parts of speech in Old English](image)

The numbers in Fig. 2 are from the online version of Bosworth and Toller (1955), [http://bosworth.ff.cuni.cz/](http://bosworth.ff.cuni.cz/). The total count of all headword entries on which the chart is based is just over 40,000, and it may look surprisingly high and in excess of the usual estimate of the size of OE vocabulary found in the surviving texts. Kastovsky (1992: 293–296) cites a “rough count” of 23,000–24,000 lexical items in the OE vocabulary, but he also makes the point that this count represents a “fairly restricted spectrum of the overall vocabulary”, because of the “associative” nature of the lexicon based on highly productive compounding and derivation. The current (2015) release of the Dictionary of Old English (DOE), which covers approximately 25–30% of the total project, from A–G, has 12,568 headwords, which suggests that the total number of words in Fig. 2 is not too wide off the mark. Still, it has to be noted that the numbers in Fig. 2 are searches for the main parts of speech, but do not exclude alternative spellings listed as individual headwords, e.g. abbad, abboda; abbudisse, abedisse ‘abbess’ are separate entries in the DOE.  

To complete the picture, we can look at the relative density of the four major parts of speech based on a search of the OED. Fig. 3 shows the distribution of headwords by part of speech without any further restrictions on the advanced search:

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16 The Advanced Search allows a Boolean option eliminating duplicate entries marked as “Add” (entries in the Supplement), which is the procedure here.
The percentages for the nouns in Figs. 1–3 are fully comparable, a reassurance that even “rough” counts can be a good source of information on the centrality of nouns. Nouns are the dominant part of speech, providing the crucial lexical component for both first and second language acquisition. This adds a new dimension to the discussion of schwa loss in individual word classes in Minkova (1991: Chapter 5, esp. 149–150), where the identification of the class of nouns as leaders in the process, the “most precocious group”, was suggested on the basis of Scandinavian influence and the increased use of prepositions rendering inflectional marking redundant.

Another consideration in favor of the focus on nouns in tracking the history of final schwa comes from the phonological shape of the different parts of speech, as tagged in headword entries. There were no schwa-final infinitives in OE, so a headword search for verbs would be futile, leaving us with the option of manually checking specific inflectional forms, e.g. 1st pers. sg. of over 10,000 individual verbs. Adjectives are also unhelpful as headwords because at least half of the entire set are derived by suffixation. This leaves us with adverbs and nouns, the counts for which are shown in Fig. 4:

<table>
<thead>
<tr>
<th></th>
<th>Nouns</th>
<th>Adverbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>22,052</td>
<td>2,201</td>
</tr>
<tr>
<td>Vowel-final</td>
<td>6045</td>
<td>368</td>
</tr>
<tr>
<td>% of total vowel-final</td>
<td>27.4</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Figure 4: Vowel-final nouns and adverbs (from http://bosworth.ff.cuni.cz/)

A note on exclusions: all <-y>-final words (x20) contain either long vowels or are alternate spellings for <-ig>. There are 56 <-i> words which are either alternate spellings for <-ig> or Latin plurals. All <-æ>-final words (x35) have either a long vowel or are an alternate spelling for <-e>. The adverbial suffix -lice, attested in over 1100

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17 Studies of other sets of loanwords into English confirm the proportions: of the total number of Romance words borrowed in ME (c.1100–1500), only 10% are verbs, against 71% nouns (Dekeyser 1986: 261).

18 Counts based on headword dictionary entries for the earlier attestations are an incomplete record, but it is the only quantifiable record we have at the moment. In actual usage plurals and/or oblique case forms are a competing input for the learner. This is outside the main concern in this study, since the demise of final schwa in English is unchallenged.
entries, a disproportionately high number of the vowel-final entries for the adverbs, is also excluded; they are also likely to skew the picture because they are trisyllabic or longer. Adverbs included in the second row of Fig. 4 are of the type inne ‘in’, late ‘at last’, milde ‘gently’. The subsequent history of the final vowel in them is the same as that in nouns.

Not surprisingly, given the ratio of nouns to adverbs in Fig. 1 – Fig. 4, the largest proportion of vowel-final base forms in the language comes from the nouns, as strikingly demonstrated in Fig. 5:

Figure 5: Vowel-final nouns and adverbs in OE (from http://bosworth.ff.cuni.cz/)

A final, and I believe, compelling, argument for reconstructing the history of final schwa loss and reinstatement on the basis of nouns comes from looking at the subsequent history of the sound. No OE verbs or verbal forms, no adjectives, no adverbs retained a final schwa vowel beyond c. 1450. On the other hand, as discussed in the next section, the few surviving, and the growing body of newly adopted, schwa-final items in English at least up to the 19th c. have a common part-of-speech denominator: they are overwhelmingly nouns.

4. Resistance to final schwa loss: defining the survivors

The resistance that certain lexical items show to losing their final unstressed vowels is not a topic commonly mentioned in the standard historical descriptions of English phonology, Lass (1992: 81) being an exception. In the context of final schwa loss he remarks that “the only persistent exceptions seem to be proper names where the final unaccented vowel is often not spelled <e>, which may or may not be significant...Most modern final /-ə/ are in fact either in names or loan words...” Since there is no further discussion of this pertinent observation, this paper attempts to address the significance of these facts.

The first point is that many, if not all, early loan words in <-a> respond to the native phonotactics: their final vowels behave unexceptionally. Some unsystematically gathered examples of this early adaptation are shown in (4):

(4) Early loans subject to native phonotactics: */-ə#/  

<table>
<thead>
<tr>
<th>Latin</th>
<th>Old English</th>
<th>ME</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ancora</td>
<td>ancor~ancra</td>
<td>anker</td>
<td>‘anchor’</td>
</tr>
<tr>
<td>baptista</td>
<td>baptista</td>
<td>baptist</td>
<td>‘baptist’</td>
</tr>
<tr>
<td>basilisca</td>
<td>basilisca</td>
<td>basilisk</td>
<td>‘basilisk’</td>
</tr>
<tr>
<td>cristallum</td>
<td>cristalla~cristal</td>
<td>cristal</td>
<td>‘crystal’</td>
</tr>
</tbody>
</table>
The entry form of the items in (4) is the same as that of the “survivors” in (5) below, but they lost their /-/ə#/ in ME. In some cases the item was reborrowed from Old French or Anglo-Norman, but since in these sources the final unstressed vowel persisted into the “later sixteenth century” (Pope 1934/1961: §273), the exact source is immaterial and we can bundle them together as subject to native phonological constraints. Quite tellingly, in the great majority of cases, the input is trisyllabic: ancora, columna, cometa, locusta, and the output form is disyllabic: anchor, column, etc. Recall that monomorphemic nouns in OE are overwhelmingly mono- or di-syllabic. The newly adapted disyllables thus match a preferred, unmarked native prosodic template, which was continuously reinforced by the loss of inflections. The /-/ə#/ in the items in (4) behaves identically to native /-/ə#/; they are of no special interest in the context of this inquiry.

Turning to the “exceptions”: as far as I know, there has been no substantive discussion of the timing, the causation, and the inventory of items spared by the general process of final schwa deletion, nor has this aspect of the change been discussed in terms of its effect on the properties of the modern lexicon. Appendix 1 (link?) presents the results of a search for all /-/ə#/ words in Present-Day English (PDE) in the OED, whose first recorded usage is before c. 1550. The data are divided into three chronological strata: before 1400, before 1500 and 1500–1550. The first set of surviving words is reproduced in (5):

(5) Earliest entries in the OED preserving /-/ə/ (Early OE – 1398)
eOE  mamm (Early OE – 1398)
OE  anima; mamma ‘breast’; podagra, ME podager, potager; planeta ‘rain cloak’
c1000  bibliopèce, biblièca (mainly in Ælfric), hosanna; charta, (Magna Charta 1215)
c1200  alpha
1308  curtana ‘sword of mercy’ ME curtein, curteyn, curteine
1340  hyena ME < OF hyene, hyene; ME variant hyen
1373  taffeta ME var. 15th c. taphet, 15–17 taffity
1382  chimera, ME chimere, < French chimère
1382  sambuca ‘stringed instrument’, ME 1500- sambuque, sambuc
a1398  asthma, var. ME asmy; aura; cholera-choler (1382); leper, comp. leper;
mola-mole ‘mole’; omega; retina
1398  diastema = diastem (1694)

Fewer than two-dozen loans recorded before the end of the 14th c. have /-/a#/ throughout their history. We are not in a position to estimate the exact fit of these

19 Thee nedeth nat the galle of noon hyene [rime: bitwene] (Chaucer, Fortune, l. 35); Shakespeare As you like It (1623) iv. i. 147, I will laugh like a Hyen. The <-a> forms established after 1560. XX put examples in italics? XX
words in the vocabulary of a speaker of ME, yet there are some observations that are quite informative. **First**, as noted above, all of the words in this set are nouns. Even an item such as hosanna, originally a Hebrew exclamation ‘save, we pray’, is used as a noun ‘the sung hosanna’ by the latter part of the 14th c. (1378, Langland). A **second** observation, unsurprising, but still worth highlighting, is that most of the entries in (5) exhibit variant forms: manna-man, podagra-podager, curtana-curtein, hyena-hyen, taffeta-tapheit, chimera-chimere, sambuca-sambuque, cholera-choler, lepra-leper, mola-mole, diastema-diastem. In some of them (podagra-podager, lepra-leper) the syllabicity of the final schwa is taken over by the sonorant /r/, but the majority of the variants are of the type manna-man, suggesting that final schwa loss was still a vigorous phonotactic constraint in the phonology, and the shape of these loans was still in the balance. Moreover, while the default pronunciation of an unstressed final vowel would be schwa, it is reasonable to assume that Latin speakers would have preserved a lower and backer allophone in the range of /ɑ/, but there is no way of testing this.

A **third** feature the items in (5) have in common is their lexical peripherality: none of these *mots savants* could have been “core” vocabulary. They belong to a register to which only a very small number of educated speakers would have had access. For the uneducated and illiterate majority of speakers such words would have sounded distinctly foreign.

In terms of phonological patterning, the system one can reconstruct for a monolingual ME speaker at the end of the 14th century would include a distributional constraint against /-ə/# (*/-ə/?) at the end of base forms (see (3) above). Importantly, the handful of rare learned borrowings would not have been sufficient to provide an underlying template for a reversal of the process. Had the external history of the language been different from what we know it to have been – massively open to new vocabulary and new word-formation elements: the suffixes -a, -ia, the self-standing use of the Lat. prefixes contrā-, extrā-, intrā-, ultrā- – the retro-diction (as distinct from prediction) would be safely negative: at the end of the 14th c. final schwa had no “future” in English.

Looking further into the history of borrowed words which now have /-ə/#, however, we see a steady growth of loans which would have counteracted the distributional constraint and would have strengthened the moribund pattern of taffeta, chimera, sambuca. As the second and third set of chronological data in Appendix 1 show, from around a dozen nouns that did not have alternate forms in 1398, the number of <-a>-final nouns increased steadily in the next century. As noted above, phonetic values are hard to test. so the null hypothesis is that for English speakers, or when used in an English context, <-a>-final words were realized with some kind of /-ə/ – this would follow from familiar patterns of loan adaptation: speakers will attempt to bring the phonology of the loan in conformity with the native phonology.

The post-1400 data collected in Appendix 2 (link) is an exhaustive list of the relevant entries in the MED [http://quod.lib.umich.edu/m/med/] up to c. 1500. Clearly, towards the end of the 15th c. the presence of final /-ə/ in the vocabulary would have come to the notice even to monolingual English speakers from words such as aqua, aura, delta, idea, mania, polenta, retina, santa, vulva – admittedly the choice here is prompted by a modern sense of lexical familiarity. Nevertheless, the point stands: it was such items
that led to the reinterpretation of the distributional constraint against */-ə#/ which had been quite powerful a century earlier.

The post-1500 rapid expansion of the English lexicon is a familiar story: as many as 1500 new borrowings are recorded in English for each decade between 1500–1700 (Minkova and Stockwell 2009: 47). The numbers of new loanwords which violate the */-ə#/ constraint grow in tandem. Over 2800 */-ə#/ nouns are recorded in the OED from 1700–1850, and the number after 1850 to the latest entry (2001) is over 3700. Figure 6 charts the occurrence of nouns ending in */-ə/ from OE to the beginning of the 21st century:

![Figure 6: Final unstressed schwa in English nouns from OE to PDE](image)

The survival and spread of schwa-final words is quite dramatic and spells out the demotion of the once practically inviolable */-ə#/ constraint. There are more and more recognizable and recyclable combining forms in */-ə#: tetra- (1471), ultra- (1551), extra- (1570), supra- (1598), infra- (1650), infra- (1666). Similarly, the language is enriched with productive suffixes and combining forms such as -a, -ia, -iana, -ula, -ella, -oma, all of them freely deriving new, usually scientific, terms. The next question of interest in the context of evaluating the probability of the survival of the */-ə#/ constraint is whether the reversal of schwa loss was just that, i.e. a distributional constraint becoming inactive, or whether there were consequences that take the process out of the narrower sphere of phonotactics into the morphological domain and the pragmatics of language use.

5. Analytical consequences of the reinstatement of final schwa

The realization of */-ə#/ was probably still possible in the first two to three decades of the 15th c. in some verb forms, but those are mostly reconstructions based on spelling, rather than on scansion. The preservation, or, quite likely, the insertion of schwa in monosyllabic weak adjectives in late ME is tightly controlled by the prosodic environment (Minkova 1991: 171–187). In any case, */-ə#/ must have been fully implemented in the native grammar by the middle of the 15th c. even in the most conservative southern forms of speech, and it is from that time onwards that the new
items charted in Fig. 6 provided the new distributional model and reversed the course of the change. If the account stopped with the upward trajectory of final schwa after 1450, however, it would overlook some very important analytical implications of the differences between the “old” and the “new” /-a/# in English.

Assigning loans to a morphological class is one of the major choices that a native speaker makes.\(^2\) It appears that although /-a/# words in English were a marginal component of the lexicon, the fact that they were nouns – and here we must include the input of proper nouns – furnished a similarity basis for adapting new loans. Throughout the centuries of the robust */-a/# constraint, late OE to the end of the 14\(^{th}\) c., it was primarily a phonotactic restriction operating across the lexicon.\(^2\)

Concurrently schwa loss triggered morphosyntactic changes: it is famously associated to loss of case marking and syncretism of cases, simplification of the inflexional system, the loss of formal distinction between adjectives and adverbs. Crucially, however, the loss of schwa was not confined to a particular part of speech, and native Anglo-Saxon, Old Norse, and Old French words were equally susceptible to it. There is a regional lag of schwa loss in the south, but other than that, novelty/unfamiliarity with an item would have been the only signal for a 15\(^{th}\)-century speaker that schwa is allowed word-finally.

The items that survive the loss of /-a/# present a quite different picture. The major points on which the loss and its reversal diverge are:

(6) Innovations in post-1450 /-a/# licensing:\(^2\)

- Post-1450 /-a/# is lost as a grammatical category marker
- Post-1450 /-a/# words are nouns
- Post-1450 /-a/# words are etymologically peripheral loans
- Different ranking of */-a/# for core and peripheral vocabulary
- Post-1450 /-a/# stems have a marked prosodic structure # σ σ σ #

The morphosyntactic consequences of schwa loss are a widely discussed aspect of the process. What needs highlighting in the context of re-introduction of /-a/# is that as a morpho-phonological change, final schwa loss appears to be irreversible, i.e., seen from an imagined mid-15\(^{th}\) c. perspective, schwa could no longer be harnessed into marking specific grammatical categories such as person, number, case, gender. This entails that if schwa loss is attested after that time, it has no morphological significance.

\(^2\) See Wehna (1980) on the gender adaptation of Latin loans in OE and Repetti (2006) on the special status of a-final loans (panda, yoga, koala) in Italian, where such loans show “an unequivocal correlation between suffix and gender/class assignment”.

\(^2\) Personal names and toponyms may behave as other nouns (OE Beda ‘Bede’; OE Adela ‘Adele’; OE Creta, ME Creta~Cret ‘wine from Crete’; OE Europa~Europe, ME Europa~Europe~Europ; OE Sodoma~Sodom) or they may resist the loss of the final vowel (Diana, Lucina, Ethna, Matilda, Sarah, Virginia etc.). The idiosyncratic behavior of onomastic elements is well known; such elements can be outside the core phonological properties in the language, but they can also enable new phonotactic patterns, as was the case with 15\(^{th}\)-century /-a/# nouns.

\(^2\) Using 1450 as the cut-off point is arbitrary; a shortcut and a convenient abstraction. Clearly, no change can be dated with such precision; pre- and post-1450 variation in dialect, register, gender etc. continues – in this case extended to as much as two to three generations before or after the mid-15\(^{th}\) c. point.
A second consequence of the contact-driven change is the introduction of a hitherto unprecedented correspondence between the distribution of a single sound and the part of speech where it is allowed to occur.\(^{23}\) As seen in Appendix 2, there are no recorded headwords in /-ə/# that are verbs before 1500. Predictably, there are some nouns that can be used in adjectival function, e.g. basilica(n) adj.; effimera, n., adj. Latin adjectives are also recorded as nouns, e.g. cephalic(a), adj. as n.; purpurea adj. as n. The morphological uniformity of the items suggests that from being a rather unstable and increasingly dispensable grammatical marker of person, number and case, /-ə/# is reanalyzed as a signal of nounlessness. This 15\(^{th}\)-century development raises the question of the information content of the unstressed vowel before it was deleted and after it started its comeback.\(^{24}\) As we will see in the next section, /-ə/# did not remain uniquely associated with nouns, but even in more recent new words, the dominant pattern of “[/-ə/# = Noun]” seems to persist as part of the native competence of English speakers.

Another consequence of the demise of native /-ə/#, both stem-final and inflectional, is that at least initially, perhaps throughout the 17\(^{th}\) c., and even later, /-ə/# was pragmatically marked. It was introduced “from above” and was linked to a specific register; it was a signal of “foreignness”. Unlike the link between /-ə/# and nounlessness, the association between a particular sound with a particular layer of the vocabulary is neither surprising nor new. Although the new loans violate the native phonotactics, they are not part of the core vocabulary, and the phonological component of the grammar can treat items belonging to a peripheral etymological layer differently.\(^{25}\)

In terms of modeling the change, an implication of the 15\(^{th}\)-17\(^{th}\) c. strengthening of the /-ə/# pattern is that */-ə/# is ranked differently for different layers of the vocabulary. Again, differential constraint ranking under conditions of lexical borrowing is to be expected (see Itô and Mester 1995: 824 for an early theoretical treatment of that issue: as the distance from the lexical core increases, “constraints are weakened and abolished, and the range of admissible structures increases”). This applies also to the last observation in (6): the new borrowings are initially prosodically marked; the structure #/θ/θ/θ/# runs against the “Germanic” prosodic template of mono- or disyllabic nominal stems. This destabilizes the Germanic stress rule and contributes to the initiation of a new prosodic contour of non-initial stress in nouns as in hyena, chimera, podagra, sambuca.

The final sections turn to the specifics of the later realizations of final schwa and the way in which its more recent history may illuminate its future.

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\(^{23}\) The closest parallel that I can think of in the phonology of English is the association of initial [ə-] with function/deictic words: the, this, that, then, they, etc. compared to its voiceless counterpart [θ-], which rather occurs in the beginning of lexical parts of speech (e.g. thing, thorough).

\(^{24}\) This is a line of inquiry that cannot be pursued here, but see Cohen-Priva (2008) and Jurafsky & Cohen-Priva (2008) on the notion of phone informativity and the predictability of phone deletion.

\(^{25}\) A well-known instance in the history of English is the different ranking of the constraint of Non-Finality in ME stress-placement (see Minkova 1997). Other instances of loan phonology in violation of native distributional constraints and therefore signaling “foreignness” are the introduction of initial [v-] and [z-] in ME, the introduction of initial [ʒ-], and, more recently, [ʃm-, ʃl-, ʃt-], [ts-] (see Minkova 2014: 4.4, 5.4, 5.6).
6. Diagnostics of the reversal of schwa loss

The steady rise of schwa-final items after 1500 initiates a restructuring of the phonotactic system. As the new items work their way into the lexicon, some of the features associated with the “new” schwa are weakened, allowing it to behave more similarly to the schwa reconstructed for ME. Thus an account of schwa after its loss must include two chronological phases: an innovative phase, and a “reversal” phase. The properties associated with the early 15th-century reinstatement of /-ə/# are listed in (6); they characterize the innovative phase. Subsequently, the new final schwa acquires some features which hearken back to the pre-1400 /-ə/#; this second phase is the “reversal” of schwa’s fortunes. How can one diagnose the shift from the innovative phase to the reversal phase?

As noted in Section 4 (see also Appendix 1), a significant proportion of the pre-1400 entries shown in (5) have variant forms: curtana-curtain, hyena-hyen, taffeta-tapheet, sambuca-sambuque, diastema-diastem etc. However, in the next two sets of loans in Appendix 1, fewer and fewer loanwords obey */-ə/: the number of doublets drops sharply after the 15th c. Indeed in some cases, e.g. podagra, mesquita ‘mosque’, drachma, hyena, thema, the <-a> is reinstated during the 15th c. or later. It is hard to imagine that 20th-century borrowings such as bottega (1900), jojoba (1900), ikebana (1901), cinema (1909 < cinematograph), milonga (1914), al Quaeda (1996), would be subject to schwa deletion. The stability of /-ə/# after the 15th c. is a reliable diagnostic of the reversal of the ranking of the original phonotactic constraint. Seen only from within the phonology, then, /-ə/# has come full circle.26

Next comes the question of the unique association of /-ə/# with nouns. I am not aware of any psycholinguistic studies of the perception of schwa-final words in PDE, but in an informal “wug-test” I asked ten adult native speakers of American English to place the items acara, birsuna, cumara, molitva, fripusha, shifita, selimka in typical noun, verb, adjective, and adverb frames.27 Reassuringly, the speakers showed no hesitation in identifying the words as nouns. As adumbrated in Section 5, this is a feature of the “new” schwa that is still present in the language. Most schwa-final words enter the language as nouns, but there are also instances of shift of part of speech accompanying the borrowing. A loan such as hlonipa ‘act humbly in conversation’ (1913) < Xhosa hlonipa, which is only a verb in the source language, is often treated as a noun in English contexts (OED). Similarly, an original adjective nova (1833) < Latin nova, fem. sg. of novus ‘new’, entered English as a noun, possibly as a short form of post-classical Latin stella.

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26 “Full circle” here refers to the licensing of a phonemic schwa in word-final position. The picture is phonetically more complex and that may affect the future categorization of the sound. There is evidence from British English that schwa in final position is realized as an open mid-central vowel [ə], as distinct from non-final schwa [a], or schwa adjacent to velars or alveolars, which is even higher. A lower quality of the final schwa, [ɛ] and even [æ] is found in final position in CGB (Conspicuous General British), formerly identified with RP (Received Pronunciation), see Cruttenden (2014: 138). Of interest for the future of final schwa is his observation that Hindi and Bantu learners of English tend to equate final /a/ with /aː/. Note also the absence of [ə] in Pakistani English (Galloway and Rose 2015: 100).

27 Of these, two are OED headwords: acara (1830) Brit. /aˈkærə/, U.S. /əˈkɛɾə/ ‘fresh-water fish’ < Brazilian Portuguese acara (1587) < Tupi aka’ra, and shifta (1950) < Somali shifto ‘bandit’ < Amharic; molitva is Bulgarian for ‘prayer’. The rest are made-up words.
On the other hand, loans that can be used both as adjectives and adverbs, such as nouns is attested negative: they are based on nouns. The evidence of these new verbs for the reversal of the process to its original scope is otherwise very productive functional shift from nouns to verbs in English. Therefore sound practically unlimited numbers are small, and they do not rise sharply in the last two centuries, unlike the (1656), examples are † words and registers. The / confines of the beginning of the 16 tailia. 'a cry used by sailors when pulling or hauling' with no certain etymology for disyllabic variant functions in the same way as PDE < words in / diagnostic of The very nature of this set of words suggests informal colloquial usage, The first column in (7) lists some interjections, either borrowed or of unknown origin. The very nature of this set of words suggests informal colloquial usage, another diagnostic of the reversal of the features identified in (6). Among the earliest non-noun words in /-a/# are the interjections eia 'ah, oh' (a1500), where the letter <a> most likely functions in the same way as PDE <h> in <ah>; osanna, which seems to have had a disyllabic variant,28 and hissa (c1500), trussa (c1500), tailia (c1500), all MDutch, all glossed 'a cry used by sailors when pulling or hauling' with no certain etymology for trussa and tailia.29 The use of the three hapax legomena hissa, trussa, tailia in a humorous context at the beginning of the 16th c. is a sign of the acceptability of /-a/# outside the narrow confines of mots savants associated with non-colloquial, learned, specialized scientific registers. The /-a/# is leaving the rarefied spheres of religious and scientific discourse and is becoming part of the speaker’s mental image of possible informal household words.

Conversion of nouns to verbs starts in the middle of the 16th c. The earliest examples are †fistula (1547), †lavolta (1590), cupola (1615), subpoena (1640), dilemma (1656), caesura (1661), militia (1724), quota (1755), niagara (1799), all used as verbs. The numbers are small, and they do not rise sharply in the last two centuries, unlike the practically unlimited rate of conversion of nouns of unmarked class status. Such verbs sound “odd”; the surviving nounness association of /-a/# has an inhibiting effect on an otherwise very productive functional shift from nouns to verbs in English. Therefore the evidence of these new verbs for the reversal of the process to its original scope is negative: they are based on nouns.

With the adjectives, the situation is more ambiguous: the attributive use of nouns is attested early; some examples are terza (1724), alpaca (1747), petunia (1825) etc. On the other hand, loans that can be used both as adjectives and adverbs, such as extra,  

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28 Chaucer rhymes Osanne with Anne (x2); since Anne rhymes once with <panne> ‘pan’, which Chaucer uses 5 times as a monosyllable verse- internally, we can assume that a disyllabic osanne was a possible pronunciation in the 14th c.

29 All three appear in a poem starting ... Men may leue..." (Cambridge, Trinity College R.3.19), an “amusing” 72-line story, The pilgrims sea-voyage, describing misfortunes at sea in a humorous way, see Furnivall (1867).
mega and combining forms like deca-, intra-, ultra-, do provide a new “landing site” for the post-medieval final schwa outside the class of nouns. This applies to the adverbs in (7). Though not numerous, such items increase the likelihood that a PDE learner of English will not automatically associate a new /-ə/ word with the category of nouns.  

To sum up the discussion of diagnostics of the reversal: reduced, and later unattested loss of final schwa in post-1500 loans signals the demotion of the phonological constraint *-/ə/ in (3). Along with that, /-ə/ gradually spreads to non-nouns: it becomes acceptable in interjections; an indication that /-ə/ words are not exclusively esoteric foreign nouns. The association of /-ə/ specifically with adverbs, and secondarily with homophonous adjectives, also indicates a loosening of the restriction to nouns, the most salient feature of the innovative phase in the reinstatement of final schwa.

7. Names as factors in the history of /-ə/  

Thus far the account focused on replicator selection mechanisms based on the loan phonology of common nouns. This section looks briefly into the role of onomastic items in the history of /-ə/. As mentioned in Section 4 and fn. 21, names can be impervious to schwa loss. Their role in the reinstatement of schwa should not be ignored. In principle, names are formed in accord with the phonological constraints of the ambient language, but adopted names are more prone to exceptional behavior. Looking at OE names of countries and places, we find that the final vowel in some of them was indeed apocopated: Babylonia, Italia, Ispania, Roma; the Old English Corpus has 29 instances of Babilonia vs. 27 Babilone, Roma (x11) vs. Rome (x136), and Ælfric translates Roma uenio with ‘ic cume fram Rome’. On the other hand, a significant group of non-anthroponymic forms (Arabia, Bauaria, India, Judea, Libia, Macedonia, Mercia, Syria) resisted schwa loss, and it is likely that -ia was a recognizable identifier of names of countries as far back as OE. It is difficult to estimate how prominent these items would have been in the vocabulary of a 15th-century speaker of English, and we do not have a complete data-base of such place names, but their existence must be considered an enabling factor for the reversal of schwa loss.

Proper names are an even weightier input to the reversal, not least because their influence follows a different time-line. As Coates (2006: 320-321) records, the practice of naming children with pre-Conquest names declined suddenly after 1066, and by 1250 the practice had shifted to French-mediated Germanic or biblical names, either consonant-final, or <-e>-final, such as Alice, Dyane, Sibille. It was only during and after the 16th c. that Latinate and vernacularized forms started to be used side by side: Julia/Julie, Clara/Clara(i)re, Helena/Helen-Ellen-Elaine. Further, “it may well be important that some of these ‘Latin’ forms coincided phonologically (in England) with favoured Italian continuations or revivals of the names (e.g. Diana, Giulia)” (ibid.). Coates also makes the point that this practice started out with the aristocracy and “since the Reformation ...gradually percolated through the English class system.” This parallels

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30 A separate line of inquiry, which I will not pursue here, is to find out whether the number of syllables in a new word also plays a role in the categorization. In the majority of cases, adverbs and non-nominally-based adjectives are disyllabic. Spelling might also be a factor: <-ah> may be identified with interjections: halleluiah, mashallah, ooyah.

31 For this term and further discussion of it see Blythe and Croft (2012) and the references there.
the spread of /-a/# interjections in (7): the proliferation of /-a/# first names – more on this below – correlates with the re-nativization of schwa in final position.

8. Phonological factors in the reinstatement of /-a/#

Other factors contributing to the U-turn in the history of schwa are within the phonological system. An obvious starting point is the “unmarked” nature of schwa, a mid, central unrounded vowel, which can appear in open unstressed syllables in word-initial and word-medial position: a.bout, a.llow, o.ppose, u.pon; reve.lation, deco.ration etc. There is nothing foreign about schwa per se, either in production, or in perception. Jumping forward to PDE, no one will be surprised that in colloquial (General British) English more than a quarter of all vowel realizations, 27%, are categorized as /ə/. This makes it far and away the most frequent sound in the language, including the consonants. Even though this refers to PDE, and the statistics include schwa in all positions, the information from the present can be projected backwards. Ease of articulation, coupled with frequency of occurrence, must be assumed for all stages in the history of schwa. Arguably, familiarity with schwa is a necessary, though not a sufficient, condition for the reversal of its loss in final position.

Other factors, regionally or socially circumscribed, also boost the post-1450 upward trajectory in Fig. 6. These are shown in (8):

(8) Phonological changes contributing to the reinstatement of /-a/#

> [-rh]# → [-ra]#
  OE burg~burh~buruh, ME bur(g)h~bor(g)h~boru ‘borough’ ['bəra]
  OE burh, ME þuruh, thouro, thoru(e) ‘thorough’ ['θəra]

> [-æo]# ~ [-ə]#
  OE pyle-pylu, ME pile-pule-pil(l)-pill(l)a ‘pillow’
  OE fela, ME fela-felau-fala-fela ‘fellow’

> Loss of [-r]#
  mero (1434), merowe (1475) ‘mirror’; fathe ‘father’, mothe ‘mother’ (1475–1488)
  winder(e)s~wynders ‘windows’ (1601, 1613); pillar (1611) ‘pillow’

The first change in (8) is limited in scope: the loss of the final glottal fricative /-h/ leaves the combination of a back vowel + /r/ open to perceptual ambiguity due to the rhotic: [r]~[ɹ]~[ɾ] (Minkova 2014: 112–114). The variability of these items continues after the 15th c. Type frequency in this group is small, yet token frequency makes it likely that the [-ra]# variant enhanced the acceptability of /-a/# as a native phonotactic pattern.

The second group of native /-a/# variants is of special interest. In PDE they are optional realizations of unstressed [-æo]# in words such as fellow,illow, window, with [-ə]#, described by the OED as “affected or vulgar”. The “correct” pronunciation is a spelling pronunciation, promoted during and after the 18th c. Judging from spellings and contemporary descriptions, 16th- and 17th-century /-a/# in this set of words was

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32 The percentage is calculated from the numbers in Cruttenden (2014: 158), where /ə/ attestations account for 10.74% of the total of 39.21% for all vowels, vs. 60.78% for all consonants.

33 Cely Papers, 1475–1488.
unstigmatized, even for a highly educated Londoner like Ben Jonson, who writes: “On o: In the last Syllabes before w ... it frequently looseth: as in willow, billow” (1640: 39).\footnote{The English Grammar. Made by Ben. Jonson. For the benefit of all Strangers, out of his observation of the English Language now spoken, and in use. Printed M.DC.XL (composed about 1617).} In some cases the reduced pronunciation of <-o/-ow> gave rise to a new lexeme, e.g. holler (1699), which is an etymological variant of an earlier noun and interjection <hollo/holla/hollow> [ˈhoʊlə]. I return to this set in Section 9; for now we just register the existence of the schwa-final variants as a system-internal factor facilitating the adoption of loanwords with final schwa.

Establishing the earliest date for loss of [-r] in word-final position is one of the controversial issues in English phonology (see details in Minkova 2014: 125–128). Evidence of incipient loss in unstressed syllables is more ample after the beginning of the 17th c. Ben Jonson explicitly refers to <-r> at the ends of words as “more liquid” (1640: 47). The change is associated with prestige and education, and the growth of literacy is an inhibiting factor. Dobson (1957: §427) writes that it “could not have occurred in good speech before...c. 1800”. Walker (1791/1831: 56) starts his discussion of <-r> by stating firmly: “This letter is never silent”, yet he proceeds to identify two types of /r/, namely “rough” and “smooth” /r/, and he adds that “it is often too feebly sounded in England, and particularly in London, where it is sometimes entirely sunk”. He describes the London pronunciation of /r/ in words in <-ard>, e.g. lard, bard, card, as “pronounced so much in the throat, as to be little more than the middle of Italian a”, and then he recommends that in word-final position, as in bar, a speaker “must have it nearly as in London”. Windross (1994) analyzes the orthoepists’ commentaries from 1791 to 1836 and shows that there was no codification of /r/-loss in standard speech in the 18th c. It was not until the middle of the 19th century, and only in “nonsense” verse that one finds rhymes of orthographic <-a> : <-er>.\footnote{There was a young lady of Lucca, Whose lovers completely forsook her (Edward Lear, 1846)} Variation and codification continue to this day. Variable /r/-vocalization in southern British English continued as late as the 1870s, and the attrition of rhoticity in some traditionally rhotic varieties is ongoing (see Britain 2011: 46, 2013: 174) on the “dramatic” decline in the use of rhoticity in current Dorset speech and other areas in the South-West, including St Ives in Cornwall, urban Exeter, Devon, the Isle of Wight off the South Coast, Telford and Milton Keynes New Towns, and in rural Devon and Somerset. The spread of /r/-vocalization continued in NZE during the twentieth century, with female speakers lagging behind in developing /r/-sandhi (Hay and Sudbury 2005).\footnote{For ongoing changes in rhoticity see further Lawson, Stuart-Smith & Scobie (2008) for Scottish English and Nagy & Irwin (2010) for AmE.}

Codified or not, however, the loss of the rhotic was rampant in the south and the south-east, it affected /-r/# irrespective of stress and the quality of the preceding vowel. Chronologically parallel to the post-1700 upward trajectory of schwa-final loans, this change increased the pool of /-a/# items for speakers of these regional varieties and contributed to the re-integration of this phonotactic sequence. Regarding the future of rhotic vs. non-rhotic varieties, it is relevant that there is significant perceptual similarity between non-rhotic realizations of <-r>#, as in butter [ˈbʌtə], doctor...
[ˈdɒktə], and of “rhotacized schwa”, the result of pre-/r/ neutralization in rhotic varieties, as in [ˈbʌtə], [ˈdɒktə].

9. Recent trends. Possible prognoses/informed guesses

A 21st-century perspective on /-ə/# allows us to characterize its long-term trajectory not just as a progressive reversal, but more of a metaphorical reincarnation, a return in a new form.

The first bullet in (6) refers to the post-1450 loss of the function of /-ə/# as a grammatical category marker. This continues to be the case in the 21st century, though with a caveat. Names, as noted in Section 7, are recognized as representing a semi-autonomous set within the core vocabulary. The adoption of more and more Latinate and Italian female names (e.g. Diana, Giulia) during and after the Reformation increases the number of items in which /-ə/# can be associated with gender. Unlike the practice of naming in ME, more and more names of specifically literary characters became popular.

(9) The spread of <-a> / [-ə]# as a feminine gender marker in given names

- Names drawn from the Romance languages: Bianca, María, Patricia, Sylvia
- Derivation male -> female: Alexandra, Antonia, Martina, Roberta, Philippa, Georgia
- Names invented by influential authors: Jessica, Cordelia, Pamela, Vanessa, Clarissa
- Newly formed names: Latoya, Maleka, Timitra, Lamecca, Tiana, Jayla, Kiara

Coates (2006: 321) writes: “These trends secured the position of –a as the mark of female names par excellence... and in more modern times –a as a formative element used to create distinctively female names from male ones”. This is the most remarkable recent development of /-ə/#: it has acquired a new gender-marking function within the sub-domain of personal names. The tendency will no doubt be strengthened by the globalization of English. 88% of the most popular Hispanic names for girls in 2012 end in /-ə/#. Recognizing the pragmatic limits of this type of pseudo-affixal gender marking – after all, English gender marking resides in pronominal reference – we can

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37 For AmE rhotic accents “coarticulation with /r/ shrinks the vowel space of pre-/r/ vowels and obliterates certain cues...These effects, in turn, lead to difficulty by speakers in identifying pre-/r/ vowels” (Thomas 2001: 44).

38 The first three sets are based on Coates (2006: 321-324)

39 Lieberson and Mikelsen (1995) analyzed innovative naming patterns in the last three quarters of the 20th c. and found that “For both African Americans and Whites, among the 100 most popular girls and boys names, there is a massive gender difference in the frequency of names ending with an a-sound. Joshua is the only male name in the top 100 ending in a. By contrast, for girls one-half of all leading names among African Americans and one third of all leading names among Whites end with an a-sound. In effect, ... the a-ending provides a powerful clue to gender: We implicitly know that such an ending almost certainly indicates a girl's name” (1995: 935). In name truncation, e.g. Rena < Irene, 96.95% of the /-a#/ forms are derived from female base names, see Lappe (2007: 68).

40 http://www.babycenter.com/0_100-most-popular-hispanic-baby-names-for-girls-in-2012_10376554.bc#articlesection2
still say that this is a typological innovation that may have repercussions outside the narrow limits of given names.

Expanding contact with languages in which common nouns are gender-marked may contribute to the extension of /-a/# to English nouns with animate referents. In Latin, nouns of the first declension (nom. sg. in -a) were overwhelmingly feminine. The feminine suffix -ina as in regina can be extended as in tsarina (1717), ballerina (1789), babuina (1882) ‘a female baboon’. The gender-marking lingers on in borrowings such as bigama (1586) < bigamus ‘a female bigamist’, emerita (1842), alata ‘a female aphid’ (1922). Influence from Spanish, an increasingly important contact language in the US and elsewhere, is also likely to solidify the association between /-a/# and gender in animate nouns: senora (1579), infanta (1601), duenna (1668), maja (1770), muchacha (1811), abuela ‘grandmother’ (1836), aficionada (1836), matadora (1901), chica (1907), militiana (1938), Chicana (1969), Latina (1972).\(^1\) Words of the type artista, doctora, feminista appear in the Urban Dictionary (http://www.urbandictionary.com); in spite of the gender-neutrality of -ista in Spanish this may be one direction of innovative word-formation in the future.

Post-1450 /-a/# words are mostly nouns. The diversification of /-a/# as a part-of-speech marker was discussed and illustrated in Section 6. The process has been slow, with interjections leading the way. The number of verb forms in [-a] is really low, and the majority of the verbs are derived from nouns. As can be seen in Appendix 3 (link), only 12 new verbs from [-a]-nouns were recorded between 1700–1850, as against 2883 new verbs total. 75% of these new verbs are derived from previously existing nouns. For the post-1850 period the number is a little higher, with 28 new verbs in [-a], as against 3663 new verbs total. Just over half of these verbs, 53.5%, are derived from nouns: mascara, opera, propaganda, rumba, samba, sauna. As noted in Section 6, the noun-to-verb functional shift for [-a] items occurs at a remarkably low rate. Why this should be the case is another direction worth pursuing: it is known that in English, conversion to verbs is severely limited for forms derived by suffixation. This is especially true for Germanic suffixes, but not exclusively: thus goodness, sisterhood, wisdom, sunny, winsome, clarity, dentist do not lend themselves to “verbing” (Don 2005), which suggests that /-a/# may share some properties with lexical category affixes.

Within the set of newly attested verbs there is a significant proportion of new verbs formed from the phonological merger of an enclitic and a head verb: 25% of the 1700–1850 set (watna, oughta, musta) and 35.7% of the post-1850 verbs (coulda, gonna, gotta, hadda, hafta, wanna, etc.) are of that type. These forms, which arise in colloquial English, are morphologically compound lexemes; they are not new verbs independent from the input verb-clitic. Pullum (1997) analyzes some of these (verb + to) as related via derivational morphology, more specifically to-derivation. The phonological shape of to in the derivatives is /-ta/#. Here one can add the contractions with unstressed have:

\(^1\) Here we could add Slavic loan-words, all nouns, such as baba, matryoshka (1948), Italian sultana (1585), prima donna (1782), signorina (1750), contessa (1819), carissima (1857), diva (1883), Yiddish shiksa (1982), yenta (1923), Arabic muslimah (1851). One may mention also the specifically scientific Latinate plural in -(l)a, e.g. marginalia, realia, notabilia, all the -zaa biological terms, but the extent to which schwa is identified as a plural marker outside the scientific nomenclature is questionable: data is ambiguous as to number, allowing both singular and plural concord with the verb, and so is trivia. Going back in history, how many speakers recognize the etymological link between opus, sg. and opera as the original Latin plural?
musta, coulda, woulda, shoulda. Such contractions, characteristic of a colloquial style, should be identified as an inroad into the overall solid association between /-ə/# and nounness. In light of the recognizable semantic identity to the input sequence, however, the contractions do not produce completely new lexical verbs; they are marginal to the destabilization of the status quo with respect to nounness, but as we will see below, they play a very important role in the speakers’ perception of the lexical layering of /-ə/# in PDE.

As noted in (6), immediately post-1450 /-ə/# words were etymologically peripheral loans; this in itself licenses their initially exceptional phonotactic shape. As is well known, however, periphery-to-core layering of the vocabulary is subject to cultural and social pressures. Universal education entails that more and more speakers are exposed to previously “exotic” words, so that these items permeate the layers closer to the core. A good indication of that is the frequency of /-ə/# words in PDE, as shown in (10):

(10) Lemma frequencies of /-ə/# and non-/ə# words compared

<table>
<thead>
<tr>
<th>/-ə# words</th>
<th>CELEX</th>
<th>Non-/ə# words</th>
<th>CELEX Lemma Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>idea</td>
<td>7132</td>
<td>mind</td>
<td>7134</td>
</tr>
<tr>
<td>area</td>
<td>6152</td>
<td>fall</td>
<td>6132</td>
</tr>
<tr>
<td>extra</td>
<td>1522</td>
<td>bottom</td>
<td>1524</td>
</tr>
<tr>
<td>china</td>
<td>1153</td>
<td>sink</td>
<td>1153</td>
</tr>
<tr>
<td>media</td>
<td>714</td>
<td>meanwhile</td>
<td>714</td>
</tr>
<tr>
<td>camera</td>
<td>651</td>
<td>eastern</td>
<td>651</td>
</tr>
</tbody>
</table>

All of the items in the third column in (10) are native words. The sample, based entirely on the comparable frequencies of words inherited from Old English with the loans in the first column, is sufficient to make the point: the frequency of many loanwords ending in schwa is comparable to that of common native words of any phonetic shape. Thus the combined effect of rapid increase of new loans in /-ə/#, the post-Reformation spread of female names in /-ə/#, and the phonological changes listed in (8) lead to a much higher density of /-ə/# words, many of which now belong to the core vocabulary.

The reduction of [-əʊ] to [-ə], advanced in the early 17th c., is now stylistically marked. Almost two centuries after Ben Jonson recognized the /-ə/# in <-ow>-words, John Walker (1791: 46), also known as Elocution Walker because he wrote on and taught “proper” oral delivery, registered the schwa variant, but insisted on a diphthong in borrow, sorrow, fellow, willow etc.: “The vulgar shorten this sound and pronounce the o obscurement, and sometimes as if followed by r, as winder and feller; but this is almost too

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42 A similar contraction occurs with noun + of: lotta (1906), kinda (1912), cuppa (1925), lotsa (1927), pinta (1960), hella (1987) etc. These are still register-specific, generated “from below” (Labov 1994: 78) and use native bases – but note supposed to > [sˈpouzta]. A linking schwa, as in pit-a-pat (1535), will-o-the-wisp (1608), jack-a-lantern (1663), chock-a-block (1840) etc. can be treated as an infixing element in PDE (see Miller 2014: 235).

43 The frequencies are from the data-base of the Carnegie Mellon University Pronouncing Dictionary (CMUDictionary): http://www.speech.cs.cmu.edu/cgi-bin/cmudict.
despicable for notice. Good speakers preserve the diphthong in this situation”. This is the prevalent position today: neither the OED, nor the CMUDictionary, nor the online Merriam-Webster give the schwa-final pronunciation as an option, though it has survived as an informal variant in unstressed <-ow># syllables since before Ben Jonson’s days.

The likelihood of a reduced /-ə/# variant in PDE may be linked to lexical frequency: the list of the top 5,000 words in American English in COCA gives the following frequencies for some of the relevant words: follow 119425; window 68303; tomorrow 30098; yellow 22452; narrow 10339; fellow 8536; pillow 7122; widow 5309; shallow 6512; arrow 5208. Studies of the effect of word frequency on the diffusion of a particular variant (see Phillips 2006: 58–75) have shown that the probability of vowel reduction rises for more frequent words. In our case we can expect that /-ə/# would be more likely in the words cited than in rarer/less colloquial words such as billow, harrow, yarrow. The rate of speech is a proven factor in the variability of the realization too: unstressed vowels are typically subject to reduction in fast speech (see Gay 1968). The long-term prognosis for the reduction of the unstressed diphthong in <-ow> words is unclear, not least because of prescriptive statements found in authoritative sources, such as Cruttenden (2014: 139), who considers the full vowel [-əʊ] completely restored.

The coup de grace on the ‘foreignness’ of /-ə/# was the progressive loss of /-r/# after the 16th century. The future of rhotic and non-rhotic accents in English, both widely attested, is unpredicatable. In any case, however, the global statistical majority of rhotic speakers, at least in the first quarter of the 21st century, is not a significant phonetic obstacle to the consolidation of the native status of /-ə/#, see Section 8 above.

The cumulative effect of loan phonology and system-internal changes generating /-ə/# secured a prominent place for it in the phonological map of the language. The ratio of stressed to unstressed syllables in English is in favor of the latter, and /a/ is the only vowel that appears exclusively in unstressed syllables, As noted in Section 8, over a quarter of the vowel realizations in PDE are /a/, making it the most frequent single vowel in the language.

The rate of occurrence of final /-ə/# in PDE is remarkably high:

![Histogram of English Vowel Realizations](chart.png)

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44 [www.merriam-webster.com](http://www.merriam-webster.com). Interestingly, they list a schwa-final option for potato, but not tomato; the distribution of variants across accents, in different styles, rates of delivery, different spellings, frequency, and other parameters would be an area worth investigating.

45 Corpus of Contemporary American English: [http://www.wordfrequency.info/top5000.asp](http://www.wordfrequency.info/top5000.asp)
Figure 7: Final vowel frequency in PDE

The chart is based on Muthmann (1999: 404). The “just /-ə/” column includes all <-ia> words, but not entries with optional final [-r] in rhotic accents, as in figure, calendar, sooner, conquer. The number of these entries in Appendix 2 in Muthmann (1999: 478-482) exceeds 2300, which puts /-ə/ above the level of /-i/. The vanilla nature of /-ə/# is fully confirmed by its distributional density. The reintegration of /-ə/# into the phonology of English is complete and, arguably, irreversible. If anything should happen to this phonotactic sequence in the future, it would be in the direction of expansion of its functions, as illustrated in (11):

(11) Recent /-ə/# headword entries in the OED:

- gangsta (1988) < gangster
- raga (1990) < ragamuffin
- fashionista (1992) < fashion + -ista (Sp.)
- alterna- (1992) < alternative
- Viagra (1996)
- machinima (2000) < machine + cinema
- Captcha, n. (2001) < completely automatic public Turing test to tell computers and humans apart

Most of the word-formation processes exemplified in (11) are of recent vintage. Only the so-called “combining forms”, a specifically OED term, go back to OE. Tetra- (1471) is the earliest relevant attestation with /-ə/#. Since word-formation processes tend to respect native phonotactics, the compatibility of /-ə/# with innovative word-formation is an indirect consequence of the elimination of the early 15th c. distributional constraint in (3).

The final innovation, which deserves its own focused investigation, has to do with the prosodic history of English. As noted in (6), many post-1450 /-ə/# stems have a marked prosodic structure # σ σ σ #. There are no Germanic monomorphemic noun stems that fit that template, but many early 15th-century loans do: edema, saliva, trachea, formica, uvula etc., see Appendix 1. The introduction of such items is one of the factors that undermine the stability of the Germanic # σ σ # disyllabic template for unaffixed nouns. In many cases the stress of the original is preserved: saliva, formica, uvula, but even input # σ σ σ # may vary in PDE: eczema [ˈɛkzɪmə] ~ [ɪg'ziːmə]; enema [ˈɛnɪmə] ~ [ɛˈniːmə]; trachea < late Latin trāchā, now either [tra'kiːə] or [treqiːə]; they illustrate the diverse strategies of prosodic accommodation which develop simultaneously with the reinstatement of final schwa. Within the context of prosodic predictions, it would appear that /-ə/# words can be a deterrent to the more general tendency in English for

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46 The columns represent counts which together add up to 15.08% – the proportion of vowel-final entries in Muthmann (1999), as against 84.92% of words ending in a consonant. I have not included vowels whose occurrence in final position is below that of /-ə/, or fewer than 60 items.
47 Gangsta is attributed to AAVE, where the sonorants /l n/ can be deleted in syllable coda position. One of the most successful female pop-rap groups in the US is the group Salt‘N‘Pepe.
initial stress in nouns, most clearly traceable in the post-16th c. increase of functional stress-shifting of the type exemplified in invalid, attribute, envelop(e).

10. The aleatory future of final schwa

Some variation and change can be observed in real time, in a localized micro-perspective, while other cases allow a non-localized macro-perspective, stretching over a millennium and a half, as is the case with word-final schwa loss in English. Unlike the dominant S-curve trajectory in the majority of the recorded changes, the loss of final schwa plots as a U-turn, a reversal of the phonotactic constraint */-ə/#. The reversal is complete within the phonology, but the re-entry of the “new” final schwa is accompanied by the emergence of previously unattested properties. These are shown in Fig. 8:

<table>
<thead>
<tr>
<th>Time Period</th>
<th>/-ə/ marking grammatical category</th>
<th>/-ə/ marking nounness</th>
<th>#əəəə noun stems</th>
<th>/-ə/ marking register</th>
</tr>
</thead>
<tbody>
<tr>
<td>OE - c. 1450</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO&lt;sup&gt;49&lt;/sup&gt;</td>
</tr>
<tr>
<td>c.1450–c.1550</td>
<td>NO</td>
<td>YES</td>
<td>Very rare</td>
<td>YES</td>
</tr>
<tr>
<td>1550 -</td>
<td>Limited to names</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Post-1900</td>
<td>In [+animate] nouns</td>
<td>Mostly&lt;sup&gt;50&lt;/sup&gt;</td>
<td>YES</td>
<td>NO?</td>
</tr>
</tbody>
</table>

Figure 8: The changing properties of English /-ə/#

Fig. 8 does not include reference to the phonological status of */-ə/#. As noted earlier, if the account is restricted to the phonotactic constraint, the turnaround after the middle of the 15th c. is robust and complete; that would be the end of the story. However, there was new information revealed by the data-survey: a change which started as a typical case of lexical diffusion of a loan-phonology distributional feature imposed “from above” had wide-ranging consequences for other parts of the grammar. Initially, all properties identified in the first two rows of Fig. 8 were reversed. Subsequently, the generalization of /-ə/# beyond the narrow lexical pool of mots savants resulted in previously non-existent relations: today /-ə/# may be a candidate for a peripheral/pseudo-suffixal status. It is involved in limited gender marking and it continues to be associated with nounness, which adds to the specificity of the information content of /-ə/# and raises the question of its morphological properties. It contributes to the hybridity of the PDE prosodic system. Only one of the non-phonological parameters in Fig. 8 replicates a property of OE and ME /-ə/#: its unrestricted use in all registers, and even that may be “in progress”, depending on education, regional demographics and rate of speech.

The main barrier to predicting language change, as distinct from predicting material changes such as oxidation or crystallization, is the interaction of multiple constraints: physiological, cognitive, communicative and social pressures shape human language. The trajectory of final schwa cuts through fifteen centuries of linguistic and

<sup>49</sup> With the caveat that scribal retention of <-e> by 1400–1450 depends on the nature of the text and the intended audience (see Minkova & Runde 2015).

<sup>50</sup> Depending on register (see (7) and note 41).
Can we forecast its future? Yes and no; hence the reference to the aleatory nature of the diffusion and persistence of the properties of final schwa. We can assert, with confidence, that /-ə/# is here to stay. Its “weakness” was an enabling factor in its near-categorical demise; the process as a whole was phonetic in origin, but its diffusion was as much grammatical as it was phonological. Once the contact with Old Norse/Scandinavian, an essential contributor to the loss of inflexions, was no longer a factor, the impetus to inflectional simplification was much reduced, and a different type of contact, with Latin, Greek, Spanish, Italian, reversed the course of events. The recent history of the English lexicon is fully in line with that trend. In addition to European loans in the second half of the 20th century: agita (Italian, 1979), ciabatta (Italian, 1985), perestroika (Russian, 1986), lambada (Portuguese, 1988), marka (Bosnian, 1997), the OED also records merdeka (Malay 1947), intifada (Arabic 1985), peshmerga (Kurdish 1965), peseta (Akan 1963), samosa (Hindi 1955), vinyasa (Sanskrit 1988), barkada (Tagalog 1965) etc. – note that these are all nouns. The final vowel in the donor languages is easily assimilated to a final schwa in English. While the transfer of vocabulary between English and other languages is more heavily in the direction of the former to the latter, there are also considerable additions to the English lexicon from the first languages in the places where English is also spoken, see Gramley (2001) on the unity and variety of Englishes in the global word. Thus the continuing presence of /-ə/#, at least for this century, is strengthened by the globalization of English.

The propagation and the staying power of the non-phonological features in Fig. 8 is much harder to predict. In the second decade of the 21st century a very low percentage of common nouns with biologically female referents end in /-ə/#, yet the naming pattern for girls is transparent and widely shared. This is not to suggest that English nouns in general are likely to return to being gender-marked, but it is not unimaginable that the gender-marking function of /-ə/# may be expanded in some geographic regions and for targeted pragmatic uses. The marking of nounness has been destabilized, but it cannot be ignored as one of the current features associated with /-ə/#. The prosodic aspect of /-ə/# – its role in producing hybrid stress contours – seems stable: the globalization of English is more likely than not to extend the variety of prosodic patterns in the language. The unexceptional phonological behavior of /-ə/# is linked also to its loss of pragmatic specificity. In terms of register, the tendency towards colloquialization, which started with mam(m)a (1555), pap(p)a (1681), nana (1844) will continue; English is going “the whole enchilada”.

The goal of historical linguistics is to reconstruct and understand the evolution of linguistic systems. No single case study can claim to accomplish such a goal, but it is only through the documentation and analysis of individual changes that we can move forward. This study confirms the idea that language change is not linear and unidirectional, that language contact can be a major factor in arresting and even reversing the trajectory of change. The descriptive facts and consequences of the reversal of word-final schwa loss are not recorded in any of the handbooks. The

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51 In this century Spanish is the second most common language used by 26 percent of the population in California (http://web.stanford.edu/dept/csre/reports/execsum_14.pdf). Latina/Latino and Chicana/Chicano Studies are offered by colleges and universities across the US.
account presented here adds to the empirical inventory of changes on which new theories can be tested.\(^\text{52}\)

As is often the case, as one digs deeper into a specific change, many new directions of inquiry come to light, opening up previously unidentified areas of research. These include the propagation of schwa loss in late OE, the role of syllable weight in late ME schwa loss, the potential emergence of */-ə#/ as a new gender-marking pseudo-suffix, the phone informativity of schwa before and after the reversal, the rate of noun-to-verb conversion of */-ə#/ words in comparison with other words, the influence of lexical frequency on the realization of */-ow#/, the psycholinguistic and sociolinguistic status of */-ə#/ in different varieties of PDE, and more.

References:


\(^{52}\) Less optimistically, Kristiansen (2014: 234) argues that “[w]e may propose and investigate ‘factors’ involved in language change (external/internal, linguistic/social/cognitive, subjective/objective) and make progress by developing the concepts and methods we use to better know the object, but we seem to be far from any definite conclusion about the role of the many ‘factors’. This, of course, is the condition under which all empirical, or \textit{a posteriori}, knowledge is established. Empirical knowledge is beliefs that we hold to be true to the extent that they are based on reliable justification (evidence). We do what we can to justify our beliefs, in awareness that these beliefs may eventually turn out to be unjustified and false”. 


doi: http://dx.doi.org/10.1121/1.1911298


Appendix 1: Earliest entries in the OED preserving /-ə/53

**eOE – 1398**

<table>
<thead>
<tr>
<th>Word</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>man</td>
<td>a1382 (WBible), a1400 (Cursor), c1450 (Lydg)</td>
</tr>
<tr>
<td>anima</td>
<td>mamma ‘breast’54; podagra, ME podager, potager55; planeta ‘rain</td>
</tr>
<tr>
<td>cloak</td>
<td>c1000 biblioȝeçce, bibliȝeça (mainly in Ælfric), hosanna; charta- Magna Charta 1215</td>
</tr>
<tr>
<td>alpha</td>
<td>1308 curtana ‘sword of mercy’ ME curtein, curteyn, curteine</td>
</tr>
<tr>
<td>hyena</td>
<td>ME &lt; OF hiene, hyene; ME variant hyen57</td>
</tr>
<tr>
<td>taffeta</td>
<td>ME var. 15th c. tapheit, 15–17 taffity</td>
</tr>
<tr>
<td>chimera</td>
<td>ME chimere, &lt; French chimère58</td>
</tr>
<tr>
<td>sambuca</td>
<td>ME 1500- sambuque, 1800 sambuc</td>
</tr>
<tr>
<td>asthma</td>
<td>var. ME asmy; aura; cholera ~ choler (1382); lepra, comp. leper; mola ~ mole ‘mole’; omega; retina</td>
</tr>
<tr>
<td>diastema</td>
<td>= diastem (1694)</td>
</tr>
</tbody>
</table>

**1400–1500**

<table>
<thead>
<tr>
<th>Year</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>a1400</td>
<td>algebra, 15–16 algeber, 16 algebre.</td>
</tr>
<tr>
<td>a1400</td>
<td>beta, macula, edema, paenua, pupilla, rotula, sciatrica, delta, eta, formica, gulla, kappa, saliva, salvatella, scrofula, spica, spina, trachea, uvula, vena</td>
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<tr>
<td>a1425</td>
<td>aphtha, gamma, lambda, maxilla, medulla, mesquita ‘mosque’59, nausea, pleura, profunda, variola, palestra</td>
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<tr>
<td>a1426</td>
<td>subpoena</td>
</tr>
<tr>
<td>?1440</td>
<td>magna</td>
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<tr>
<td>1440</td>
<td>supra, summa</td>
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<tr>
<td>c1450</td>
<td>santa</td>
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<tr>
<td>a1475</td>
<td>amphora, icada, gonorrhea, fossa</td>
</tr>
<tr>
<td>1481</td>
<td>fistula</td>
</tr>
<tr>
<td>1483</td>
<td>aureola60, aurora</td>
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</table>

53 The searches are from the OED (http://www.oed.com/). The search for headwords in «-u» prior to 1400 yields only one possible item, obsolete saumbu c1330 †ˈsaumbu, n. ‘saddle-cloth’, ME saumb, saumber, pl.ME saumb(e)s, saumbutes, saumbuces. Etymology: < OE saumb < medieval Latin sambūca, apparently < Old High German sambuoh ‘saddle-cloth, litter’. There are no relevant «-i»-final loans before 1400. Loans in «-e» are numerous: depending on origin and structure, their final «-e» behaves like native final «-e». Some examples arranged from older to newer (OE – 1400) are: rose, table, pine, case, pole, trope, plume; chore~chor ‘choir’, purse, aureole, olive, achate, timp~timpe ‘tambourine’, sphere, curate… etc. There are under a dozen «-o»-final nouns: they preserve the original length of the vowel, e.g. credo (eOE) < Lat. crēdō ‘I believe’, (but note creed < OE crēda); placebo (c1225) < Lat. placēbō ‘I shall be pleasing’; echo (1340) < Lat. ēchō. |

54 mama, n. (1555); comp. mam. mum. mom, momma, mommy, maum, mauma. |

55 From Anglo-Norman after 1300: podager, pōacre, podagre. |

56 planet < OF planete, c. 1300. |

57 Thee nedeth nat the galle of noon hyene [rime: bitwene] (Chaucer, Fortune, l. 35); Shakespeare As You Like It (1623) iv. i. 147, I will laugh like a Hyen; The <a>-forms established after 1560. |

58 Since the 16th cent. the earlier form « French has been supplanted by its Latin original. As chimere was certainly /ˈtʃɪmɪr/, the two spoken forms are practically distinct words. |

59 IME musket, IME musketh, 15 muscot, 15–16 meskit, 16 machit, 16 meschit. |

60 The <a> restored in the 15th c., earlier aureole (c. 1220).
1500–c. 1550

1502 conserva
1508 flora
?1521 drama
a1522 phalarica
1523 dilemma, zabra ‘a small vessel’, uvea
1525 spatula
1526 anathema
?1527 alga
1527 cornea, drachma, (1382 *drachm*), sperma, comp. c1386 *sperm*
1531 caffa, encyclopaedia, thema, comp. *theme* a1300, 1541 spasma, compare c1400 *spasm*, armada (1533), utopia (1533), dogma, gerah (1534), halleluiah, olla, tabula (1535), tantara (1537), plasma (1538), enigma (1539), regalia, synaloepha, soda ‘headache, basilica (1541), encla, ironia, malagma, plethora, sclerotica, spasma, ulna (?1541), academia, aga, stamina (1542), conjunctiva, naphtha, scotoma, senna (1543), framea (1545), *fistula*, n. and *verb*, hydrophobia (1547), jubbah, panacea (1548), cupola, gondola (1549)... This is the picture up to c. 1550

Exclusions:
Names, including plant names: Abba, Jehovah, Minerva, Martha, Regina, Ursa, Vesta, viola, achillea, mandragora ‘mandrake’, Hydra, Medusa, Apocrypha
Phrases like *mappa mundi*, *pro and contra*, *nota bene*, *aqua fortis*; *-ēa* suffix forming nouns (*idea* a1398)
The adverb *supra*, Lat. *suprā/superā*, a single OED attestation (1440) before 1592.
PDE *-ə/-final* forms which acquired the *-ə/ after* 1700, e.g. *aroma* (c1200) <OF *aromat*, but the form *aroma* attested only after 1700
EOE † *ballista* ‘military engine’ ~ *ballist* (1384); † *camaca* ‘silk or satin fabric’ (1338)
Appendix 2

ME <-a> words from the MED ([http://quod.lib.umich.edu/m/med/](http://quod.lib.umich.edu/m/med/))
Excluded: -ā# items and entries with OE etymology

<p>| | | |</p>
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<td>1.</td>
<td>acācia (n.)</td>
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<td>2.</td>
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<td>Asia (n.)</td>
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<td>36.</td>
<td>augmentīva (adj.)</td>
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<td>aura (n.)</td>
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<td>azarabacca(ra (n.)</td>
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<td>balaustia (n.)</td>
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<td>42.</td>
<td>balsamita (n.)</td>
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127. idroforbia (n.)  
128. idropacia (n.)  
129. ifēa (n.)  
130. inca (n.)  
131. iposarca (n.)  
132. ipia (n.)  
133. jaccinctornicsta (n.)  
134. jera-pigra (n.)  
135. jossa (n.)  
136. kynoyda (n.)  
137. labrusca (n.)  
138. lacca (n.)  
139. lamia (n.)  
140. lapacia (n.)  
141. lapparia (n.)  
142. latria (n.)  
143. leoniña (n.)  
144. libra (n.)  
145. lienteria (n.)  
146. Lucina (n.)  
147. lucipata (n.)  
148. luna (n.)  
149. lupia (n.)  
150. macula (n.)  
151. magada (n.)  
152. magma (n.)  
153. magnésia (n.)  
154. manaa (n.)  
155. mània (n.)  
156. manna (n.)  
157. mediána (n.)  
158. medulla (n.)  
159. melissa (n.)  
160. morphēa (n.)  
161. nacta (n.)  
162. nausea (n.)  
163. niğella (n.)  
164. nigra (n.)  
165. noctilüca (n.)  
166. noctilupa (n.)  
167. nola (n.)  
168. nucha (n.)  
169. obtalmia (n.)  
170. onicha (n.)  
171. orbita (n.)  
172. orızia (n.)  
173. ortigomētra (n.)  
174. osanna (interj.)  
175. paradilā (n.)  
176. pėna (n.)  
177. pēnula (n.)  
178. perizōmata (n. pl.)  
179. Persia (n.)  
180. Persida (n.)  
181. petra (n.)  
182. pleura (n.)  
183. podagra (n.)  
184. polenta (n.)  
185. Polimia (n.)  
186. poplitica (n.)  
187. porta (n.)  
188. praxina (n.)  
189. preciosā (n.)  
190. profunda (n.)  
191. prophētisa (n.)  
192. pūericia (n.)  
193. purpurea (adj. as n.)  
194. pūtrida (n.)  
195. rānula (n.)  
196. rēğina (n.)  
197. rētīna (n.)  
198. rorrā (n.)  
199. salisia (n.)  
200. saliuṇca (n.)  
201. salvātica (n.)  
202. santa (n.)  
203. scēna (n.)  
204. scēatica (n.)  
205. scilga (n.)  
206. scēriotica (n.)  
207. scória (n.)  
208. sece-secārā (n.)  
209. selia (n.)  
210. sēpia (n.)  
211. serra (n.)  
212. sesquialtera (adj.)  
213. sesquioctava (adj.)  
214. sesquertercia (adj.)  
215. sima (n.)  
216. simbria (n.)  
217. sīringa (n.1))  
218. sīringa (n.2))  
219. sīringatoma (n.pl.)  
220. sīra (n.)  
221. sīsaminia (n.pl.)  
222. sīkrota (n.)  
223. sōda (n.)  
224. sophēna (n.)  
225. spartea (n.)  
226. spergula (n.)  
227. splēnatica (n.)  
228. sub-pēna (n.)  
229. sūra (n.)  
230. taffata (n.)  
231. tailia (interj.)  
232. talpōnāria (n.)  
233. tapsia (n.)  
234. telgra (n.)  
235. terapeucia (n.)  
236. testaricia (n.pl.)  
237. thēta (n.)  
238. fibia (n.)  
239. tilia (n.)  
240. timpana (n.)  
241. tinea (n.)  
242. trāchea (n.)  
243. trenda (n.)  
244. trussa (interj.)  
245. uðimia (n.)  
246. ūnivōca (adj. pl.)  
247. ursa (n.)  
248. ūva (n.)  
249. ūvea (n.)  
250. ūvula (n.)  
251. veronica (n.)  
252. verucī (n.)  
253. Vesta (n.)  
254. viola (n.)  
255. vīpera (n.)  
256. vulva (n.)  
257. zerna (n.)  
258. zēta (n.)  
259. zeuma (n.)  
260. zimia (n.)
Appendix 3: Post-1700 verbs in [-ə]#:

Verbs in [-ə]# 1700-1850 (data from OED)
1. militia, v. 1724
2. mama, v. 1751
3. quota, v. 1755
4. niagara, v. 1799
5. watna, v. 1818
6. pialla, v. 1830
7. vista, v. 1832
8. oughta, v. 1840
9. diploma, v. 1843
10. musta, v. 1844
11. polka, v. 1846
12. razzia, v. 1846
Total: 12; 75% derived from nouns; 3 new verb forms (25%) based on verb+clitic (boldface)

Post-1850 verbs in [-ə]# (data from OED)
1. concur’tina, v. 1906
2. coulda, v. 1925
3. gonna, v. 1913
4. gotta, v. 1924
5. ha’dla, v. 1945
6. ha’ta, v. 1941
7. hlonipa, v. 1913
8. kalua, v. 1880
9. la-di-da, v. 1901
10. la-la, v. 1906
11. mascara, v. 1961
12. muta, v. 1876
13. ninja, v. 1992
14. nova, v. 1949
15. ooh-la-la, v. 1950
16. opera, v. 1853
17. prima donna, v. 1929
18. propaganda, v. 1921
19. Rebecca, v. 1890
20. rumba, v. 1934
21. samba, v. 1950
22. sauna, v. 1967
23. shoulda | shouldda, v. 1933
24. spika, v. 1889
25. wanna, v. 1893
26. wanta, v. 1894
27. willya, v. 1941
28. woulda, v. 1913
Total 28; 15 (53.5%) derived from nouns; 10 new forms (35.7%) based on verb-clitic group (boldface); 3 (10.7%) derived from interjections (italics)