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Pathways of Obsolescence: Scots /u(:)/ Across Borders

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1 OUT around the Irish Sea

1.1 Characteristics of the OUT Lexical Class in Scotland and Northern Ireland

The OUT lexical class is made up of those words, like *out*, which are pronounced in RP with the diphthong /aʊ/. Though monophthong /u(:)/ was the categorical pronunciation of OUT in traditional Scots, modern speakers in Scotland have been shown to almost always variably mix Scots forms with Scottish Standard English forms, when they use Scots forms at all (Stuart-Smith 2003). Thus, all speakers who use OUT /u(:)/ also necessarily use the Scottish Standard English diphthong, typically a mid-high back diphthong approximating /ʌu/. The seventeenth century migration period termed the ‘Plantation of Ulster’, involving mass settlement of certain Northern Irish towns by people mainly from southwestern Scotland, led to the presence of Scots in Northern Ireland as well. The towns in Northern Ireland that were the site of this historical migration are labeled Ulster Scots towns to this day, and local speech is characterized by forms reminiscent of historical Scots. Trade has maintained a link between the Irish Sea-bordering towns of Northern Ireland, southwestern Scotland, and northwestern England across centuries, with the result that these areas share many ‘distinctly Northern’ linguistic features (Tagliamonte 2013).

The phonological tendencies of Scottish speech have been widely studied, and two analyses are especially relevant to the OUT vowel. The Scottish Vowel Length Rule, also referred to as Aitken’s Law after its author, governs the appearance of distinct long and short vowels in historical Scots (Aitken 1984). Long vowels occur morpheme-finally and precede voiced fricatives and /r/ morpheme-internally, while short vowels occur in all other contexts. In historical Scots this resulted in a length distinction between the /u:/ of words such as *now* and *our* and the /u/ of words such as *about* and *house*. While Scottish Standard English is not assumed to maintain any such vowel length distinction, a historically long context can possibly result in a more amenable place for a diphthong to occupy in a contemporary phonology. Somewhat at odds with this hypothesis is the ‘Pennine’ Diphthongization observed in Johnston 1997, where the COW subclass of OUT (that is, the words containing a morpheme-final OUT vowel) have tended to diphthongize to a greater extent along the southern border of Scotland than elsewhere in Scotland and Northern Ireland. Each of these analyses has different implications for the characteristics of the variation in OUT, so that one of the aims of this paper is to provide evidence that one of these phonological observations makes better predictions for actual modern Scottish conversational speech data.

1.2 Dialect Attrition versus Bidialectalism in Scotland and Northern Ireland

Previous sociolinguistic studies of the variable pronunciation of OUT by Scottish speakers found the alternation between vernacular /u(:)/ and standard /ʌu/ to correlate with social factors. The first major sociolinguistic analysis of OUT was Macaulay’s (1977) Glasgow study. He examined the alternation between multiple Scots and standard vowel pairs in the speech of Glaswegians with regard to social factors such as age, class, and gender of the speaker. It was observed that men use more of the traditional Scots monophthong while women use more of the Scottish Standard English diphthong. The variable was also correlated with social class, with the professional and managerial class using more of the standard diphthong while the skilled, semi-skilled, and unskilled manual classes use more of the vernacular monophthong (Macaulay 1977: 40-42). This is consistent with sociolinguistic change from above, where an incoming prestige variant spreads from women to men and from higher to lower classes (Labov 1963). Subsequent studies of OUT in Glasgow have found a similar sociolinguistic stratification (e.g. Macafee 1994, Stuart-Smith 2003).

* I am grateful to Sali Tagliamonte for use of the Roots Archive (Tagliamonte 2001-2003, 2013). Thanks as well to Sali Tagliamonte, Jack Chambers, Jen Nycz, the Language Variation and Change research group at the University of Toronto, the Variationist reading group at Georgetown University, and the attendees of PLC 37 for their comments on earlier versions of this paper.

Stuart-Smith (2003) further confirmed that Glaswegians continually style-shift between vernacular Scots and standard Scottish Standard English features including OUT variants, evidence of the social salience of the OUT vowel. Glaswegians with a variable OUT class have recently been shown to exhibit the Scots monophthong in only seven words, all of them extremely common (Macafee 1994, Stuart-Smith 2003).¹ The erosion of the OUT monophthong from historical categoricity to its limited lexical environment in recent times supports the claims of rapid attrition of local forms across the United Kingdom advanced by many researchers (e.g., Trudgill 1974, Trudgill 1986, Watt and Milroy 1999, Williams and Kerswill 2000, Kerswill 2002).

As Scots forms regularly co-occur in speech for stylistic purposes (Stuart-Smith 2003), individuals who use Scots forms are sometimes said to be bidialectal in Scots and Scottish Standard English (Smith and Durham 2011, 2012). The bidialectal speaker common to Scotland complicates the view that Scots forms will rapidly decline in use until Scottish Standard English forms are categorical in all currently variable areas. For example, Smith and Durham (2012) hypothesize that more remote areas such as their study site in the Shetlands may be better candidates for a situation of stable bidialectalism between Scots and Scottish Standard English. Indeed, they find speakers to be heterogeneous in their usage of Scots forms, a precondition of a stably bidialectal community according to Dorian (1994). Despite these findings, Smith and Durham remain unconvinced that rapid dialect attrition is not taking place in this community, and instead characterize their bidialectal speakers as a ‘generation of choice’ and perhaps even a necessity to the dialect death process.

2 Data

2.1 The Roots Archive

Previous work on obsolescing dialect features has indicated that phonological and grammatical constraints may become disordered and begin to ‘unravel’ approaching the endpoint of a change (Cukor-Avila 1997, Anderson 2011). An adequate study of OUT class variation must analyze data in which the Scots form appears richly enough that its underlying constraints become apparent. The data must thus come from communities not as far advanced in the change towards the Scottish Standard English diphthong as focal cities like Glasgow are. These communities, termed *relic areas* (Hock 1991), are characterized by a lack of geographic mobility that would bring with it linguistic change. The speakers in these communities most likely to be conservative of linguistically older forms are, the apparent-time hypothesis predicts, the oldest living generation (e.g., Labov 1963).

The data used in this analysis come from a subset of sociolinguistic interviews in the Roots Archive (Tagliamonte 2001–2003, 2013). The Roots Archive includes four towns located across three countries—Cumnock in Scotland, Maryport in England, and the Ulster Scots towns of Cullybackey and Portavogie in Northern Ireland. Previous research by Tagliamonte and others has shown these towns to pattern similarly grammatically for morphosyntactic variables despite differing overall rates. The current project is the first investigation into phonological variation in the Roots Archive, and the results presented in this paper reveal that while speakers in the four communities are alike in that they possess a variable OUT class, the phonological constraints on the appearance of the Scots monophthong may differ amongst them.

Though they are located in three different countries (Scotland, England, and Northern Ireland), the four towns are geographically very close, separated from each other only by the Irish Sea, which they all border. Because of the proximity of Cullybackey and Portavogie in Northern Ireland, it is reasonable to hypothesize that the two Northern Irish towns will share the same regional dialect. Despite the geographic closeness of Cumnock and Maryport, the national border between them has led them to not share the same regional dialect. Indeed, while the closest major city to Cumnock on the Scottish side of the border is Glasgow, the closest major city to Maryport on the English side is Newcastle. It is quite obvious that Glasgow and Newcastle have regionally distinct accents and dialect features, thus Cumnock and Maryport similarly differ in dialect and “expose a Scots vs. English contrast” (Tagliamonte 2013: 35). An interesting finding of the current paper is

¹ These words are *about, our, down, 'round* (preposition), *out, house, and now*.

that there is any Scots /u(:)/ in Maryport at all, and moreover that it follows the same lexical patterning as in the other three towns.

In Northern Ireland, both Cullybackey and Portavogie were specifically chosen for this study because they are Ulster Scots communities, and thus more likely than non-Ulster Scots areas to possess Scots features in their local dialect. The inhabitants of these areas are the descendants of the Lowland Scottish farmers that immigrated to Northern Ireland during the Plantation of Ulster in the 17th century. The county in which Cumnock is located, Ayrshire, is the historical source of migration to Northern Ireland in the Plantation of Ulster. Because of this historical link between the two Northern Irish towns (Cullybackey and Portavogie) and the Lowland Scottish town (Cumnock), it is not surprising that they have been found in previous work by Tagliamonte and others to share the same morphosyntactic features. This paper investigates whether they also share the same patterning of the OUT phonological variable.

2.2 Sampling and Coding Methods

The subset of recordings used in this paper is comprised of thirty-eight speakers across the four towns of the Roots Archive. The subset is stratified by town and by speaker sex where possible, as shown in Table 1. Speakers ranged in age from fifty-four to ninety-two, an age range representative of the much larger Roots Archive itself.

Town	Males	Females	Total	Mean OUT /u(:)/
Cumnock, Scotland	6	5	11	63%
Cullybackey, N.I.	6	5	11	55%
Portavogie, N.I.	7	2	9	70%
Maryport, England	3	3	6	6%

Table 1: Interviews were stratified by town and speaker sex to the maximum extent allowed.

In total, 5,353 tokens of OUT were coded auditorily by the researcher either as /u(:)/ or as a mid- or low-high diphthong approximating /ʌ/. Tokens that were inaudible or phonetically reduced were excluded from the variable context. The vowel alternation was documented to occur across forty-eight separate lexical items. Lexical items that did not show an alternation between vowels (i.e., at least one instance of the Scottish Standard English diphthong and at least one instance of the Scots monophthong) were excluded from the variable context. A word displaying categorically one vowel, usually the Scottish Standard English diphthong, was in most cases due to infrequent occurrence.

3 Constraints on OUT

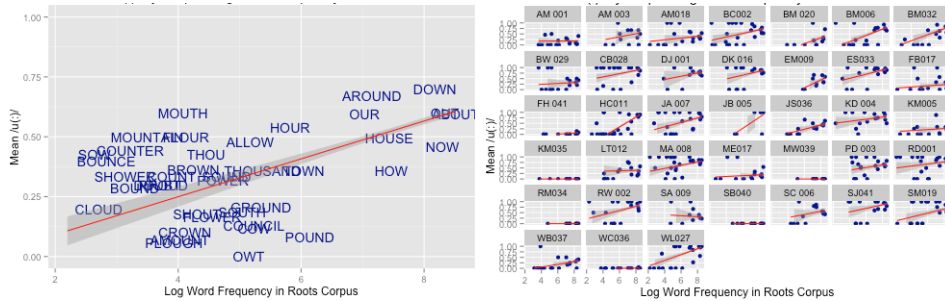
3.1 Lexical Frequency

As pointed out in Section 2.2, the Scots OUT monophthong is only reported in urban speech in seven high-frequency lexical items, though it historically would have been heard in every OUT context. This implies a trajectory for the attrition of /u(:)/ through the lexicon, as the regionally standard diphthong may have overtaken it first in the least common words, and then in increasingly more common words over time so that the last vestige of the Scots form is the seven OUT words with the highest lexical frequency.

Lexical frequency in this dataset was measured across the Roots Archive itself rather than by traditional methods based on written corpora, following Erker and Guy’s logic that “the spirit of usage-based models is to attribute ‘grammatical’ patterns to speakers’ experiences” so that the best lexical frequency measure “approximates the usage prevailing in the local speech community” (2012:530). As all phonological constraints being tested apply to morpheme rather than word boundaries, the decision was made to count lexical frequency by lemma rather than by surface form (e.g., *bounce*, *bounced*, *bouncy* are all categorized as *bounce*).

Figures 1a and 1b show the correlation between lexical frequency and mean rate of /u(:)/ for lexical items in this dataset. Figure 1a shows mean rate of /u(:)/ by a continuous measure of lexical

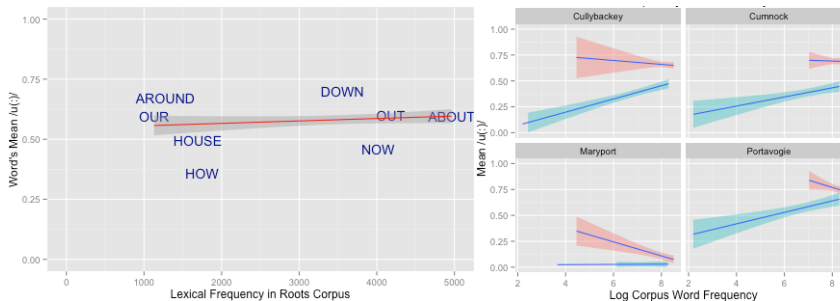
frequency for all towns combined. A logarithmic transformation of raw lexical frequency was chosen for a better visual display of the data and the trend of increasing /u(:)/ from low frequency to high frequency words in the corpus. Figure 1b illustrates that this trend is not a coincidence of the compilation of individual data, but that indeed lexical frequency appears to influence mean rate of /u(:)/ in the speech of the individuals in this dataset.



Figures 1a-b: Figure 1a (left) is mean rate of /u(:)/ by log lexical frequency for all speakers, Figure 1b (right) is mean rate of /u(:)/ by log lexical frequency for individuals.

3.2 Grammatical Function

While there are many low frequency words, there are few words with very high frequency. Most of these highest frequency words are function words, but not all. High frequency content OUT words in the dataset include *house* (n.), *how* (adv.), and *now* (adv.). Figure 2a shows that the function words *around*, *our*, *down*, *out*, and *about* contain a consistently higher mean rate of /u(:)/ than the content words *house*, *now*, and *how*, despite relatively equal lexical frequencies across the corpus. The tendency of function words to have a higher mean rate of /u(:)/ than content words is reflected in each of the four towns, depicted in Figure 2b. This new division of the OUT class into function and content words justifies an amended hypothesis that grammatical function constrains the appearance of /u(:)/ over and above the effect of lexical frequency.



Figures 2a-b: Figure 2a (left) is the mean rate of /u(:)/ for the most frequent words in the Roots Archive, Figure 2b (right) is the mean rate of /u(:)/ in function words (red) and content words (blue) by log frequency in each of the four towns.²

3.3 Phonological Context

As discussed in Section 2.1, following phonological context may influence the appearance of the Scots monophthong in certain OUT class items. The Scottish Vowel Length Rule (Aitken 1984) predicts a lower rate of /u(:)/ in words where the OUT vowel occurs morpheme-finally, before

² The reason for what appears to be relatively low frequency function words in Cullybackey and Maryport is the presence of the pronoun *thou* in only these two towns. A corpus-wide measure of lexical frequency will thus yield a less frequent *thou* than other function words, even though its frequency in the two communities where it is used is more than likely much greater.

voiced fricatives, and before /r/ in all four towns. ‘Pennine’ Diphthongization (Johnston 1997) establishes a COW subclass of OUT, containing words with a morpheme-final OUT vowel, that will have a lower rate of /u(:)/ in only Cumnock, Scotland and Maryport, England.

Cumnock, Sco. and Maryport, Eng.		Cullybackey and Portavogie, N.I.	
Following Context	Rate of /u(:)/	Following Context	Rate of /u(:)/
Morpheme-final	27%	Morpheme-final	49%
Voiced fricative or /r/	47%	Voiced fricative or /r/	59%
Other	49%	Other	63%

Table 2: Effect of following phonological context on rate of /u(:)/ in Scotland and England and in Northern Ireland.

Table 2 shows that ‘Pennine’ Diphthongization is a better fit to the Roots Archive OUT data than the Scottish Vowel Length Rule. A following phonological context of a voiced fricative or /r/ does not differ to any extent from elsewhere in either Scotland and England or Northern Ireland. While the morpheme-final OUT context does contain a lower rate of /u(:)/ than elsewhere in Northern Ireland, it is nowhere near as low as the rate of /u(:)/ morpheme-finally compared to elsewhere in Scotland and England. While the significance of the effect of following phonological context remains in question, the decision to include ‘Pennine’ Diphthongization as a potentially influential factor on OUT variation is justified.

4 Results

4.1 A Mixed-Effects Model of OUT Variation

The logistic regression model that best fits the data is shown in Table 3. This model contains a random intercept for speaker and a random slope for log lexical frequency. This model was a better fit than a similar model that included untransformed lexical frequency rather than logarithmically transformed frequency. The fact that a logarithmic transformation of frequency improved the fit of the model is important to note, as it means that the effect of frequency on the appearance of the Scots variant is not a linear one. This is in line with the recent consensus of the field that lexical frequency does not affect linguistic variables in straightforward ways, as discussed in Erker and Guy (2012). In this model, function words are significantly more likely to contain a Scots /u(:)/ than are content words even with a random slope for log lexical frequency.

Factor	Coefficient	SE	SD	p value
Constant	-5.32	0.79	-6.77	<.001
Town: Cullybackey	3.53	0.78	4.55	<.001
Town: Cumnock	2.79	0.78	3.57	<.001
Town: Portavogie	4.75	0.81	5.90	<.001
Grammatical function: function words	0.93	0.12	8.03	<.001
Log lexical frequency	0.18	0.06	3.18	<.001
Phonological Context: non COW subclass	[-0.60]	0.42	-1.43	NS
Interaction: Cullybackey, non COW subclass	[0.49]	0.44	1.19	NS
Interaction: Cumnock, non COW subclass	1.12	0.45	2.49	<.05
Interaction: Portavogie, non COW subclass	[-0.04]	0.45	-0.09	NS

Table 3: Mixed effects logistic regression of OUT /u(:)/ across all towns with random intercept for speaker and random slope for lexical frequency. /u(:)/ ~ Town + Grammatical Function + Log Frequency + Following Phonological Context + Town : Following Phonological Context + (1 + Log Frequency | Speaker)

Lexical frequency, as discussed above, was included in the model after being logarithmically transformed, which improved the model over a non-transformed lexical frequency predictor. This

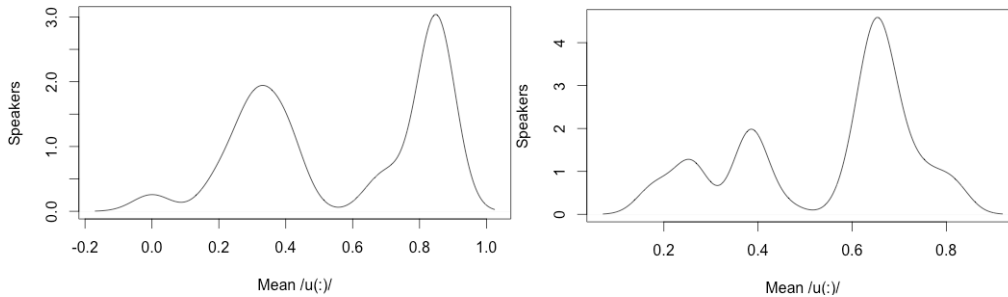
model also improved over one where the measure of lexical frequency was taken from a non-local corpus, namely the English Lexicon Project, showing that a local measure of frequency is better suited to this dataset and better reflects the way frequency affects this phonological variable, as the idea behind a lexical frequency factor group is grounded in usage-based models of language. There is also a random slope for log lexical frequency by speaker included in this model, showing that the significance of this constraint is not influenced by particular individuals, but is consistent enough in how it applies to be significant above the level of individual speakers.

Though Pennine Diphthongization does not attain significance as a main effect in this model, it is significant as an interactional factor group specifically within the town of Cumnock. This represents a confirmation of Johnston's assertion that the OUT class members with word-final vowels are more likely to be diphthongized in the region near the Pennines. The model including Pennine Diphthongization outperformed other models which included the Scottish Vowel Length Rule, leading to the conclusion that Pennine Diphthongization better accounts for variation in the OUT vowel than Aitken's Law.

Sex was significant in this model neither as a main effect nor as part of an interactional factor group with any of the towns. Although sex would be expected to achieve significance in a situation of change from above, as OUT variation has been previously described, this may be a reflection of the towns' non-urban social situation. It also may be an indicator of heterogeneous usage of Scots /u(:)/ by individuals in these towns, a symptom of stable bidialectalism.

4.2 Bimodal Distribution of Speaker Means in Cumnock and Cullybackey

Figure 3a shows a bimodal distribution of speaker means for /u(:)/ in Cumnock and Figure 3b shows a slightly messier bimodal distribution of speaker means in Cullybackey. Previous studies of stable bidialectalism in communities have cited heterogeneous use of dialect features by individuals as evidence that there are no social implications or other pressures leading to the use of one dialect over another, an inequality between dialects that could predict language change towards one or the other (Dorian 1994, Smith and Durham 2012). Though the present data does not support OUT patterning in these communities along a broader social division such as sex, there is a clear bimodal distribution in speaker use of the Scots variant in at least two towns of the Roots Archive and thus it is not used in a heterogeneous fashion by individuals.³



Figures 3a-b: Figure 3a (left) is mean OUT /u(:)/ by density of speakers in Cumnock, Figure 3b (right) is mean OUT /u(:)/ by density of speakers in Cullybackey.

This bimodal distribution may be a coincidental artifact of the dataset and disappear with further data added, or it may be representative of some social or linguistic division within Cumnock and Cullybackey.⁴ In any case, the division in each of these towns into two groups of speakers,

³ Given that a measure like social class does not always hold up in small rural communities and that the speakers of the Roots Archive are all of roughly the same generation, speaker sex was the only traditional social factor included in modeling of the data.

⁴ Whether any social division is represented in this bimodal distribution must be further explored in these areas, but preliminary analysis reveals categorically that the speakers with high use of the Scots variant in both towns are affiliated with the central industry of the town (mining in Cumnock and agriculture in Cullybackey), while speakers with low use of the Scots variant were employed outside of this industry. The trend

which I will term ‘vernacular’ and ‘standard’ groups after Smith and Durham (2012), provides an opportunity to investigate whether vernacular speakers use OUT /u(:)/ differently than standard speakers. Specifically, a hypothesis of rapid dialect attrition for this area would be supported by a disordering and confusion of phonological and grammatical constraints on use of the Scots variant by the standard speaker group, who should be assumed to be more advanced in the change than the vernacular speaker group (Cukor-Avila 1997, Anderson 2011).

Table 4 shows a model incorporating the vernacular and standard speaker subgroups that turns out to be a statistically better fit to the Cumnock data than a model without subgroups included. Crucially, this deeper view of OUT /u(:)/ in Cumnock shows that ‘Pennine’ Diphthongization does not have a significant effect on OUT variation for all speakers, but only for the speakers of the vernacular subgroup.⁵ The fact that only vernacular speakers maintain this phonological constraint on the presence of Scots /u(:)/ aligns with findings from such other work on the ‘unraveling’ of constraints in rapid attrition of a variant as mentioned above. As lexical frequency and grammatical function remain significant both above the level of individual speaker and when speaker subgroup is added to the model, these may not be phonological constraints on use of /u(:)/ in the same way that ‘Pennine’ Diphthongization is, but are more likely tied to the Scots variant’s retreat across the OUT class as the Scottish Standard English diphthong diffuses to greater extents over time.

Factor	Coefficient	SE	SD	p value
Constant	-5.31	0.90	-5.89	<.001
Grammatical function: Function words	0.57	0.23	2.40	<.05
Log lexical frequency	0.48	0.10	4.65	<.001
Following context: non COW subclass	[0.11]	0.28	0.40	-
Vernacular speakers	2.01	0.44	4.60	<.001
Interaction: Vernacular speakers, non COW subclass	1.43	0.31	4.61	<.001

Table 4: Mixed effects logistic regression of OUT /u(:)/ in Cumnock only with random intercept for speaker and random slope for log lexical frequency. /u(:)/ ~ Grammatical function + Log frequency + Phonological subclass * Speaker group (1 + Log frequency | Speaker)

5 Discussion: Attrition of the Scots Monophthong in OUT

The evidence from the Roots Archive seems to support previous findings from research in other areas of Scotland that attrition of Scots features in favor of Scottish Standard English is indeed taking place and will most likely continue to advance. The question this paper concerns itself with is how the monophthong is obsolescing within the OUT lexical class. The synchronic results from individual speakers suggest that the diphthong potentially entered into the OUT lexical class first through least common words, and then continued to gain ground at higher and higher lexical frequencies. This theory correctly predicts that the last vestige of the Scots monophthong is the very most common OUT words, as reflected in research on urban Scottish English, where the only seven words in which /u(:)/ is reported at all are unsurprisingly the seven most frequent words measured across the Roots Archive.

This is interesting because it counters the way sound changes often proceed, when a new variant enters the context of variation through the most frequent lexical items, possibly due to repetition of the new form in such lexical contexts. Usually a sound change will proceed this way when the change is phonetic in nature, towards a phonetically more reduced or lenited variant (Bybee 2002). When an incoming variant is more often found in lower frequency lexical items and is resisted to a greater extent by the high frequency lexical items, the combination of high token frequency and low type frequency of high frequency lexical items is said to exert a “conserving” ef-

of high use of /u(:)/ affiliated with employment in the town’s central industry holds to a very large extent in Portavogie (agriculture) and Maryport (mining) as well. Indeed, the only three speakers to even use OUT /u(:)/ in Maryport were miners.

⁵ Further models confirm that ‘Pennine’ Diphthongization does indeed not exert a significant effect on OUT /u(:)/ within the standard speaker subgroup.

fect on the older form (Bybee 2010). Such an effect has been explored to a greater extent in morphological variation and change (cf. Erker and Guy 2012), but here in the OUT class of the Roots Archive communities it seems to also play a part in dialect change and replacement of the older, more local Scots variant by the regional prestige form. If this is the case, then function words in this dataset can be said to exert even more of a conserving effect on Scots /u(:)/ than equally frequent content words in the corpus, an unexpected finding that must be explored further. Phonetics may also play a role in the conservation of the Scots form in function words and other high frequency lexical items, as out of the two variants, the monophthong is the shorter and more reduced form, and thus perhaps more suitable to high-frequency lexical contexts than the incoming diphthong.⁶

6 Preliminary Conclusions and Future Directions

Unsurprisingly, the communities of the Roots Archive are not exempt from the rapid dialect attrition taking place elsewhere in the United Kingdom. Stable bidialectalism, while preliminarily supported by the lack of a sex effect on the presence of Scots /u(:)/, was ruled out in this paper because of the lack of heterogeneity of usage of the Scots variant among speakers in the four communities. Specific evidence also came from Cumnock that the phonological constraint which had previously been observed to be operating on OUT variation in that geographic area was no longer a significant factor in the appearance of /u(:)/ for the standard speaker subgroup, and was only retained in the phonology of the vernacular speaker subgroup. The confusion, disordering, and application failure of constraints are signs of the loss of phonological knowledge by speakers that occurs near the endpoint of a change. This study implies the prediction that, over time, the phonological tendency of ‘Pennine’ Diphthongization will cease to be a factor in OUT variation in Cumnock. Across the Roots Archive, it seems that the sole predictors of the appearance of the Scots monophthong to remain will soon be lexical frequency and grammatical function, as /u(:)/ continues its retreat to lexical items of higher and higher frequency, its last stronghold being the function words *around*, *about*, *out*, *down*, and *our*, where it is still present in urban Scottish English.

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⁶ Clearly the Scots monophthong is not a reduced form of the Scottish Standard English diphthong either historically or in modern speech. The reduced form of the Scottish Standard English diphthong is usually a schwa.

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