Scottish Vowel Length

Regular vowel length alternations and the raising of /ae/ in Scottish Standard English

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1. Introduction

In this paper, I will present contemporary descriptions of the peculiarities of the vowel system in Scottish Standard English (ScStE), with the main emphasis on the Scottish Vowel Length Rule (SVLR). I will present the behaviour of the counterpart of the RP diphthong /aɪ/ under the SVLR, compare it to patterns attested in other forms of English, and relate it to phonetically grounded phenomena.

First, I will discuss the history and status of Scottish Standard English in Scotland in section 2. Next, I will summarize the vowel system of Scottish Standard English, as compared to Received Pronunciation in section 3. In section 4, I will present various approaches to the Scottish Vowel Length Rule. Finally, I will investigate the resulting split of the phonemes /ae/~/ʌɪ/ in section 5, compare it to similar processes in other dialects of English, and try to find a diachronic explanation for the split.

2. Scottish Standard English

Scotland is a part of the United Kingdom, but it was an independent state until 1707. The original vernaculars spoken in Scotland were Scottish Gaelic and Scots; the former is a Celtic language, while the latter has developed from the local variant of Middle English. After the loss of statehood, the influence of English has grown: at first it was only used in more formal environments, but by the present day it has become more vernacular. Meanwhile, the usage of Scots and Scottish Gaelic has declined, the latter to the point where virtually "no monoglot speakers of Gaelic are to be found" (Wells 1982, p. 395).

Scottish Standard English, as it is reflected in its name, is Standard English spoken with a Scottish accent "and retaining a few scotticisms in vocabulary" (Wells 1982, p. 394). Its status in Scotland is considerably more prestigious than that of Welsh English or those of local dialects in England. Its role is therefore similar to that of Received Pronunciation in England, or General American in the United States.

The phonology of Scottish Standard English reflects its linguistic situation: it is similar, but not identical to Scots regarding its phoneme inventory and phonotactics. Additionally, it retains the Scottish Vowel Length Rule, as it will be discussed below.

3. Vowels in Scottish Standard English

In this section, I will summarize the ScStE underlying vowel system in stressed syllables based on Wells (1982), Stuart-Smith (2008) and Scobbie et al. (2006).

3.1. Monophthongs

The vowel system of Scottish Standard English typically consists of nine monophthongs in stressed positions. Four of these (/ɪ, ɛ, ʌ, a/) are checked vowels (i.e. they cannot occur word-finally), while the other five (/ɔ, ʉ, i, e, o/) are free (i.e. they may occur in both open and closed syllables). ScStE lacks the Scots vowel phoneme /ø/, which is merged in most dialects with either /e/ or /ɪ/ (Aitken 1984, p. 96).
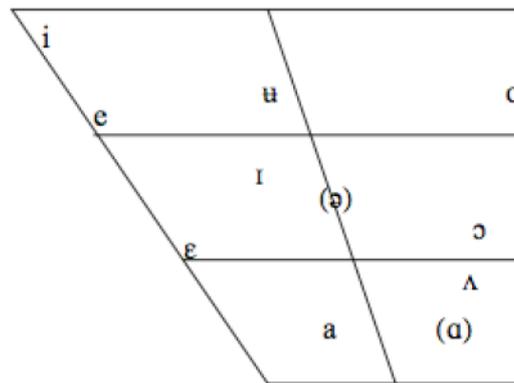

Figure 1: The Scottish Standard English vowel system according to Scobbie et al. (2006)

KIT /ɪ/

According to Stuart-Smith (2008, p. 58), "the usual realization of this vowel in ScStE is [ɪ], though it is often more open [ë]". Scobbie et al. (2006, p. 6) place /ɪ/ in the almost mid-central location in their vowel chart, though they state that it "may be further lowered and backed or raised and fronted."

DRESS /ɛ/

Both Wells (1982) and Stuart-Smith (2008) describe the ScStE vowel higher than the corresponding RP vowel, which is more similar to cardinal [ɛ].

STRUT /ʌ/

The ScStE vowel is somewhat advanced from cardinal [ʌ], as claimed by Wells (1982). It should be noted that while /ʌ/ is present in ScStE, Scots, Southern English dialects and therefore in Received Pronunciation as well, Northern English dialects lack this phoneme, as it has not split from /ʊ/.

TRAP/PALM/BATH /a/

Unlike in RP, there is no /ɑ/ phoneme in ScStE; therefore, the TRAP set is merged with the PALM/BATH one. However, according to Stuart-Smith (2008, p. 59), Abercrombie (1979) "observes that «quite a lot of people, particularly in Edinburgh» do have the vowel /ɑ/ with slightly different lexical incidence." Wells (1982) also claims that the allophone [ɑ] is available for some speakers, but it is claimed to be marginal. The phoneme /ɑ/ is absent from Scots so this occurrence of [ɑ] is probably the result of occasional borrowing from the more prestigious RP vocalism. Its status is therefore uncertain, so it would be problematic to attribute phonemic status to [ɑ] in ScStE.

LOT/CLOTH/THOUGHT /ɔ/

The vowel /ɒ/, which is present in RP in LOT and CLOTH words, is also missing from ScStE, and these lexical sets are merged with the THOUGHT set. Abercrombie (1979) and Wells (1982) report a distinct [ɒ] quality for many speakers here as well, but this could be again the result of interaction with RP. Macaffe (2004) proposes the same analysis, calling the situation similar to dialect contact, where [ɒ] can spread gradually in lexical items across the dialect border, but the status of this sound is not phonemic yet.

FOOT/GOOSE /ʉ/

"From a diagnostic point of view, the most important characteristic of the Scottish vowel system is its lack [...] of a phoneme /ʊ/" (Wells 1982, p. 40). In Scottish Standard English the FOOT-vowel and the GOOSE-vowel are both realized as [ʉ], "a high, usually rounded, vowel which is central or even front" (Stuart-Smith 2008, p. 60).

FLEECE /i/

/i/ is the same as in RP, it corresponds to the cardinal vowel [i]. It is not necessarily long, though, unlike in RP, as its length is controlled by the Scottish Vowel Length Rule, which will

be discussed below. As opposed to RP, it does not appear in unstressed environments. This will be covered in section 3.3.

FACE /e/

As opposed to RP /eɪ/, Scottish Standard English has a monophthong /e/ in this set. Some Scots dialects distinguish /e/ and /eː/, but this distinction is mostly lost in Scots as well due to the Scottish Vowel Length Rule (Aitken 1984, p. 95).

GOAT /o/

Similarly to the FACE set, Scottish Standard English has a monophthong /o/ in place of the RP /əʊ/. Also similarly, some Scots dialects still distinguish a long version of this sound, but it is merged to the short phoneme in Central and South Scots (Aitken 1984, p. 95).

Summarizing the above, we can sketch up the system of monophthongs in ScStE as follows:

	Front	Central	Back
Close	/i/	/ʉ/	
Close-mid	/e/		/o/
Mid		/ɪ/	
Open-mid	/ɛ/		/ʌ/ /ɔ/
Open		/a/	

Figure 2: The system of Scottish vowel phonemes

3.2. Diphthongs

Many RP diphthongs correspond to monophthongs in ScStE. As ScStE is rhotic, RP centring diphthongs are parallel to monophthong + /r/ sequences. Therefore, the inventory of diphthongs in ScStE is much smaller than in RP.

CHOICE /ɔe/

The transcription of this diphthong is quite different in the sources. Wells (1982) has /ɒi/, and notes that there is much variation in the actual surface form. Stuart-Smith (2008) is inconsistent, on p. 55 she transcribes this diphthong with /ɔe/, but on p. 56, when approaching ScStE from Scots, with /oe/. Scobbie et al. (2006) have /ɔe/ here as well. We

can conclude that the exact quality of this diphthong is probably variable in Scottish speech, but /ɔe/ seems to be a good compromise between reported surface forms.

MOUTH /ʌʉ/

The diphthong corresponding to RP /aʊ/ has a remarkably different quality in ScStE. The nucleus of the diphthong is centralized according to every descriptive analysis, with a quality usually described with [ʌ]. The offglide is transcribed as a tense [u] by Wells (1982), but Stuart-Smith (2008) and Scobbie et al. (2006) have a centralized [ʉ] here as well. As RP /ʊ/ and /u/ are generally fronted and merged in ScStE /ʉ/ as seen above, and the nature of this diphthong is central, the latter proposal fits much better into the vowel system of Scottish English. Therefore, together with the more recent analyses, I will define this diphthong as /ʌʉ/, and use this transcription.

PRIZE/PRICE /ae/ and /ʌɪ/

The lexical set corresponding to RP /aɪ/ is split in ScStE. The environment conditioning the split will be discussed below. The phoneme occurring in PRIZE and – in most cases – word finally is transcribed as /ae/ by Wells (1982) and Stuart-Smith (2008), and as /ɑːe/ by Scobbie et al. (2006). Since, as seen above, [ɑ] is marginal is Scottish, I will use the more traditional /ae/ below. The vowel in the PRICE set is transcribed with a centralized nucleus as /ʌɪ/, similarly to the MOUTH set.

3.3. Unstressed vowels

commA /ʌ/

According to Wells (1982), not every version of ScStE has [ə]. In place of RP [ə], where it is not present in the inventory, ScStE usually has [ʌ]. In many cases, though, RP [ə] corresponds to [ɪ], e.g. pilot [paelɪt].

lettER /ɪr/ and /ʌr/

As ScStE is a rhotic dialect, the lettER set is different from the commA set. Its vowel can be [ɪ] or [ʌ] according to Wells (1982) and Stuart-Smith (2008). Wells (1982, p. 405) claims that "in Edinburgh speech, however, it seems more realistic to recognize a phoneme /ə/."

happY /e/

Scottish Standard English does not exhibit "happy tensing", which is the process of raising the original word-final [ɪ] vowels to a tense [i] in RP and other major English standards. The counterpart of the word-final RP /i/ is a lower vowel: [e] or [ɪ].

3.4. Vowel length

It is apparent from the description above that there is no lexical vowel length distinction in ScStE. While pairs of vowels may be categorized based on length or using tense/lax features in RP, ScStE uses the tense/lax features exclusively. However, it should be noted again that while ScStE contains /i/–/ɪ/ as a tense/lax pair, there is no /u/–/ʊ/ pair as it is merged into /ʉ/.

Having said that, vowel length distinction does exist in ScStE, but it is not phonemic; I will discuss this in the next section.

4. The Scottish Vowel Length Rule

The rule governing the length of a vowel in Scots and in Scottish English is called the Scottish Vowel Length Rule (SVLR), which is attributed to Aitken (1981). The basic rule is that stressed vowels are lengthened before a morpheme boundary, a voiced fricative (/v/, /ð/, /z/ and the marginal phoneme /ʒ/) or a rhotic consonant. This can be summarised in an SPE-style rule as below:

$$\acute{V} \rightarrow [\text{+long}] \ / \ \_ \ \{\#, [\text{-continuant, -sonorant, +voice}], \ /\,r\,/\,\}$$

The operation of this rule is the same in Scots and ScStE. Aitken (1984) confirms that "all varieties of Scottish speech, from the fullest vernacular to Educated Scottish Standard English, operate in some measure the Scottish Vowel Length Rule" (p. 94). Two vowels are exempt from SVLR: /ɪ/ and /ʌ/ are always short, and in most varieties, /aː/ and /eː/ are always long in Scots (Aitken 1984, p. 98). Northern dialects tend to keep every lax vowel short (Millar 2007, p. 20).

It appears that not every vowel is targeted by the SVLR in ScStE either. According to Wells (1982) every monophthong except /ɪ/ and /ʌ/ are subject to variation of length. In the case of /ae/~/ʌɪ/ "we have here further instances of length variation in accordance with Aitken's Law. Unlike the monophthongs, though, this diphthong varies qualitatively as well as quantitatively" (Wells 1982, p. 405).

Scobbie et al. (2006) do not mention vowels that are not subject to the rule, but state that the Scottish vowel inventory might be considered larger than above. They propose that "the quasi-phonemic contrast of the Scottish Vowel Length Rule (SVLR) establishes three extra phonemes by splitting /i, ʉ, ae/ into «long» and «short» variants" (Scobbie et al. 2006, p. 5). This suggests that the primary targets of SVLR are /i/, /ʉ/, and /ae/~/ʌɪ/.

Stuart-Smith (2008) also supports what is laid down above on p. 58: "Recent accounts of the SVLR based on durational data conclude that the monophthongs /i, ʉ/ and the diphthong /aɪ/ alone are subject to the SVLR."

4.1. Examples of the Scottish Vowel Length Rule

In the next table I will show how the SVLR operates based on Wells (1982). The examples not involving /i/ or /ʉ/ are questionable according to Scobbie et al. (2006) and Stuart-Smith (2008):

bead	[bid]	sleeve	[sliːv]
mood	[mʉd]	smooth	[smʉːð]
lace	[les]	maze	[meːz]
tote	[tot]	pour	[poːr]

Table 1: The Scottish Vowel Length Rule: long vowels before voiced fricatives and rhotics

In the following table we can see that the targeted vowels are also long before strong morpheme boundaries. The examples in the upper section (cited from Scobbie et al. 1999) are accepted by all sources mentioned above, while the ones in the bottom section are only listed by Wells (1982), as the target vowels in these examples are not /i/ or /ʉ/:

need	[nid]	knee#d	[niːd]
crude	[krʉd]	crew#ed	[krʉːd]
staid	[sted]	stay#ed	[steːd]
toad	[tod]	toe#d/tow#ed	[toːd]
bad	[bad]	baa#ed	[baːd]
nod	[nɔd]	gnaw#ed	[nɔːd]

Table 2: The Scottish Vowel Length Rule: long vowels before strong morpheme boundaries

We can also observe that the /ae/~/ʌɪ/ alternation is conditioned by the same environments as the long-short vowel alternation in the above examples:

price	[prʌɪs]	prize	[praez]
side	[sʌɪd]	sigh#ed	[saed]

Table 3: The Scottish Vowel Length Rule: the /ae/~/ʌɪ/ alternation

This alternation in Scots (Aitken 1984) became phonologized as it is apparent from the existence of the following minimal pairs:

ay [ʌɪ] 'always' ~ aye [ae] 'yes' (Aitken 1984, p. 95)

gey [ʌɪ] 'very' ~ guy [gae] 'guy' (Scobbie et al. 1999)

To sum up, in the case of the /ae/~/ʌɪ/ alternation, /ae/ behaves as the long variant of /ʌɪ/. The reasons for this will be further investigated in the next section.

5. The raising of the diphthong /ae/

We have seen in the previous section that /ae/ and /ʌɪ/ serve as the long and short counterparts of each other. In this section we will consider the causes of that from different aspects. First, I will present data for the raising of the corresponding /aɪ/ diphthong from other dialects of English, and then summarize the possible explanations for this phenomenon.

5.1. The raising of /aɪ/ in other varieties of English

Canadian Raising is a well-documented phenomenon, which causes the nuclei of the diphthongs /aɪ/ and /aʊ/ to be raised before voiceless consonants, resulting in [ʌɪ] and [ɑʊ], respectively. I will only concentrate on the raising of /aɪ/ because it is parallel with the phenomenon in ScStE. The examples below are from Chambers (2006):

twice	[twʌɪs]	five	[faɪv]
wife	[wʌɪf]	nine	[naɪn]
right	[rʌɪt]	my	[maɪ]
appendicitis	[əˌpɛndɪˈsʌɪɾəs]	died	[daɪd]
like	[lʌɪk]	library	[ˈlaɪbrəri]

Table 4: Canadian Raising of /aɪ/ to [ʌɪ] before voiceless consonants

The raising of /aɪ/ also present itself in The Fens region in Eastern England. In the following table I will show examples of the pronunciation in Outwell, a village in this region, where this phenomenon is clearly observable. Speakers from other villages also exhibit raising, resulting e.g. in [ɔi] in Lutton, and [ʌɪ] or [ʌʏ] in Warboy (Britain 1997).

night	[nʌɪt]	time	[taɪm]
ice	[ʌɪs]	five	[faɪv]
light	[lʌɪt]	Friday	[ˈfraɪdeɪ]

Table 5: Realizations of /aɪ/ in Outwell: raising before voiceless consonants

A third example of this kind of diphthong raising can be found in Cape Flats English, "whereby the onsets of closing diphthongs of the PRICE and the MOUTH classes are centralised in pre-fortis environments but low elsewhere" (Finn 2004, p. 982). Finn (2004) brings the following example in the case of /aɪ/:

| **Pre-fortis** | **Elsewhere** | |
| bite [bɐɪt] | bide [baˑɪd] | buy [baːɪ] |

Table 6: Realizations of /aɪ/ in Cape Town: raising before voiceless consonants

5.2. An explanation for the raising of /ae/

We have seen that /aɪ/ is subject to raising in several varieties of English in a similar way as StScE /ae/, which belongs to the same lexical set (PRIZE) as /aɪ/ in those dialects. In this section I will explore what the reason for the existence of the same phenomena in these distant accents of English might be.

"English vowels are subject to pre-fortis clipping [shortening], then, when they are followed by a fortis consonant within the same syllable" (Wells, 1990). Therefore, pre-fortis clipping might account for the origin of the SVLR. However, it does not seem to give an explanation for the alternation of /ae/ and /ʌɪ/.

A possible account is that the nucleus of the diphthong assimilates more with its offglide when the diphthong is shorter. In the case of /aɪ/ this means that the nucleus [a] raises towards the offglide [i]. This is confirmed by the experiments of Thomas (2000) and Moreton (2004a). As stated by Moreton (2004b, p. 5), "voiceless codas promote assimilation of the /aɪ/ nucleus to the offglide, while voiced ones promote assimilation of the offglide to the nucleus." This also explains why /aɪ/ becomes [ae] before voiced consonants, as it does in ScStE, for instance.

The lowering of the offglide is also present in dialects in the Southern United States and in African American Vernacular English (Bailey & Thomas, 1998). In these varieties the offglide can be lowered to the extent when the diphthong is monophthongized:

Pre-fortis	Elsewhere	
bite [baɪt]	bide [baːd]~[baɛd]	buy [baː]~[baɛ]

Table 7: Realizations of /aɪ/ in Southern US English

5.3. Diachronic development of the /ae/~/ʌɪ/ alternation

In this section, I will try to sketch up a diachronic analysis for the emergence of the /ae/~/ʌɪ/ alternation. Both of these phonemes developed from the Middle English /iː/, which is also the ancestor of the RP phoneme /aɪ/. In the following diagram, I present the process of the development of /aɪ/ in RP in the period of the Great Vowel Shift:

$$\text{/iː/} \rightarrow \text{/ɪi/} \rightarrow \text{/ʌɪ/} \rightarrow \text{/aɪ/}$$

Figure 3: The Middle English /iː/ > RP /aɪ/ sound change

There are two diachronic explanations for the /ae/~/ʌɪ/ alternation in the literature, which are summarized by Britain (1997) and Moreton (2004b). According to the simpler one, the nucleus of the diphthong did not lower further from the /ʌɪ/ stage before voiceless consonants due to the phonetic reasons discussed in 5.2. We can illustrate this with the following diagram:

Figure 4: The /ae/~/ʌɪ/ split

The alternative explanation is based on the presumption that /ae/ and /ʌɪ/ originate from two separate, non-alternating dialects. Those dialects that exhibit alternation borrowed both of these sounds. Because of phonetic reasons, the [ʌɪ] variant became more frequent, and later exclusive before voiceless consonants, while the [aɪ] variant did so before voiced ones:
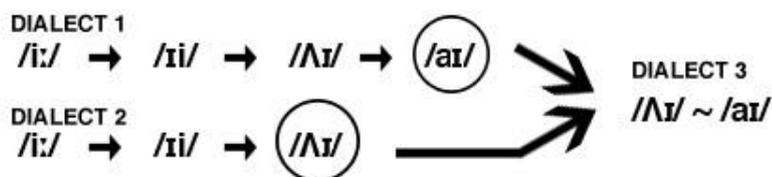

Figure 5: A dialect borrowing both [aɪ] and [ʌɪ]

In both approaches, the result of the vowel shift is [aɪ] before non-voiceless segments. In Scottish Standard English the offglide of this sound lowered to [e], the reasons of which have been discussed in 5.2. Thus both explanations are capable of accounting for the /ae/~/ʌɪ/ alternation found in ScStE.

6. Summary

In this paper I have presented the Scottish Standard English vowel inventory and its distinctive phenomenon, the Scottish Vowel Length Rule. We have seen that the /ae/~/ʌɪ/ alternation parallels the variation of the long and short versions of other vowels. I have shown that other varieties of English also exhibit a similar alternation, and then I gave synchronic and diachronic explanations for the phenomenon. These explanations are based on the observation that when the diphthong /ae/ is shortened, its nucleus is raised due to natural phonetic causes.

There are some puzzles, however, that are beyond the scope of this paper. One of these questions might be why there is no such alternation in the case of the diphthong /ʌʉ/ in ScStE unlike in some Northern American dialects. It is also intriguing why /oe/, the third diphthong of ScStE, does not take part in the process of the Scottish Vowel Length Rule. The most compelling question might be whether the phenomenon of raising has a common origin or developed seperately in the above varieties. These issues could lead to further interesting research topics.

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