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Charting the rise and demise of a phonotactically motivated change in Scots

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Abstract: Although Old English [f] and [v] are represented unambiguously in Older Scots orthography by <f> and <v> (or <u>) in initial and morpheme-internal position, in morpheme-final position <f> and <v>/<u> appear to be used interchangeably for both of these Old English sounds. As a result, there is often a mismatch between the spellings and the etymologically expected consonant. This paper explores these spellings using a substantial database of Older Scots texts, which have been grapho-phonologically parsed as part of the *From Inglis to Scots* (FITS) project. Three explanations are explored for this apparent mismatch: (1) it was a spelling-only change; (2) there was a near merger of /f/ and /v/ in Older Scots; (3) final [v] devoiced in (pre-)Older Scots but this has subsequently been reversed. A close analysis of the data suggests that the Old English phonotactic constraint against final voiced fricatives survived into the pre-Literary Scots period, leading to automatic devoicing of any fricative that appeared in word-final position (a version of Hypothesis 3), and this, interacting with final schwa loss, gave rise to the complex patterns of variation we see in the Older Scots data. Thus, the devoicing of [v] in final position was not just a phonetically natural sound change, but also one driven by a pre-existing phonotactic constraint in the language. This paper provides evidence for the active role of phonotactic constraints in the development of sound changes, suggesting that phonotactic constraints are not necessarily at the mercy of the changes which conflict with them, but can be involved in the direction of sound change themselves.

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1 Introduction

Between the Old English (OE) period and the early Middle English (ME) and Older Scots (OSc) periods there was a set of changes which transformed the phonological shape of the language and its phonotactic constraints. These extensive changes include degemination (Lass 1992; Minkova 2014: 80–81), unstressed vowel reduction and final unstressed vowel loss (Minkova 1991; Lass 1992), phonemicisation of the voiced/voiceless contrast in fricatives (Minkova 2011), and interdependent changes in vowel quantity and syllable weight (Bermúdez-Otero 1998; Lass 1992; Ritt 2005). As historical phonologists, we want to understand not only how these changes happened but also the role that phonotactic constraints played in them and resulted from them. Taking a single example, which will be explored in detail in this paper, how did the OE phonotactic constraint on the distribution of voicing in fricatives and the loss of unstressed final vowels interact? In Old English, voiced fricatives could only occur between voiced sounds, and thus could not occur word-finally (see Campbell 1959: 197–180). But after the OE period unstressed final vowels reduced to [ə] and then disappeared. The result was that formerly intervocalic [v] now appeared in final position, in contravention to the OE phonotactic constraint. This is one of the changes which destroyed the OE constraint, and helped to create the phonemic distinction between /f/ and /v/ (cf. Minkova 2014: 89–98). But is that what happened in all descendants of Old English? Why did the sound change (schwa loss) lead to change in the phonotactic constraint, rather than the phonotactic constraint affecting the change, and are phonotactic constraints at the mercy of the changes which conflict with them, or are they involved in the direction of sound change themselves (see the issues discussed in Honeybone (this issue))? Answering such questions requires us to carefully analyse the order in which changes took place and any possible interactions between them, and for this we need detailed records of earlier stages of the language.

However, it is often the case that data directly relevant to questions of this sort in historical varieties are sparse and difficult to assemble into a coherent narrative. But with the creation of large online databases of earlier records of the language, we are now in a position to analyse the history of these changes in a way which has never been possible before. This paper describes how one such database, the *From Inglis to Scots* (FITS) corpus of OSc grapho-phonological correspondences (Alcorn et al. forthcoming), reveals complex patterns of

variation in the graphemic representation of final labiodental fricatives in the fifteenth century. A detailed investigation of these patterns shows that the variation in the FITS data is not random, but results from the interaction of the continuing constraint against final voiced fricatives and the loss of final unstressed schwa. As such, this paper provides good evidence for the active role of phonotactic constraints in the development of sound changes.

This paper is organised as follows. Section 2 describes the FITS corpus and its linguistic context. Section 3 outlines the nature of variation in the representation of final labiodental fricatives in the FITS corpus and suggests possible explanations for this variation, which on the face of it appears to involve devoicing of OE [v] when it came into final position after schwa loss. In Section 4, the relevant data in the FITS corpus are laid out, and in Section 5 the extent to which these explanations account for the data is determined. Section 6 offers concluding remarks on the value of this study, not only for understanding the phonological history of Older Scots (and English more widely), but also the value of the FITS corpus for demonstrating what we can learn from corpora of earlier stages of the language, and the importance of interpreting evidence for sound change in the context of the phonotactic constraints of the language at the time.

2 From Inglis to Scots

'Scots' (see Alcorn et al. 2017; Maguire 2012, Maguire 2015) is the name of the Insular West Germanic variety spoken in Lowland Scotland and parts of Ulster. Like English, Scots derives from Old English, specifically as a result of the spread of northern Middle English into Scotland in the twelveth and thirteenth centuries. Although this variety, which we call Older Scots, remained linguistically close to northern Middle English (Williamson 2002), it became an autonomous language, subject to its own linguistic and orthographic developments (though many of these have parallels in English). However, with the loss of its autonomy from English in the seventeenth century and the establishment of diglossia and then diaglossia with English in subsequent centuries, the linguistic status of Scots has become debatable. Nevertheless, traditional dialects of Scots in the twentieth and early twenty-first centuries are characterised by significant phonological divergence from English.

As part of an extensive study of the phonological structure of Older Scots and its orthographic manifestations, we have developed a technique of grapho-phonological parsing (Kopaczyk et al. 2018), which we have applied to the Germanic

lexis in the corpus of 1200 texts written in Scots between 1380 and 1500 underpinning *A Linguistic Atlas of Older Scots* (LAOS, Williamson 2008). Our technique resolves each form of each morpheme into a sequence of spelling units. Each spelling unit is then assigned an OSc sound value, which is assigned a corresponding sound value for its pre-Scots input variety (typically Old English if not Old Northumbrian (ONhb) in particular; less often Old Norse or Middle Dutch). The resulting FITS Corpus is therefore a database of correspondences between OSc spelling units and their synchronic and pre-Scots sound values. For example, we resolve OSc *gowd* 'gold' into <g> for OSc [g], <ow> for OSc [ɔʊ], and <d> for OSc [d], and associate these spelling units with ONhb [g], [ol] and [d] respectively. The development of ONhb [g] and [d] > OSc [g] and [d] is straightforward, but that of ONhb [ol] > OSc [ɔʊ] is not. We therefore identify the relevant developments, which we list and describe in a separate 'Corpus of Sound Changes'. The end result is a richly explicated form history, e.g. ONhb [gold] undergoes Short Vowel Lowering (SVL) > [gɔld], then undergoes pre-L diphthongisation (PLD) > [gɔʊld], which then undergoes L-vocalisation (LV) > OSc [gɔʊd]. A separate 'Corpus of Spelling Changes' completes the story by listing and describing all spelling developments, such as the use of <ow> for OSc [ɔʊ].[1]

As well as providing (a) individual form histories and (b) a full inventory of examples of each documented sound or spelling development, the FITS corpus can identify and display (c) all OSc reflexes of any pre-Scots sound value and, conversely, (d) all pre-Scots sources of any OSc sound value. Moreover, results for (c) and (d) can be tailored to particular contexts, defined in terms of position within the syllable, morpheme or word, or in terms of neighbouring segment(s). The FITS corpus is thus a uniquely powerful tool for investigating phonotactic phenomena in Older Scots, as this paper will show.

3 Developments of OE /f/ in Scots

Modern Scots (ModSc) and English have much in common, reflecting their shared ancestry and intertwined history. With reference to the labiodental fricatives which are the subject of this paper, both English and Scots have similar developments of OE /f/, retaining largely unchanged pronunciations of this consonant despite important phonotactic changes through the centuries affecting its status and distribution. The pronunciation of /f/ in Old English,

1 Our form histories and supporting corpora of changes are conceptually indebted to Roger Lass and his CoNE project (Lass et al. 2013).

like the pronunciation of /θ/ and /s/, was subject to allophonic conditioning (Minkova 2011). In initial and final position and next to a voiceless consonant, OE /f/ was pronounced [f], whilst between voiced sounds it was pronounced [v]. In the post-OE period this allophonic distribution was replaced by a phonemic distinction between /f/ and /v/ as a result of a number of 'conspiring' factors: borrowings from French (e.g. *very*) and English dialects (e.g. *vixen*) with voiced fricatives, degemination of OE /ff/ (> [f] intervocalically, e.g. *offer*), and loss of unstressed final vowels (so that OE intervocalic [v] came to stand in word-final position, e.g. *live* [v.]). Even so, the etymological distribution of original OE [f] and [v] has largely remained unchanged in Modern Scots and English, apart from some loss of [v] in intervocalic and final position in Scots and northern English dialects, e.g. *deil* 'devil' and *gie* 'give' (Johnston 1997: 104). The continuity in the pronunciation of [f] and [v] in English and Scots, regardless of their phonemic status, is illustrated in Table 1.

Table 1: Continuity in the pronunciation of [f] and [v] in English and Scots.

	fish	**after**	**life**	**offer**	**seven**	**love**
OE Word	*fisc*	*æfter*	*līf*	*offrian*	*seofon*	*lufu*
OE Consonant	[f-]	[-f-]	[-f]	[-ff-]	[-v-]	[-v-]
Mod Scots	[f-]	[-f-]	[-f]	[-f-]	[-v-]	[-v]
Mod Eng	[f-]	[-f-]	[-f]	[-f-]	[-v-]	[-v]

But when we examine spellings of these words in OSc sources such as the FITS corpus, things are less straightforward. Older Scots has two groups of spellings corresponding to OE and modern [f] and [v]. The first group, labelled '<F>' in this paper, consists of the spellings <f> and <ff> (at the ends of words these can be followed by a phonically empty <e>).[2] The second group, which we label '<V>', consists of a range of interchangeable spellings such as <v>, <u>, <vv> and <uu> (usually followed by the same 'silent' <e> in word-final position). In initial position and morpheme-internally, Older Scots consistently has <F> spellings for OE and ModSc (and English) [f]/[ff] (e.g. *fisch*, *eftir*, *offir*), and <V> spellings for OE and ModSc (and English) [v] (e.g. *sevin*), and thus appears to maintain the OE pronunciations of these consonants and to distinguish them orthographically. Table 2 summarises these patterns.

2 There are three interpretations of final <e> in Older Scots: (i) residual schwa in final positions, which is unlikely by this period unless intended as an archaism, particularly in verse (Aitken and Macafee 2002: 69–71); (ii) a diacritic, most typically a length-marker for the root vowel; (iii) an otiose element without phonological consequence.

Table 2: Spellings of etymological initial and morpheme-internal [f] and [v] in Older Scots.

	fish	**after**	**offer**	**seven**
OE Word	*fisc*	*æfter*	*offrian*	*seofon*
OE Consonant	[f]	[f]	[ff]	[v]
OSc Spelling	<F>	<F>	<F>	<V>
OSc Consonant	[f]	[f]	[f]	[v]
Mod Scots	[f]	[f]	[f]	[v]
Mod Eng	[f]	[f]	[f]	[v]

But in morpheme-final position, Older Scots has variation between <F> and <V> , both in cases where the consonant was final [f] in Old English (as it still is in Modern English and Scots), e.g. *lyfe*, *lyve* 'life', and in cases where the consonant was intervocalic [v] in Old English (final [v] in Modern English and Scots), e.g. *lufe*, *luvve* 'love'. What is more, this variation between <F> and <V> spellings is also found pre-inflectionally in Older Scots, so that we get, for example, *liffis~lyvis* 'lives', and *luffit~lovit* 'loved'. If we assume that OSc <F> represents voiceless [f] and <V> represents voiced [v], as they do in initial and morpheme internal position, then there appears to have been variation between etymologically expected [f] and unexpected [v] in words like *life*, and between etymologically expected [v] and unexpected [f] in words like *love*, *lives* and *loved*. These apparent mismatches between Older Scots and Old English, Modern Scots and English are summarised in Table 3 (unexpected spellings highlighted).

Table 3: Spellings of etymological morpheme-final [f] and [v] in Older Scots.

	life	**love**	**lives**	**loved**
OE Word	*līf*	*lufu*	*līfes (gen.)*	*lufade*
OE Consonant	[f]	[v]	[v]	[v]
OSc Spelling	<F>, <V>	<F>, <V>	<F>, <V>	<F>, <V>
OSc Consonant	?[f] ~ [v]	?[f] ~ [v]	?[f] ~ [v]	?[f] ~ [v]
Mod Scots	[f]	[v]	[v]	[v]
Mod Eng	[f]	[v]	[v]	[v]

The morpheme-final spellings in Older Scots are a conundrum, given the agreement between the pronunciations of these consonants in Old English and Modern Scots (and English). The otherwise regular correspondences between OSc <F> and <V> and etymological [f] and [v] suggest that Older Scots had

variation between [f] and [v] in morpheme-final position, but that this variation disappeared before the ModSc period, and did so leaving the etymological distribution of these consonants unchanged. But is that the only possible explanation of these spellings and, even if it is, how might it have worked, given that it requires the development of a change and its subsequent reversal? In this paper we consider this (our preferred) explanation for the variation between OSc <F> and <V> in morpheme-final position, and two alternative explanations, one offered by Luick (1940), the other not suggested for this 'change' before but which is commonly invoked to explain such situations. These three explanations are:

(1) That variation between <F> and <V> is spelling variation only and does not indicate variation in pronunciation. This explanation, suggested by Luick (1940: 1008), would mean that since no phonetic or phonological change had taken place, the OE pronunciations were maintained in Older Scots and were inherited by Modern Scots. This hypothesis thus sidesteps the apparent phonetic problem. Nevertheless, this explanation requires answers to a number of questions. Why did OSc scribes decide that [f] and [v] in Older Scots could be written with the same symbols (<F> or <V>) in morpheme-final position when they rigorously kept these spellings distinct for [f] and [v] in other positions, and why did these variable spellings spread into pre-inflectional position but not elsewhere?

(2) That the pronunciation of word-final [v] became similar but not identical to [f] so that the difference between /f/ and /v/ was hard to discern and scribes could use the same symbols for both. This explanation, which has not been suggested before for this feature, relies on the notion of 'near merger' (Labov 1994: 293–418; see also Maguire et al. 2013). In situations of near merger, the pronunciations of two phonemes become almost identical and may overlap to a large degree. Despite this overlap, speakers consistently produce a minor difference in the pronunciation of the two phonemes, but are not aware that they do so and as a result they can rhyme instances of the two phonemes and spell them the same way. Since cases of near merger often involve not just phonetic proximity but also phonetic overlap, these rhymes and identical spellings may in fact indicate phonetic identity (some of the time) without phonemic identity. Nevertheless, the pronunciations of the two phonemes are significantly different, and speakers learn this difference and can use it to distinguish the two categories (even if distinguishing individual tokens is sometimes impossible). In the case of OSc /f/ and /v/, this would mean that the pronunciation of the two phonemes became so similar that speakers and writers could not distinguish them or did not feel the need to distinguish them as they were often

phonetically identical (though statistically different). This hypothesis also requires us to answer a number of questions before we can accept it, however. Firstly, we need to suggest possible values for /f/ and /v/ in this situation of near merger and determine whether one or both of the phonemes changed in pronunciation. Secondly, we need to explain how these near-merged pronunciations spread into pre-inflectional position. Thirdly, we need to determine when and how speakers separated the two phonemes out again given that they are pronounced differently in Modern Scots, and given that the difference between them has been important in the development of one of the most characteristic features of the phonology of Scots, the Scottish Vowel Length Rule (SVLR; Aitken 1981).

(3) Returning to our preferred suggestion, perhaps variation between <F> and <V> in morpheme-final position means exactly what it appears to: variation between [f] and [v]. This explanation, which assumes the same faithful representation of the voiceless and voiced labiodental fricatives with <F> and <V> as is found in other positions, requires a process of devoicing of OE [v] when it came to occur in final position as a result of final unstressed vowel loss (e.g. in OE *lufu* 'love'), a process of voicing of final OE [f] (e.g. in OE *līf* 'life'), and a spread of final [f], whether original or as a result of final devoicing, into pre-inflectional position (e.g. in OSc *liffis* 'lives' and *luffit* 'loved'). This is what we might call the 'standard' hypothesis, as it has been suggested before for Scots and northern ME (see Wright and Wright 1928: 108; Jordan 1934: 191; Mossé 1952: 40; Fisiak 1968: 61), though <V> for OE final [f] and the spread of the voiceless variant into pre-inflectional position have not been previously discussed. Johnston (1997: 104) suggests that the devoicing of [v] in final position is "diagnostic of [Older] Scots as a whole ... final /v/ is almost always represented by <f>, or the giveaway sign of voicelessness, <ff>". However, in addition to explaining why final [v] devoiced, why final [f] voiced, and how [f] spread to pre-inflectional position, we must explain why there is variation between <F> and <V> ([f] and [v]) in these words, and why there is no variation in Modern Scots, which has maintained the qualities that these consonants had in the OE period. Spellings in parentheses represent expansions of conventional scribal abbreviations.

Determining which of these hypotheses best explains the variation that we see in Older Scots between <F> and <V> requires us to closely analyse the frequencies of these spellings in the two etymological sets and in word-final and pre-inflectional position and to bear in mind possible interactions with the phonotactic constraints that may have been in place at the time. With the

extensive FITS corpus, we are in a perfect position to do exactly this in a way that was not possible for previous researchers, and the data allows us to identify one hypothesis (the third one) as the best explanation for the observed patterns of variation and change.

4 The data

In this section we summarise the FITS data for OSc spellings of words with OE word-final and pre-inflectional /f/. In the rest of this paper, we use the following labels for the various categories under investigation:

- LIF words with word-final /f/ in Old English, e.g. *life* (<lif>, <lyf>, <lyfe>), *turf* (<turf>, <turfe>)
- LUFU words with medial /f/ in Old English which has become word-final in Older Scots, e.g. *leave* (<lef>, <leiff>, <leve>), *give* (<gyf>, <giffe>, <geve>)
- LIF+ words with stem-final /f/ in Old English followed by an inflectional suffix in Older Scots, e.g. *life* (<lyffis>, <lif(is)>, <lyvis>), *turf* (<turfis>, <turff(is)>, <turwiß>[3]
- LUFU+ words with medial /f/ in OE which has become stem-final in OSc and which is followed by an OSc inflectional suffix, e.g. *leave* (<leff(is)>, <lefit>, <levis>, *give* (<givis>, <giffin>, <geui(n)>

The number of tokens of each of these categories in the FITS corpus is as follows: LIF = 612; LUFU = 2103; LIF+ = 50; LUFU+ = 870. The small number of tokens available for LIF+ means that any interpretation of the spellings for this group must be treated with caution.

Whilst the difference between <F> and <V> spellings is shown in this paper to vary significantly according to a range of linguistic and non-linguistic factors, the differences between each of the spellings within the two categories are essentially insignificant, at least with regard to the questions addressed in this paper, and thus these are not investigated further.

Figure 1 illustrates the frequency of <F> and <V> for the LIF and LUFU groups. <F> predominates in both groups, though it is significantly more common for LIF than for LUFU.[4] Indeed, <V> in LIF words is rare, as we might expect

3 Inflectional suffixes begin in a voiced sound, typically a vowel, in Older Scots; in most cases the unstressed vowel in inflectional suffixes has survived, as indicated by and <y> spellings of it (see King 1997; Smith 2018).

4 χ^2 (1) = 144.0, p <0.001.

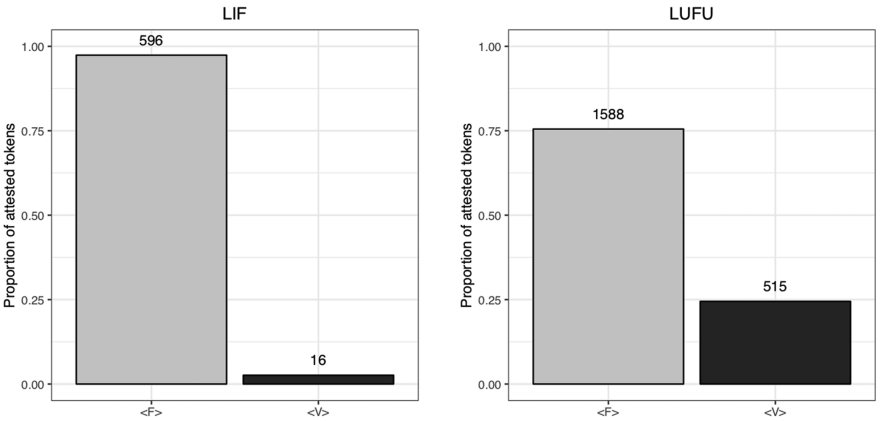

Figure 1: The frequency of <F> and <V> spellings in LIF and LUFU.

given that these words had [f] in Old English. Crucially, every one of the <V> spellings of LIF is found in the words *half* and *life*, where etymological confusion with adjectival or verbal forms (*halve*, *(a)live*) may explain the minority spellings.[5] That is, Older Scots shows a direct correspondence between <F> and OE [f] in LIF words. Conversely, <V> in LUFU words is rather more common, constituting a quarter of the tokens. Given that these words had [v] in Old English, the high frequency of <F> in these words is striking.

Figure 2 illustrates the frequency of <F> and <V> in the LIF+ and LUFU+ groups. As noted previously, the frequencies of <F> and <V> for the LIF+ group must be interpreted cautiously. Nevertheless, there is a striking (and significant) difference in the frequency of <F> and <V> for LIF+ and LUFU+, even though the two groups had [v] in Old English.[6] It is noteworthy that in both cases the levels of <V> are much higher (significantly so) in pre-inflectional position than in word-final position (see Figure 1). Despite this, however, both groups also have a majority of <F> spellings.

An examination of the frequencies of <F> and <V> in the four groups across the time-span of the FITS corpus (Figures 3 and 4) reveals a number of interesting patterns, though the low number of tokens of LIF+ means that the figures for that group do not mean a great deal. Since the number of texts (and tokens) in the FITS corpus is much lower for the period 1385–1425 (boxed in Figures 3 and 4), the

5 A similar situation is evident in some non-standard dialects of modern English and Scots, whereby *calf* (n.) and *half* may be pronounced [kɑːv] and [hɑːv] due to confusion with *calve* and *halve* (Wright 1905: 363, 471).

6 χ^2 (1) = 20.7, p <0.001.

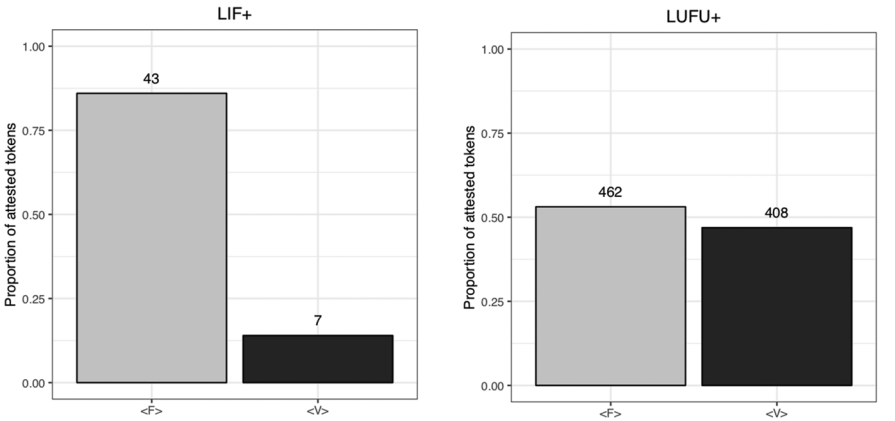

Figure 2: The frequency of <F> and <V> spellings in LIF+ and LUFU+.

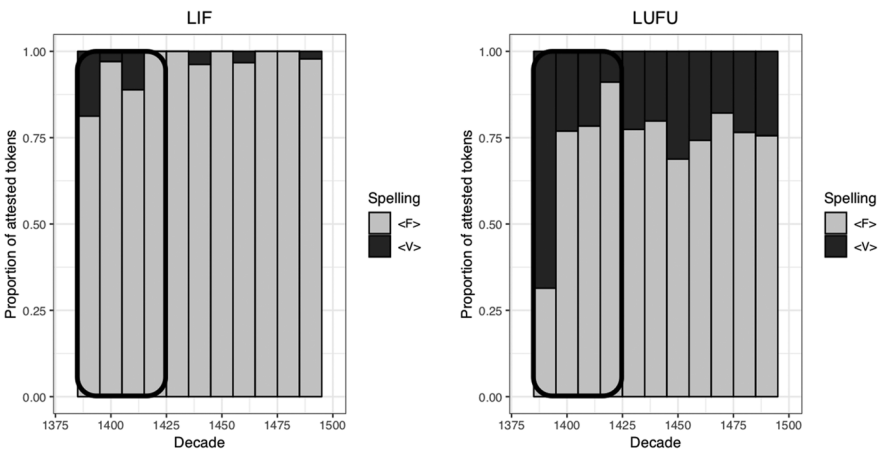

Figure 3: The frequency of <F> and <V> spellings in LIF and LUFU per decade, 1385–1495.

frequencies of <F> and <V> for the first few decades of the period covered by the FITS corpus must also be interpreted with caution.

The figures for LIF and LUFU through the decades from 1385–1495 reflect the overall differences in the frequencies of <F> and <V> spellings for the two groups, and also show that these differences are constant and essentially unchanging throughout the period (the somewhat atypical frequencies of <F> spellings in the first four decades being a result of the small number of tokens in this period). With reference to the pre-inflectional groups, the number of LIF+ tokens means

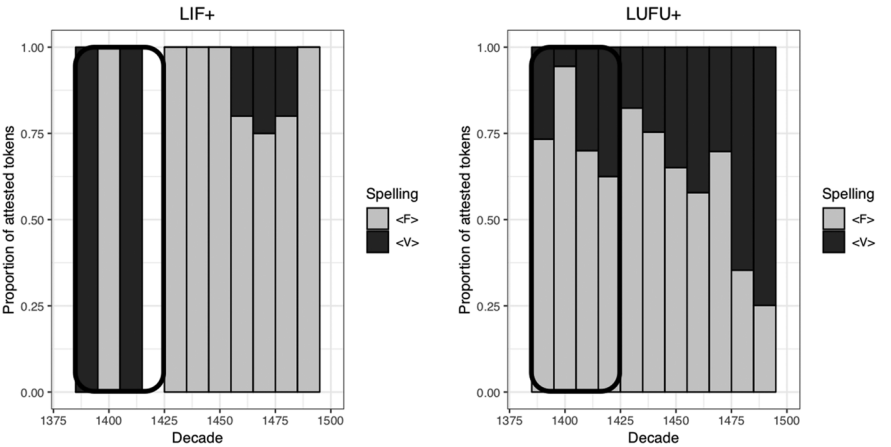

Figure 4: The frequency of <F> and <V> spellings in LIF+ and LUFU+ per decade, 1385–1495.

that no firm conclusions can be drawn about the behaviour of this set, whilst the frequency of <F> in LUFU+ shows a marked decline in the fifteenth century, from a level of nearly 80% in 1425–1435 to under 25% in 1485–1495.

The analysis of the frequency of OSc <F> and <V> for OE /f/ may be summarised as follows. Although allophones of OE /f/ in initial and morpheme-internal position are consistently represented by OSc <F> and <V> respectively, indicating continuity in the pronunciations [f] and [v], the situation in morpheme-final position is more complex. Where OE /f/ occurred in word-final position (pronounced [f], the LIF group), it is almost always represented with <F> in Older Scots, the few exceptional <V> spellings occurring in words where etymological confusion between nominal and adjectival/verbal stems is possible. Where OE /f/ occurred in morpheme-internal intervocalic position (pronounced [v]) but where this consonant ended up in word-final position in Older Scots due to unstressed final vowel loss (the LUFU group), levels of <F> are also high, but there is a not insignificant amount of <V> too (24.5%). In the LIF+ and LUFU+ groups, which both had [v] in Old English, levels of <F> are also high. This is especially the case in LIF+, whilst LUFU+ is close to having half-and-half <F> and <V>. This difference cannot reflect an etymological difference (since both had [v] in Old English), but to an extent correlates with the frequency of <F> and <V> in the uninflected LIF and LUFU groups. Finally, whilst the frequency of <F> in LIF and LUFU remains unchanged through the period of the FITS corpus, the frequency of <F> in LUFU+ declines substantially in the fifteenth century.

5 Discussion

We are now in a position to assess the strengths and weaknesses of the three hypotheses given in Section 3. Despite a number of apparent difficulties, Hypothesis (3), final devoicing of [v], is the explanation which best fits with the OSc data and with our understanding of the nature of phonological change.

5.1 Hypothesis (1), a spelling-only change

This explanation (Luick 1940: 1008) has the advantage that it requires no change in the pronunciation of [f] and [v] and thus no reversal to engineer the identical distribution of these sounds in Old English and Modern Scots. Under this scenario, word-final [v] could be spelled as <F> and word-final [f] as <V>. Furthermore, by 'spelling analogy' the final <F> in both LIF and LUFU words spread into non-final pre-inflectional position, but this analogical spelling was on the wane throughout the fifteenth century (and does not survive in ModSc spelling). But whilst this explanation seems plausible, it begins to run into problems when we consider the data more closely.

Firstly, it must be recalled that OSc scribes rigorously assigned <F> and <V> to etymological (and ModSc) [f] and [v] respectively in initial and morpheme-internal position. Why, then, when they had the means to do so, did they not distinguish them in morpheme-final position? The FITS corpus reveals that this was not just an occasional respelling, but a very frequent one, at least in the case of using <F> where we would expect [v] (75.5% in word-final position in the LUFU group). Given that scribes had the means to distinguish [f] and [v], why did they so often choose not to? It is noteworthy, too, that this only worked one way; assuming that this hypothesis is correct, OSc scribes used <F> for [v] in morpheme-final position, but rarely used <V> for [f] in the same position. If the two consonants could be represented the same way in this position in the word (but not in others), why was it almost always <F> that was used? Indeed, the examination of the FITS data in Section 4 suggests that the situation may have been even more extreme than that. Since all of the cases of <V> for word-final [f] in the data can be accounted for by appealing to etymological mix-up, it is possible that there were *no* genuine cases of <V> for final [f] in Older Scots. In other words, not only were scribes extremely consistent in distinguishing [f] and [v] orthographically in initial and morpheme-internal position, they also made sure to use <F> only for final [f], but were quite happy to use <F> and <V> for final [v] (i.e. to sometimes make the distinction they do elsewhere and to

sometimes not). We are asking a lot of the OSc scribes here, but perhaps it is possible that they had an aversion to representing final [v] with <V>, so that <F> became a preferred orthographic representation of [v] in word-final position.

In fact this idea is even weaker when we consider how they actually spelt these words. It is not the case that the spellings representing [v] usually occurred in absolute final position. Words in the LUFU group are often written with phonetically empty <e> following the <F> or (especially) <V>, as in *lufe* (though final <V> was possible, e.g. *fyv* 'five'). This means that the scribes dispreferred <V> for final [v] (in the pronunciation), even though the symbol they used for this sound was almost never in final position orthographically. It is not clear how they could have distinguished this spelling practice (i.e. representing word-final [v] as <F> in non-final orthographic position) from their rigorous use of <V> for morpheme-internal [v] in non-final orthographic position (as in *sevin*). It is unclear what their motivation for spelling word-final [v] as <F> would be in such cases given that orthographically nothing need have been different than for the representation of morpheme-internal [v]. When we add to this the necessity of invoking ad hoc spelling analogy, which involved the variable spread of (often non-final) <F> for final [v] to pre-inflectional [v] and which never affected the spelling of non-final <V> for morpheme-internal [v] (cf. *sevin*), the case for this explanation is at best weak.

5.2 Hypothesis (2), near merger of final [f] and [v] in OSc

Although this explanation requires a change in word-final [f], [v] or both, it appears to provide an explanation as to why there has apparently been no change in the distribution of these consonants – nothing changed phonemically, and since a near merger is not an actual merger, it can be (indeed will be if it is at all) reversed without error (Labov 1994).

A reasonable scenario in this near merger is that pre-OSc [v] was (perhaps variably) devoiced to [v̥] in word-final position, but was still distinguished from [f] in some way, perhaps in its length or intensity, at least statistically. Because this [v̥] was phonetically close to [f] and could not easily be distinguished from it, scribes wrote it as <F>. But since they knew (if not consciously) that [v̥] was /v/, not /f/, or since the pronunciation of /v/ ranged from [v] to [v̥], they also sometimes wrote it as <V> . This would account for the variable spelling of word-final /v/ in LUFU (which in the FITS corpus has a ratio of 75.5% <F> to 24.5% <V> spellings).

However, there are problems with this explanation too. As was described in Section 4, and discussed further for Hypothesis (1) in Section 5.1, variation

between <F> and <V> spellings in word-final position is only characteristic of LUFU words, not LIF words. If /f/ and /v/ were in a situation of near merger, such that scribes were happy to spell /v/ ([v̥]) as <F>, why were they not equally happy to spell /f/ ([f]) as <V>? The whole point in the near merger explanation is that they could not phonetically tell which phoneme was involved, and if this was true for [v̥], then it must equally have been true for [f]. We would expect, then, a noticeable rate of <V> spellings for /f/, rather than the near complete absence of such spellings that we see in the FITS corpus. The only way to explain this is that the scribes knew which phoneme underlay the ambiguous word-final realisations, so they could avoid using <V> in the LIF group, and indeed could employ <V> at a rate of 24.4% for the LUFU group. That the scribes must have been aware of the distinction and could operationalise it in spelling takes away the whole point of this explanation.

There are further problems too. In many dialects of Modern Scots, final /v/ is, like other voiced obstruents, devoiced, being pronounced as [v̥]. However, it is still distinguished, like other underlyingly voiced obstruents, from its voiceless counterpart. Given how similar this situation is to the hypothesised near merger in Older Scots, it is tempting to see a continuation of the OSc realisation of this consonant in Modern Scots (otherwise we need partial devoicing of /v/ to [v̥], then revoicing to [v], then partial devoicing again to [v̥]). However, speakers and writers of Scots today are, regardless of the pronunciation of the two phonemes, aware of the phonemic distinction between them, and there is no evidence of confusion between the two phonemes, which would be required to produce the spelling variation seen in Older Scots. As was noted previously, Modern Scots is characterised by the SVLR, a phonological constraint which specifies that (certain) vowels are long before voiced fricatives (including those in word-final position), morpheme boundaries, schwa, and /r/, and are short elsewhere. This constraint arose as a result of lengthening of short vowels in these environments and a shortening of long vowels outside of these environments. These regular changes, dated by Aitken and Macafee (2002: 129–130) to the sixteenth century, depend upon a definite, phonetically motivated phonological distinction between voiced and voiceless fricatives in the history of Scots. In the SVLR, voiced stops, nasals and /l/ group with voiceless consonants in the short environment, whilst voiced fricatives group with morpheme boundaries, /r/ and schwa in the long environment. If the voiced fricatives were phonetically voiceless, why would they have acted this way, especially when the nasals and /l/, which are sonorants, so not subject to general final obstruent devoicing, were short environment consonants? Similarly, if the voiced fricatives devoiced as part of a general obstruent devoicing change, why did they affect vowels differently than the voiced stops? It is not clear that such a difference and the

changes which depended on it would have existed had the proposed OSc near merger of /f/ and /v/ still been in operation in the sixteenth century. That being the case, a phonetic separation of /f/ and /v/ after the OSc period (which would of course have been possible as they were not truly merged) must indeed have occurred, something which is necessary in any case to account for ModSc dialects with final voiced [v]. But following this, final /v/ in Scots must once again have devoiced, to [v̥], in many dialects. Whilst all of this is just about possible, it involves a lot of assumptions that we just don't have evidence for.

There is another piece of evidence against the near merger explanation, involving the spread of <F> to pre-inflectional position (in LIF+ and LUFU+) in Older Scots. Near merger must, by its very nature, be a sub-phonemic change, since it does not disrupt a phonological distinction. In this case it was a change conditioned by the phonetic environment: /v/ devoiced in word-final position. This kind of sub-phonemic conditioned realisation cannot spread by analogy to pre-inflectional position, since its structural specifications are no longer met (i.e. it is no longer in the devoicing environment): a sub-phonemic rule of word-final devoicing cannot apply to a non-final consonant (see Kiparsky 2003). Analogy works on categories (e.g. phonemes), not realisations of categories. The only way the voiceless pronunciation could spread to pre-inflectional position by analogy is if it had crossed the phonological boundary and become /f/, which did occur between vowels in Older Scots (e.g. in *offer*). But of course that means that this would not have been a near merger at all, but a full merger of /f/ and /v/ in final position (i.e. Hypothesis 3). This shows that the near merger explanation of variation between <F> and <V> in morpheme-final position in Older Scots is also untenable.

5.3 Hypothesis (3), final [v] devoiced to [f] in pre-OSc

This leaves us with option (3), that final [v] devoiced to [f], becoming identical to pre-existing final [f], and thus could be spelt the same way (as <F>). This explanation has the advantage that we can assume that the OSc scribes knew what they were doing in using <F> or <V> (as they did in other positions in the word), but it requires us to explain: (i) the changes which are represented by these spellings; (ii) how word-final <F> spread to pre-inflectional position; and (iii) how this change has disappeared from Scots. None of these are trivial concerns, but we believe that they can be addressed by examining the wider context of this change.

Dealing first with (i), two processes appear to have been involved. Firstly, there was the loss of final unstressed vowels (which had already reduced to schwa), leading to formerly morpheme internal [v] appearing in word-final position (e.g. OE

lufu [lʊvʊ] 'love' > [lʊvə] > [lʊv]). Minkova (2014: 231) argues that schwa loss was an initially variable change and that after a long period of variation it was probably complete in English by 1450, though it likely reached this stage earlier in the north. Thus the change was actually OE [lʊvʊ] > [lʊvə]~[lʊv] > [lʊv]. Secondly, there was devoicing of final [v] to [f]. This change may have affected the other voiced fricatives ([ð] and [z]) in final position too, though evidence for this is unavailable given the lack of orthographic distinction between [θ] and [ð] and [s] and [z] throughout much of the history of English and Scots. If this devoicing happened during the period when schwa loss was variable (e.g. [lʊvə]~[lʊv]), in the thirteenth to fourteenth centuries, then it would only have affected those instances where schwa was absent, leading to variation of the kind [lʊvə]~[lʊf]. If the devoicing then ceased to apply before schwa loss was complete (we know that schwa loss took a long time to come to completion), the result would be variation of the sort [lʊv]~[lʊf], i.e. exactly the sort of variation we see represented in the variable <V> and <F> spellings for the LUFU group in Older Scots.

In fact, this may be over-complicating things. Old English had a phonotactic restriction on the occurrence of voiced fricatives in word-final position. That is, it already had what was, in effect, a word-final [v] (and [ð] and [z]) devoicing rule. Rather than assuming the disappearance of this rule and then the reintroduction of a new final [v] (or final fricative) devoicing rule in pre-Older Scots, it is more parsimonious to assume that this phonotactic restriction continued after the OE period in the North, even though the distinction between [f] and [v] was becoming phonemic in other environments.[7] That is, the phonotactic constraint survived the significant changes to the phonemic system to which it originally applied. By the time variable schwa loss began, there was a constraint in place against final voiced fricatives (regardless of their phonemic status), so that any fricative which ended up in word-final position was by default voiceless. Thus we can remove one step in the changes outlined above, and posit a change of OE [lʊvʊ], via [lʊvə], to pre-OSc [lʊvə]~[lʊf]. As schwa loss continued towards its conclusion, the phonotactic constraint against word-final voiced fricatives must finally have come to an end, probably indeed as a result of further schwa loss producing the potential for lots of word-final voiced fricatives (which by this stage were phonemically distinct from the voiceless fricatives, as noted in Minkova 2011: 46). The interaction of these changes is illustrated in Figure 5.

7 Minkova (2011: 46) notes that the establishment of the [f]–[v] contrast in final position in English as a result of schwa loss would have required the phonemic distinction between /f/ and /v/ in other positions in the word to have already become established. We are arguing here that the reverse need not be true: the establishment of the /f/–/v/ contrast in other positions in the word did not (initially) mean that this contrast was possible in word-final position.

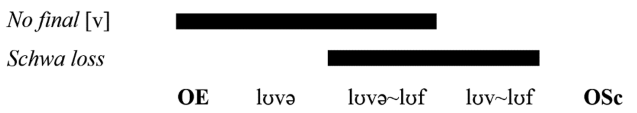

Figure 5: Interaction of phonotactic constraint against final [v] and schwa loss.

The interaction of variable final schwa loss (essentially completed before our earliest OSc records) with the OE constraint against final voiced fricatives (which must have ceased to operate before schwa loss was completed) would have produced exactly the situation we appear to see recorded by the OSc scribes as variation between <F> and <V> in LUFU words. The FITS corpus reveals that 75.5% of LUFU words ended in <F> and 24.5% in <V>, suggesting that schwa loss was at a fairly advanced stage before the constraint against final voiced consonants in pre-Older Scots ended. And because <V> in LIF words probably represent etymological or orthographic confusion, we do not need to invoke any change in original final [f], which is thus represented regularly by <F> ([f]) in Older Scots.

As for the spread of <F> ([f]) into pre-inflectional position, an answer suggests itself when we consider what the situation must have been before this change. Prior to this spread, words of the LIF group ended in [f], words of the LUFU group ended in [f] or [v], whilst words in both the LIF+ and LUFU+ groups would have had [v], inherited from Old English. That is, the morphological alternation between LIF and LIF+ involved phonological alternation between [f] and [v], whilst the morphological alternation between LUFU and LUFU+ involved phonological alternation between [f]~[v] and [v]. This kind of allomorphy is exactly where we expect to see analogical levelling (Hock 1986: 167–171), a categorical but variable process, and one which is applicable in this case in particular since the difference between [f] and [v] had already become phonemic in the language, and was not just positionally determined. Thus if we get [li:f]~[li:vəs] 'life~lives' and [lʊf]/[lʊv]~[lʊvəs] 'love~loves', we can expect analogical spread from the basic form to the inflected form (e.g. [li:f]~[li:fəs]). Precisely such a change is evident in Modern Scots in the nouns *hou*[s]*e~hou*[s]*es* and *wi*[f]*e~wi*[f]*es*.[8] In fact, it is possible that these ModSc forms represent a continuation of this analogical levelling from the OSc period. So by well-known principles of linguistic change in the context of language specific phonotactics,

8 The levelling can go in the other direction too, from the inflected to the basic form, though this is less common. A modern example is [li:v] for 'leaf', found in some modern English and Scots dialects. It may also be an explanation for forms such as *calve* and *halve* for 'calf' and 'half' in some modern dialects and OSc, though etymological confusion between nominal and adjectival/verbal stems is also possible, as described previously.

we can get the kind of variation between [f] and [v] that we see represented as variation between <F> and <V> in pre-inflectional position in Older Scots. As was noted, analogical levelling is necessarily variable, both between and within lexical items. This inherent variability accounts for the variability in <F> ([f]) and <V> ([v]) in pre-inflectional position in LIF+ and LUFU+. But how do we account for the difference in the frequencies of <F> in LIF+ (86%) and LUFU+ (53.1%)? Assuming that this is not just a statistical blip, this must depend on the extent to which [f] was present in the uninflected LIF and LUFU forms throughout their history. In the case of LIF, it always had final [f], so analogical spread of this to pre-inflectional position was possible from the point that [f] and [v] diverged phonemically in the language, and was just as likely in the OSc period given the near exclusive presence of [f] in word-final position in this group. LUFU words, on the other hand, only ever had variable [f] in final position (and indeed for much of their history did not have [f] at all), so that even by the OSc period there was variation between [f] and [v] in final position (albeit with [f] occurring at a rate of 75.5%). This means that compared to the LIF(+) group there was less analogical pressure for the [f] to spread to pre-inflectional position in the LUFU(+) group, though even here it did, in just over half of the relevant tokens in the period covered by the FITS corpus.

As for explaining problem (iii), how this change disappeared from Scots, here we move into somewhat more speculative territory, since this change largely occurred after the period documented by the FITS corpus, at a time when Scots was increasingly coming under the influence of English. Nevertheless, the solution to this problem must also lie in the variable nature of final [v] devoicing described in this paper. In cases of variation between [f] (/f/) and [v] (/v/), i.e. in LUFU, LIF+ and LUFU+, it is possible for speakers to generalise one or the other of the variants, since they have only variably merged (Maguire et al. 2013). Thus in these groups, variation between [f] and [v] was ultimately simplified to pronunciation with [v] only. This is not possible in the LIF group, which only ever had [f]. We can already see this happening in the LUFU+ group in the FITS data, with <F> decreasing dramatically through the fifteenth century (Figure 4), though the level of <F> for uninflected LUFU remains constant. It is likely that this simplification of variation in pre-inflectional position in LUFU+ in the fifteenth century sparked a similar reduction in variation in uninflected LUFU. This can only have been helped by the close relationship between English and Scots throughout their histories and the increasing influence of English on Scots from the sixteenth century onwards. Although Scots and English in the OSc period should be considered to be two different though closely related languages, they formed, in the words of Williamson (2002: 253) "a common speech area", characterised by many shared changes. In other words, Scots was as likely to share changes with

English as to diverge from it throughout its history. This being the case, the devoicing of final [v] in Scots put it out of step with English and, as a result of 'pan-Anglic pressure', Scots ultimately realigned with English in this respect, simplifying the variation between [f] and [v] in LUFU, LIF+ and LUFU+ to [v]. Thus morpheme-final devoicing of [v] in Scots was reversed. The existence of pronunciations such as *hou*[s]*es* and *wi*[f]*es* in ModSc exemplifies the kind of analogical pressure which once brought final [f] into pre-inflectional position in the language, and indeed may indicate survival of this change in the poorly documented OSc LIF+ set.

The comparison of the three explanations for the variation between <F> and <V> spellings in LIF, LUFU, LIF+ and LUFU+ words in Older Scots in this section has shown that while explanations (1) (spelling-only change) and (2) (near merger) appear to offer solutions to various problem, they ultimately fall down on closer inspection. Explanation (3), on the other hand, involves further explanation of a number of non-trivial problems, but these are resolvable once we set them in the wider context of the evolving phonotactics of the language. Ultimately, the interaction of final schwa loss and the continuation (for a time) of the OE constraint against final voiced fricatives led to variable analogical levelling, which in turn gave rise to the variation we see in the OSc texts. The subsequent retreat of this final devoicing change is a result of this ongoing variation and long-term pan-Anglic pressure, leading Scots, which had diverged in this respect, to eventually realign with English.

6 Conclusions

The profusion of spelling variants in medieval manuscripts is often daunting and this brings with it disadvantages (e.g. difficulty in interpretation) and advantages (e.g. an insight into the phonetics and phonology of the scribes' dialects). This paper shows that a detailed analysis of variation in OSc spelling pays rich dividends: the spellings (in the case of <F> and <V> at least) are not random, and when considered in the context of the phonological history of the language, they tell a coherent and illuminating story of variation and change. In so doing, they illustrate the value of corpora such as FITS and persuade us that much can be learned about the phonological history of English in its widest sense through detailed analysis of carefully constructed databases of historical texts.

Being able to interpret seemingly unsystematic spellings opens up new vistas on important sound changes in the history of the language. In particular, the spelling evidence in FITS is compatible with a change whereby OE [v], when

it came to occur in final position due to loss of schwa, devoiced to [f]. That this change resulted in variation between final [f] and [v] (as indicated by variation between <F> and <V> in spelling) is due to the interaction of this devoicing with the long drawn out loss of schwa in the language. Ultimately the devoicing process ceased to operate before schwa loss was complete. Other explanations for the variation in spelling change are considerably less satisfactory.

But from a more general viewpoint, this change in Older Scots is much more than a simple process of final devoicing. It represents a case where a phonotactic constraint operating on the distribution of allophones of the OE fricatives survived the phonemic split which turned these allophones into phonemes. After this phonemic split, it continued to operate in pre-Older Scots as a phonotactic constraint against the occurrence of voiced fricative phonemes in word-final position. Thus the devoicing of [v] in final position in pre-Older Scots was not just a phonetically natural sound change, but also one driven by a pre-existing phonotactic constraint, even though the system the constraint was acting upon had changed its status. And it was this change in status that enabled these word-final voiceless fricatives to spread into pre-inflectional position, where previously they had been impossible, thus further entrenching the distinction between the voiced and voiceless fricatives in the language.

Ultimately, the variable nature of this change and the influence of the ever-dominant English led to the demise of this phonotactically motivated change in Scots, leaving the seemingly chaotic spellings of the OSc scribes as almost the only evidence that such a change ever took place. But with these spellings subjected to grapho-phonological parsing in the FITS corpus, we are now in a position to understand some of the reasons why they wrote as they did, to take advantage of the sophistication in their spelling practices, and to learn about the phonological history of the language. As Laing and Lass (2003: 258) put it: "The apparent disorder of many of these systems is an artefact of our *own* present lack of understanding".

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