Chapter Five

LAS3 Revisited

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1 Introduction

The third volume of the *Linguistic Atlas of Scotland* (Mather and Speitel 1986), referred to in this chapter as 'LAS3', is the most detailed and wide–ranging survey of the phonology of modern Scots dialects that has ever been made. Covering 188 locations in Lowland Scotland, north Northumberland and east Ulster, it documents the segmental phonology, especially of stressed vowels, of Scots dialects as spoken in the 1950s, at a time when traditional forms of the language, relatively unaffected by influence from English, were still spoken by many older members of the community across the region. As such, LAS3, together with the other (lexical) volumes of the *Linguistic Atlas of Scotland* (Mather and Speitel 1975, 1977), represents a uniquely important and irreplaceable record of Scots that rivals the contemporaneous *Survey of English Dialects* (SED; Orton and Dieth 1962–71) in scale and significance.

Despite its importance, LAS3 is not without its problems, and some of these are far from trivial. The rather restricted data contained in LAS3 and the rather extreme systematisation of the phonology of Scots dialects that is presented in it raise as many questions as they answer, and the analysis obscures much that we would like to know about the phonetics, phonology and historical development of the language and its regional varieties. Given that LAS3 is the only record we have of most Scots dialects, and will remain the only record we ever have of many of them, this is regrettable. If we were able to peel back the layers of analysis that have been imposed on the data in LAS3, and if we were able to see all the data that were collected for each location rather than the limited (though still extensive) sample that is given in the volume, we could learn much more about these dialects. After all, the data in LAS3 represents an analysis which is based on primary data collected in face-to-face interviews with the speakers of the language, and it is this

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primary data that is really of interest (it now, of course, being impossible to go directly to these traditional speakers).

Thankfully the primary data that were collected for LAS3 survive and are archived at the University of Edinburgh. These are much more detailed and extensive than the systematised data contained in the published volume, and have the potential to considerably enrich our understanding of the phonetics, phonology and historical development of Scots dialects. This chapter discusses the nature of the data in LAS3 and describes the unpublished primary data that underlies and is associated with it as a first step towards making this important resource available to a wider audience. The chapter is organised as follows. In Section 2, I describe the nature of LAS3, what it contains, and the analyses that the data presented in it have been subjected to. Such an overview of LAS3 is necessary to understand the problems with the data in it and the importance of the unpublished primary data. In Section 3, I discuss various problems with LAS3 which mean that it is rather less useful than we would like it to be. In Sections 4 and 5, I describe the primary data underlying and associated with LAS3, showing how they give a much fuller picture of the phonetics and phonology of traditional Scots dialects of the mid twentieth century. In Sections 6 and 7, I discuss some of the things we can learn from these data and outline plans for making them available in a usable way.

2 LAS3

The *Linguistic Survey of Scotland* (LSS) was an ambitious programme conducted by researchers at the University of Edinburgh to document the indigenous languages of Scotland in the middle of the twentieth century. The LSS had two strands, a Gaelic Section and a Scots Section, whilst a separate strand investigating English in Scotland was never realised. The methods and results of the Gaelic section were published in Ó Dochartaigh (1994–1997) and are not discussed further in this article. The methods and results of the Scots Section were published as the *Linguistic Atlas of Scotland* (LAS; Mather and Speitel 1975, 1977, 1986). The Scots Section of the LSS consisted of two surveys conducted in the 1950s, a lexical one, the results of which are published in the first two volumes of the LAS, and a separate phonological survey, as documented in LAS3, and it is with this phonological component of the Scots Section of the LSS that this chapter is specifically concerned.

LAS3 consists of an introductory section outlining some of the principles and methods that underlie the phonological survey, an extensive

section presenting systematised data for 188 locations across Lowland Scotland, north Northumberland and east Ulster (see Figure 2 in this chapter), a section containing a considerable number of symbol maps illustrating the geographical distribution of various features and characteristics of the phonology of Scots dialects, and a series of short appendices giving details of the survey wordlist, fieldworkers and informants. The introductory section is very brief, considering the complexity of the methods being described (cf. the book-length introduction to the Gaelic survey given in the first volume of Ó Dochartaigh 1994–7), and further explanation and clarification of these is one of the purposes of this section. Unlike the lexical survey, which was conducted using postal questionnaires sent to prospective Scots informants via local primary school head-teachers, the data for the phonological survey were gathered by trained fieldworkers in face-to-face interviews with native speakers of Scots dialects. The survey used a list of 982 mostly monosyllabic Standard English words and gathered data via the direct questioning method, eliciting Scots equivalents of these. So, for example, the word 'stone' was included in the wordlist, and fieldworkers asked the informants a question in Standard English along the lines of 'How do you pronounce the word *stone*?' (Mather and Speitel 1986: xii). In other words, the informants were given a pronunciation such as [stəʊn] or [ston] and were asked to provide the pronunciation of the same lexical item in their own dialect. This kind of direct questioning technique is readily understood by many people in Scotland even today (as I have repeatedly experienced teaching students at the University of Edinburgh), and was expected to produce pronunciations such as [sten] or [stin], depending on the dialect. This was indeed the result at most locations, and the consistency with which the informants in the survey were able to produce alternative pronunciations for many words speaks of their "linguistic sophistication and awareness of their bilingualism" (Mather and Speitel 1975: 14).

The data elicited using this technique were described by Mather and Speitel (1986: xii) as a "potential" for Scots dialect pronunciations, given that the informants also knew and perhaps sometimes used the 'English' pronunciations of these words, but this 'potential' was assumed to represent a coherent system from diachronic and synchronic phonological perspectives. These pronunciations were transcribed impressionistically (in some variant of the International Phonetic Alphabet) in full in specially prepared fieldworkers' notebooks, which contained the wordlist and a space for each word to be transcribed, as well as additional space for notes and other forms and data (see Figures 3 and 4). No audio-recordings were made of the wordlist

as initially elicited, though selections of the wordlist were subsequently tape-recorded at many locations (see Section 5). Thus the primary data for the phonological survey were the phonetic transcriptions of the elicited Scots pronunciations at these 188 locations, and it is these which underlie the data presented in LAS3.

For each of these 188 locations, LAS3 provides data for 786 of the original list of 982 words, excluding the pronunciations gathered for pronouns, deictics and words involving unstressed vowels. The data are presented as phonemic, not phonetic, transcriptions, and these are given for stressed vowels only, arranged by 11 phonological environments (numbered 0-10). These environments are: 0, a following /t/; 1, a following /d/; 2, word-finally; 3, a following /r/; 4, a following voiced fricative (i.e. /v/, /ð/, /z/ and /ʒ/); 5, a following labial stop or nasal (e.g., /p/, /b/ and /m/); 6, a following velar stop or nasal (e.g. /k/, /g/ and /ŋ/); 7, a following /l/; 8, a following /n/; 9, a following non-velar voiceless fricative (i.e. /f/, /θ/, /s/ and /ʃ/); and 10, a following /x/. A default phonemic consonant skeleton is assumed for each word in the list (as given in the LAS3 appendices), and departures from this are noted for each location. For example, if *bush* was elicited with final [ʃ] (/ʃ/), this is indicated, but if no note is given the reader should assume the default final [s] (/s/), common to many Scots dialects. No phonetic transcription of the consonants is given, although some details of particular note are given for each location at the end of many entries. In addition to the phonemic data, a 'polyphonemic' analysis of the vowel phonemes of each location is presented (see further below), and this polyphonemic analysis underlies the cartographic representation of the data in the 'Maps' section of LAS3.

The phonemicisation of the stressed vowels for each location was done for the 11 phonological environments independently. All of the phonemic oppositions before /t/ were worked out, then before /d/, then before voiced fricatives, etc., and these were not combined into a single overall phonemic analysis. That is, the phonemic analysis assumed a polysystemic model of phonology (Firth 1935; see Lass 1984 for a useful discussion). This is illustrated in Table 1 for location 21.1 Newhaven (Midlothian), the matches between the phonemes in each environment (made by the current author) mostly being apparent even though these are not specified in LAS3. In order to understand the overall phonology of the vowels of this and the other dialects documented in LAS3, the reader must make comparisons of this sort across all environments.

Table 1: Phonemic oppositions before /t/ and /d/ in the dialect of Newhaven.

_t	iˏ	e	eˑ	ɛˑ	ä	ɔˌ	ɔˌᵊ	o	oˑ	ʉ̶	juʉ̶	ë	ɛ̈	ʌ	ëi		
_d	i	eˑ		ɛˑ	äˌ	ɔˑ		oˑ		ʉ̶	juˑ	ë	ɛ̈	ʌ	ëi	ɔë	əü

This polysystemic treatment of the stressed vowel phonology was used to construct a polyphonemic analysis of the data for each dialect. Building on work by Catford (1957) and by members of the 'Hjelmslew school' such as Jensen (1944), LAS3 defined a set of polyphonemes, i.e. abstract structural positions in the vowel space. For example, every Scots dialect has some kind of vowel in the high front unrounded part of the vowel space (e.g. [i], [iː], [ɪi]) in opposition to a high rounded vowel (e.g. [u], [ʉ̶]), a high-mid front unrounded vowel (e.g. [e], [eː]), and a central or central-front unrounded vowel (e.g. [ə], [ë], [ɪ]), and this structural position constitutes the polyphoneme \I\ (polyphonemes are indicated by uppercase letters in backslash brackets). This polyphoneme is typically found in words which had Older Scots (OSc) /eː/ or /ei/, for example in *feet*, *geese* and *teeth* and in *die*, *eye* and *lie* 'fib'. But crucially, and unlike the lexical sets in Wells (1982), polyphonemes are structural positions, not sets of words. This means that if words of other origins end up with the vowel [i] in some dialects, e.g. *king* [kiŋ] and *swim* [swim], they also have the polyphoneme \I\. This contrasts with Wells's system, where these would remain classified as KIT words, even though some dialects have the vowel typical of the FLEECE set in them (i.e. they do not come to 'belong' to FLEECE, since membership of lexical sets is unchanging). The point of a polyphonemic analysis is to facilitate comparisons at a more abstract level, between dialects, of vowels with different phonetic and phonemic values in particular words. Examples of such comparisons are illustrated in Figure 1.

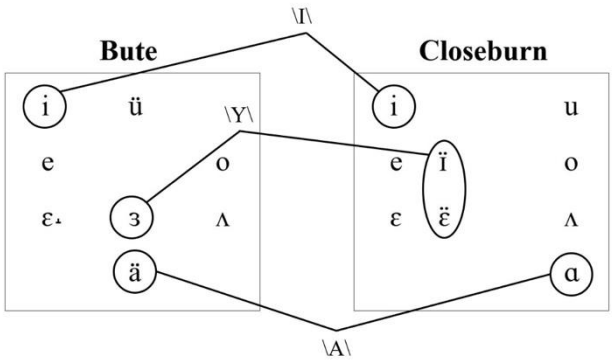


Figure 1: Polyphonemic comparisons between the dialects of 17.1 Kingarth by Rothesay (Isle of Bute) and 25.4 Closeburn (Dumfiresshire).

Polyphonemic analysis thus allows us to compare different dialects in various ways. For example, we can ask questions of individual dialects or of all of the dialects included in LAS3 such as the following:

- What is the pronunciation of the vowel in the polyphoneme \I\ position?
- Is there a phonemic split, resulting in two phonemes in polyphoneme \I\ (e.g. *deep* [dip] /dip/ vs. *creep* [kriːp] /kriːp/)?
- Are the vowels derived from OSc /ɪ/ (e.g. in *bit*) and /øː/ (e.g. in *boot*) kept distinct from other vowels in the system? (If so, they are grouped under polyphoneme \Y\).
- Assuming OSc /ɪ/ and /øː/ remain distinct from other vowels, is the distinction between them maintained? (If merged, there is one phoneme corresponding to polyphoneme \Y\, if not merged, there are two vowels corresponding to polyphoneme \Y\).
- What polyphoneme is in the word *swim* (i.e. what vowel is in the word regardless of its precise phonetics); is it \I\ (e.g. [swim], [swiːm]), \Y\ (e.g. [swɪm], [swɵ̈m]), or \U\ (e.g. [sum], [sʉm])?

These are exactly the kinds of questions dialectologists might want to be able to answer, but it is difficult to do so without the necessary methodological framework, and this is what the polyphonemic analysis seeks to provide. Although there are problems with the polyphonemic analysis (see Section 3), it is an ingenious solution to the difficult problem of comparing the phonologies of different dialects. The polyphonemic analysis also underlies the maps in LAS3, which illustrate for each location the total number of phonemes per phonological environment, the number of phonemes corresponding to each polyphoneme in each phonological environment, and the polyphoneme found in a selection of key words from the survey wordlist.

This review of the methods and presentation of the LAS3 data reveals not only the theoretical predilections of the researchers involved in this survey, but also their considerable ambition and insight. It also explains the substantial distance between the spoken dialects of the informants and the data in the published atlas. Whilst LAS3 can be considered to be a triumph in respect of its geographical coverage, the amount of data it contains, and its development of theoretical tools for comparison of the phonological systems of divergent dialects, it is not without its problems, and it is to these I turn in the next section.

3 Problems with LAS3

Impressive though it is, LAS3 has a number of problems which detract rather considerably from its usefulness (for previous critiques of it, see Aitken and Macafee 2002: 106–108, 167–168 and Johnston 2000). The lack of a substantial introduction explaining the survey's methods is one such problem, as noted in the previous section. And although the geographical coverage of LAS3 is impressive, including as it does 188 locations across Lowland Scotland, north Northumberland and east Ulster, there are some lacunae in the distribution of survey points. As Figure 2 shows, there were no survey locations in Argyll, Peeblesshire and Selkirkshire, whilst substantial parts of the Central Belt, Aberdeenshire, Shetland and Ulster where Scots dialects were spoken were not covered, and several of these are areas for which we have no other linguistic data.

Furthermore, LAS3 only includes a subset of the data that was collected at the locations that were surveyed. Minimal information is given for consonants other than what is retrievable from the default consonant skeletons and the brief notes for each location. For example, the pronunciation of /r/ in most dialects is unspecified, and given that this consonant is subject to considerable phonetic variation in Scots dialects, this is regrettable. In addition, the substantial sections of the wordlist covering unstressed vowels, deictics and pronouns (196 words in all) were left out, so that we cannot, for example, determine from the LAS3 data whether vowel harmony was in operation in particular dialects (cf. Dieth 1932: 73–78). And because of the way that the data were analysed and presented, words which did not fit the default consonant skeleton were excluded from LAS3. This means that pronunciation of words such as *daughter* which retained /x/ were included, whilst pronunciations which, through independent changes or due to influence from English, had lost /x/ were silently excluded. This decision

means that traditional Scots forms of *daughter* such /doθər/, common in north-east Scots dialects, do not appear in LAS3, and no data for this word is included in the atlas for such locations. This has the unfortunate effect of giving the impression that these traditional forms did not exist in the 1950s. For example, Johnston (1997: 505) states that "At the time of the S[cottish]N[ational]D[ictionary] … the cluster /xt/ in a few specific words such as *might, daughter* was realised as [θ] in north-eastern dialects. This feature is now highly recessive, and may survive, if at all, only in Angus … *LSS vol. 3 failed to find any examples of this change*" (emphasis mine). Such cases, involving /x/ and other consonants (especially /l/), are not uncommon in the LAS3 data.

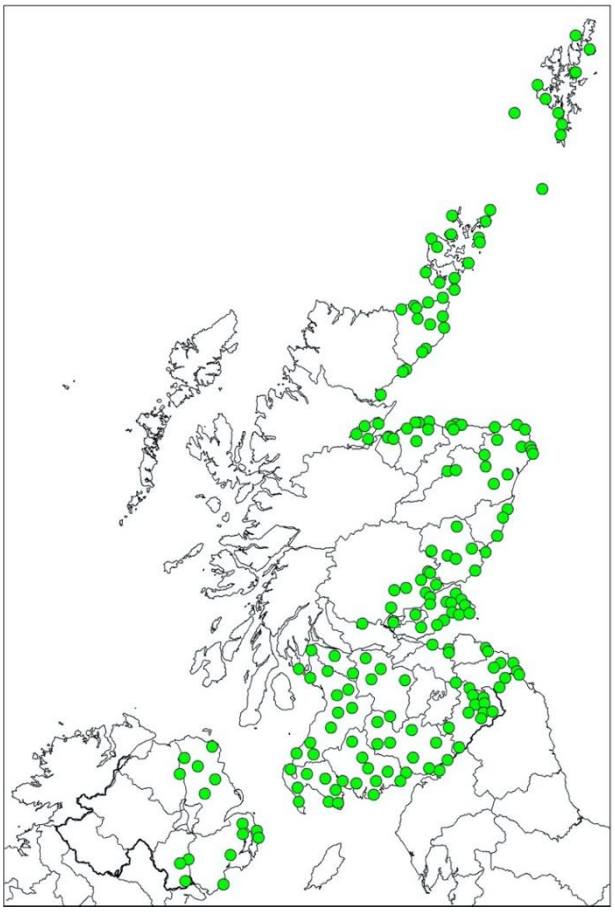


Figure 2: The distribution of locations included in LAS3.[1]

[1] This map and the map in Figure 5 were drawn using the DMAP program (Morton 1993–2005).

Perhaps most significantly, the rather severe systematisation of the data in LAS3 presents a substantial barrier to understanding the phonetics and phonology of the dialects it recorded. The approach in LAS3 not only abstracts away from the pronunciation of these words as elicited by the fieldworkers, but also involves a number of theoretical assumptions and methodological approaches which make it difficult to determine what the overall phonology of any one of these dialects might be. For example, a polysystemic analyses requires the analyst to decide what constitutes a sub-system within it. Why, for example, did the LAS3 researchers group vowels before /p/, /b/ and /m/ as a single subsystem ('Section 5'), but distinguish as separate subsystems those before /t/ ('Section 0'), /d/ ('Section 1') and /n/ ('Section 8')? Given the importance of the nature of the following consonant in Scots for determining features such as vowel length (see Aitken 1981), such groupings potentially lead to different phonemic results per environment without this necessarily reflecting the actual phonetic patterns in the dialect. Even where this problem can be avoided, phonemicising phonetic transcriptions is a difficult, often subjective business and requires lots of tokens to understand variability within categories. Inevitably analysts will come up with different results, and it is likely that the LAS3 editors frequently posited phonemic differences where none existed, something which has significant consequences for their whole analysis. For example, four phonemes were posited before /r/ in the high-mid front part of the vowel space for location 21.1 Newhaven (Midlothian) as follows:

- /eᵊ/ in *beard*, *fare*, *hare*, *hoarse*, *more*, *sore*, *there*
- /eˑᵊ/ in *bear* (n.), *bear* (v.), *mare*, *their*, *there*
- /eˠ/ in *airt*, *bairn*
- /eˠᵊ/ in *fair*, *hair*, *pair*, *part*, *poor*, *square*

These 'phonemes' do not correspond either to etymological groups or for the most part to particular diachronic or synchronic phonological environments, and it is difficult to accept that this dialect has developed an unconditioned four-way phonemic contrast in this part of the vowel space. Sub-phonemic variation is a better explanation for some or all of these differences, and a wider analysis of the distribution of these vowels across all environments (something which LAS3 does not do) would help to determine whether we are actually dealing with only one, or perhaps two, high-mid front vowel phonemes in this dialect. This is not an isolated case in LAS3. The data for most locations in the atlas contain similar examples, often multiple times.

Another problem arising out of the polysystemic phonemicisation of the LAS3 data is that the phonemic distinctions posited for each environment were made without referencing the distinctions in other environments, and this can create rather strange, unlikely results. Like other Scots dialects, location 2.1 North Ronaldsay (Orkney) distinguishes the vowels which derive from Older Scots /ɛ/ (e.g. *met*), /ɪ/ (e.g. *sit*), /ʊ/ (e.g. *but*). Tables 2 gives the LAS3 North Ronaldsay phonemes in selected environments corresponding to these historical vowels.

Table 2: North Ronaldsay phonemes corresponding to OSc /ɛ/, /ɪ/ and /ʊ/.

OSc	**0 (_t)**	**1 (_d)**	**3 (_r)**	**7 (_l)**	**9 (_S)**
ɛ	ɛˤ	ɛ	ɛˑ	ɜˑ	ɛˑ
ɪ	ɛ	ɤ̈	ɜ, ëˤ	ɤ̈	ɜ
ʊ	ɜ	ɜ	ʌ	Ä	ʌ

The LAS3 phonemicisation gives the impression that values for these vowels have switched around in particular environments. For example, '/ɛ/' is the reflex of OSc /ɪ/ before /t/ but of OSc /ɛ/ before /d/, whilst '/ɜ/' is the reflex of OSc /ʊ/ before /t/ and /d/, but of /ɪ/ before /r/ (variably at least) and before voiceless fricatives. It is not clear what the overall phonology of this dialect might be with respect to these vowels, or how such a situation might have developed, and the most likely explanation of this conundrum is that the phonemicisation was done in each environment without reference to the others, so that the choice of symbols in each environment was somewhat arbitrary.

Finally, it is clear that the LAS3 researchers had some difficulty in objectively determining which vowels belonged to which polyphoneme (Mather and Speitel 1986: xvi). This is not surprising given that how the phonemic system of one dialect corresponds to the phonemic system of another dialect is not something which those dialects themselves encode and is instead a theoretical question for linguists. Despite the best efforts of the LAS3 researchers, a certain degree of arbitrariness is inevitable, as they admit themselves (Mather and Speitel 1986: xvi). This and the other problems with the phonological systematisation that run through the whole of the LAS3 mean that although the data and maps in the atlas can only be interpreted in light of the phonemic and polyphonemic analyses, it is not always clear what they show, or how important or meaningful it is. The subjective LAS3 phonological analysis forces a particular shape on the dialect data it contains

which we, as linguists, would like to be able to strip back to determine its worth and to explore other aspects and alternative analyses of the data. In order to do so, we need access to the primary phonetic data that was gathered by the survey fieldworkers, and it is these materials that I describe in the next section.

4 The original phonetic transcriptions

The LSS employed 17 fieldworkers to gather data for the phonological part of the Scots section of the survey, though three of them (CMacG and, especially, JSW and JYM) were responsible for gathering data at 82% of locations (see Maguire 2016). These fieldworkers, using the direct questionning method described above, elicited local (at most locations equating to Scots) pronunciations of all 982 words in the wordlist, including the sections covering unstressed vowels, deictics and pronouns, and transcribed these phonetically in full (including the consonants) in bespoke notebooks. These notebooks have been retained and are held by the University of Edinburgh Centre for Research Collections in the Celtic and Scottish Studies Archive.[2] Although there are not insignificant differences between the transcription practices of the various fieldworkers (see Maguire 2016: 320–322 for discussion), these notebooks constitute a detailed record of the dialects surveyed by the LSS. Not only do they contain far more information than LAS3, they are also free of the severe phonological systematisation that characterises the published atlas so that, within the confines of impressionistic phonetic transcription and bearing 'fieldworker isoglosses' in mind, a much richer and less obscure record of mid-twentieth century Scots dialects is available. These original transcriptions mean that we do not need to rely on the selective and idiosyncratic LAS3 treatment of the data to analyse the diachronic and synchronic phonetics and phonology of these dialects.

Two examples of the original data are given in Figures 3 and 4. The first reproduces two facing pages from the notebook for location 22.1 Tranent (East Lothian), giving an indication of the layout and content of the original data and the kinds of extra information that they not infrequently include. The second contains two samples from parts of the wordlist not included in LAS3, the first from location 33.1 Poyntzpass (Armagh) containing transcriptions of

[2] The author thanks Rachel Hosker, Cathlin Macaulay and Margaret Mackay for providing access to these materials.

words with unstressed *-er*, the second from location 1.10 Fair Isle (Shetland) giving a sample of the transcriptions of pronouns in the dialect.

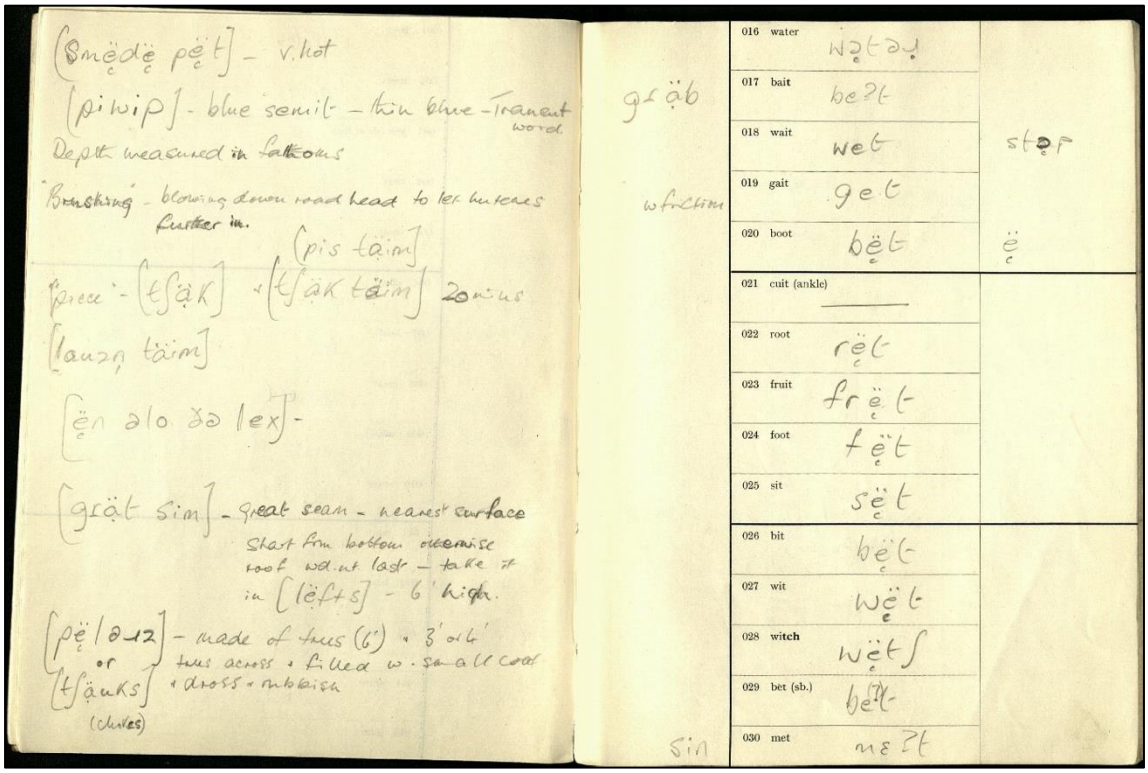


Figure 3: Reproduction of a page from the notebook for location 22.1 Tranent (East Lothian).

The unpublished notebooks that underlie LAS3 do not only contain more (and more detailed) information than what we find in the published atlas. They also cover many more locations. In addition to the fieldworkers' notebooks for the 188 published locations, there are notebooks for a further 105 informants, many of them from locations not covered in LAS3. These include locations in, for example, inland Aberdeenshire, Argyll, Cumberland, the Glens of Antrim, Northumberland, Peeblesshire, Selkirkshire, Unst and Whalsay, areas that were either not covered or which received little attention in the published survey. The reasons these notebooks were not included in the published survey is not always clear (cf. Aitken and Macafee 2002: 167). Some of them may have been rejected because they were incomplete, or because the informant was not judged to have been suitable (for example, because his/her dialect was characterised by levelling or standardisation, though this rarely seems to be the case). Others may have been left out for

reasons of time and space, or because coverage in certain counties in the published atlas was considered to be adequate. But a substantial number of notebooks used a slightly different wordlist and appear to have constituted a parallel or complementary survey, carried out by some of the same survey fieldworkers (especially JSW) or by others. Although there is a high degree of overlap between the wordlist used for LAS3 and the wordlist used in these unpublished notebooks, the differences are significant enough to mean that incorporating the two sets of data into a single atlas may have been considered to be impractical. Whatever the reasons they were excluded from LAS3, these unpublished notebooks constitute an important record of mid-twentieth century Scots, Ulster and northern English dialects, including many that were not and have not otherwise been recorded.

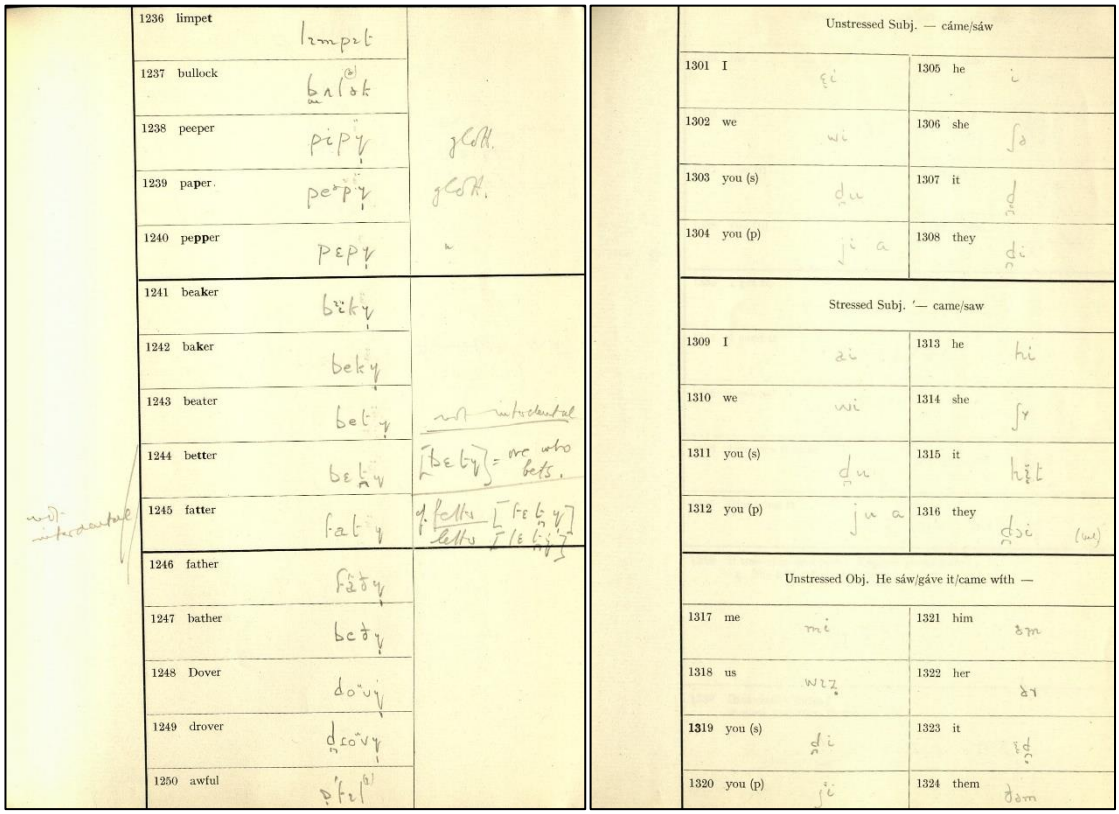


Figure 4: Parts of the wordlist for locations 33.1 Poyntzpass (Armagh) and 1.10 Fair Isle (Shetland)

Although they are of a rather different nature, there are other unpublished fieldworkers' materials in the LSS archive containing large amounts of information on Scots dialects that were compiled around the same time, again

mostly by the LSS fieldworker JSW. These materials, consisting of 14 folders covering locations across Lowland Scotland, contain phonetically transcribed responses to a version of the long SED questionnaire (Orton 1962). As there are no published SED returns for Scotland (other than the few bits of data in Glauser 1974), these materials constitute a substantial collection of phonetic, lexical, and morpho-syntactic data which is strictly comparable with what was gathered for dialects across England, and thus are of considerable importance for comparing between dialects north and south of the border. Figure 5 is a map showing the distribution of the unpublished locations, with the 'SED' survey points indicated by red squares, which should be compared to Figure 2.

Thus the unpublished fieldworkers' notebooks, both those that underlie the published atlas and those which did not feed into it, provide an extremely rich record of the traditional dialects of Lowland Scotland, far northern England and east Ulster in the middle of the twentieth century, far in excess of what it available in LAS3 both in quality and quantity and without many of the complications that the published analysis introduced. I return to some of the uses that these data can be put to in Section 6, but first I give a brief overview of the unpublished audio-recordings that are associated with LAS3, which provide further important data for the phonetics and phonology of these dialects.

5 The audio data

Although there is no published or unpublished description of the process, it appears that audio-recordings of the LAS3 informants were not made at the same time as the phonetic data for the survey were transcribed. This seems likely given that not all of the informants for the published survey were recorded (though most of the LAS3 locations, or places near to them, were covered), and the fieldworker making the recording was not necessarily the same as the one who made the transcriptions. In a parallel fashion to the SED, it is possible that the LSS fieldworkers revisited the survey informants at a slightly later date to make these recordings as a supplement to the transcribed data. The LSS audio-recordings, which have been digitised from the original reel-to-reel tapes, are also held by the University of Edinburgh Centre for Research Collections in the Celtic and Scottish Studies Archive. Given the lack of a description of the recording process by the original researchers and the 70-odd years since these recordings were made, much work still needs to

be done to catalogue them in detail and to relate them to the LAS3 locations, so that the outline given here is only preliminary.

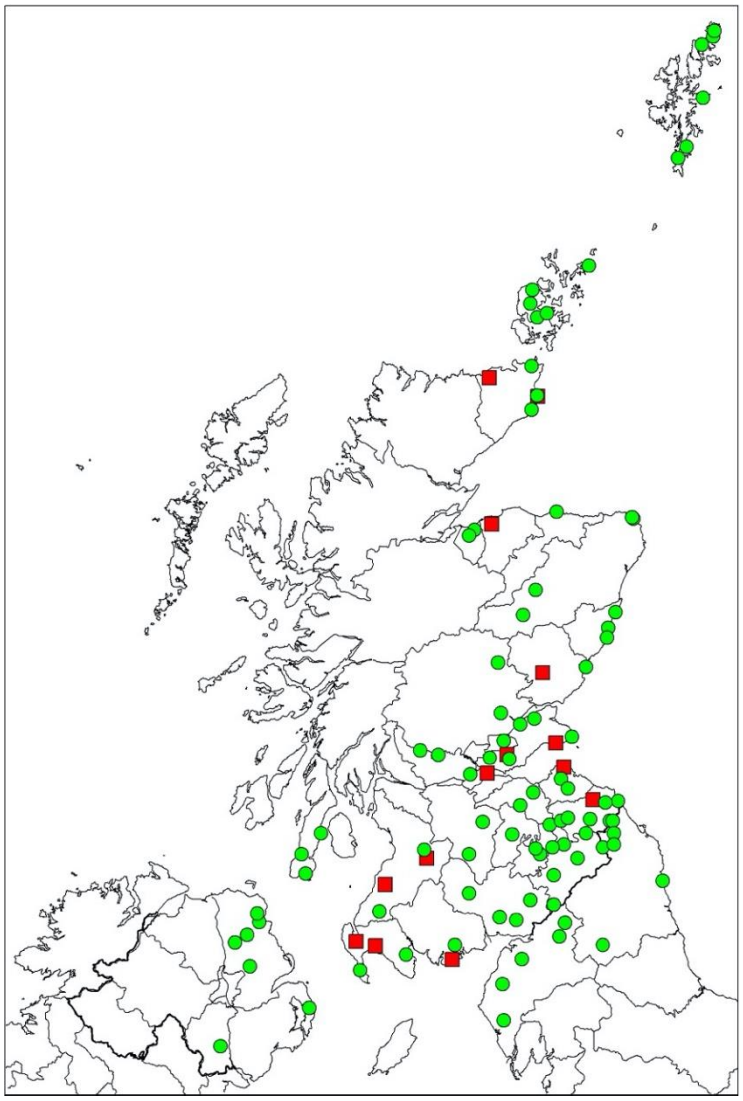


Figure 5: The geographical distribution of the unpublished LSS locations.

The details vary from one location to the next, but audio-recordings were made of short stretches of conversation or of stories, sometimes including songs, and of parts of the LAS3 wordlist. These latter typically covered Sections 0 (words with vowels before /t/) and 2 (word-final vowels) and sometimes a selection of other items from the wordlist. Thus they (usually) do not constitute a full recorded record of the full wordlist data, though they do provide a useful complement to them. By way of illustration,

this section describes the wordlist data for location 17.1 Kingarth by Rothesay (Isle of Bute), in order to show the advantages and limitations of these data.

The Bute informant in the audio-recording was the same one who supplied the data for the LAS3 transcriptions. In the audio-recording, she gives her local pronunciations of Sections 0 (words with vowels before /t/) and Section 2 (word-final vowels) in response to direct questioning by the fieldworker. In addition, a small number of words with /k/ before and after vowels are elicited in order to check the degree of palatalisation of the consonant (a feature indicated in LAS3), and the pair of words *part* and *heart* are discussed in order to determine whether they have the same vowel or a different one.

Table 3: Vowels before /t/ in 17.1 Kingarth by Rothesay (Isle of Bute).

Vowel	Examples	Vowel	Examples
/i/	*meet*	/ʌ/	*putt*
/ɜ/	*bit*	/o/	*fault*
	boot		*cot*
			coat
/e/	*mate*	/ü/	*about*
	bait		
/ɛˑ/	*met*	/əi/	*bite*
/ä/	*fat*	/ʌü/	*colt*

Concentrating here only on the vowels produced before an immediately following /t/, LAS3 identifies 10 phonemes, as indicated in Table 3, and these replicate the contents of the fieldworker's notebook closely. One notable feature of this dialect, as recorded in LAS3 and in the original transcriptions, is that the vowels derived from OSc /ɔ/ (e.g. *cot*), /ɔː/ (e.g. *coat*) and /au/ (e.g. *fault*) have all merged under /o/, so that there is no separate /ɔ/-type vowel in the dialect from any source. Another aspect of the dialect very regularly recorded in LAS3 and in the original data is that it has a strict Scottish Vowel Length Rule (SVLR; Aitken 1981), whereby all monophthongs except /ɜ/ and /ʌ/ (which are always short) are long before voiced fricatives, /r/ and word-finally, and short elsewhere (including before /t/). An analysis of the audio-recording for this location shows that neither of these things is strictly accurate. Measurement of the first and second formants of the vowels in the relevant words (Figure 6) reveals that there is a distinct '[ɔ̟]' vowel corresponding to OSc /au/, which has not merged with /o/ in words like *cot*

and *coat*, thus constituting a distinct phoneme in the dialect not recorded in LAS3.

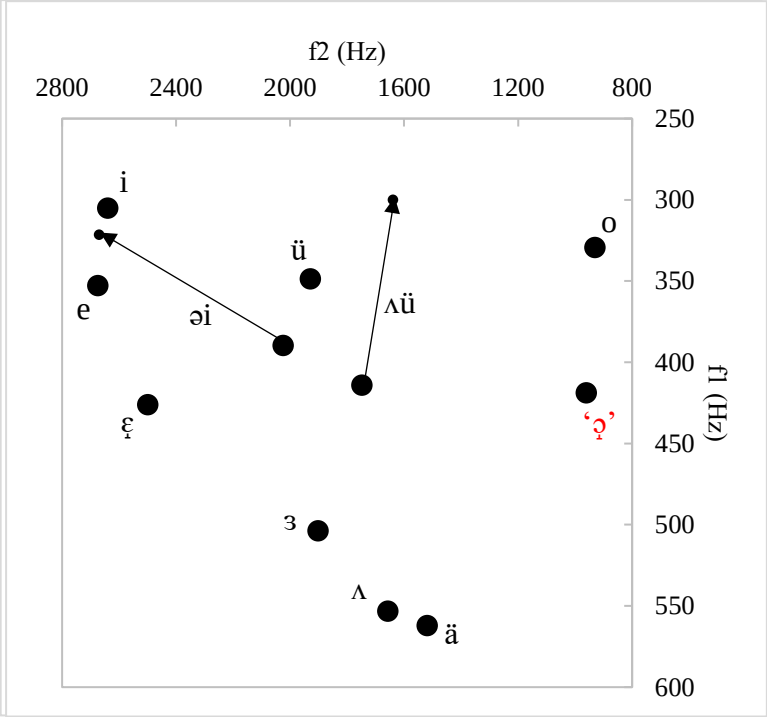


Figure 6: Formant chart for vowels before /t/ in location 17.1 Kingarth by Rothesay (Isle of Bute).[3]

In addition, the acoustic analysis suggests that some of the qualities assigned to these vowels in LAS3 are not optimal, with, for example, /o/ having a value around [ǫ], /ʌ/ being realised as [ä], and /ʌü/ having a central nucleus, i.e. [əü], though in general terms the vowel symbols used by the original transcriber and in LAS3 are not very far wrong, indicating the value of his impressionistic phonetic transcriptions.

An analysis of the duration of these vowels before /t/ is also revealing. Although LAS3 indicates that all of the monophthongs are short in this environment (following, as they appear to do, the SVLR) measurement of their duration in these words shows that they fall into two categories, one short and the other long. The vowels /i/, /ü/, /ɜ/ and /ʌ/ are short, whilst /e/, /ɛ̣/, /ä/, /ɔ̣/ (not recorded in LAS3) and /o/ are long, as are the diphthongs /əi/

[3] Measurements for this analysis and the analysis summarised in Figure 7 were made using PRAAT (Boersma and Weenink 2019). Monophthongs were measured at the mid-point, diphthongs at the 25% and 75% points.

and /ʌü/. These patterns are illustrated in Figure 7, which gives the duration for all tokens of each of these vowels before /t/.

Useful though the data underlying the analyses in Figures 6 and 7 might be, they are unfortunately also rather limited. The audio-recordings usually include all the words from Sections 0 and 2 but only a few words from other environments. This makes assessment of the conditioning of vowel length, SVLR or otherwise, difficult, since a comparison of the duration of vowels before voiceless stops, voiced stops and voiced fricatives (and perhaps voiceless fricatives) is a minimal requirement for establishing these kinds of patterns (see Watt and Ingham 2000). Furthermore, the number of tokens is small, especially for certain vowels. Thus the Kingarth by Rothesay recording furnishes us with 16 examples of /i/ before /t/, 13 of /ɜ/, 17 of /e/, 11 of /ɛ̨/, 5 of /ä/, 4 of /ə̨/, 4 of /ʌ/, 12 of /o/, 3 of /ü/, 4 of /əi/, and only 1 of /ʌü/. Whilst some of these numbers are reasonable, others are rather lower than what is ideal, and thus any conclusions we draw from an acoustic analysis of them must be tentative. Nevertheless, the audio data associated with the LAS3 locations is an important resource for confirming, clarifying and correcting certain aspects of the data in the published atlas and the phonetic transcriptions which underlie it, and thus are an essential component of the survey.

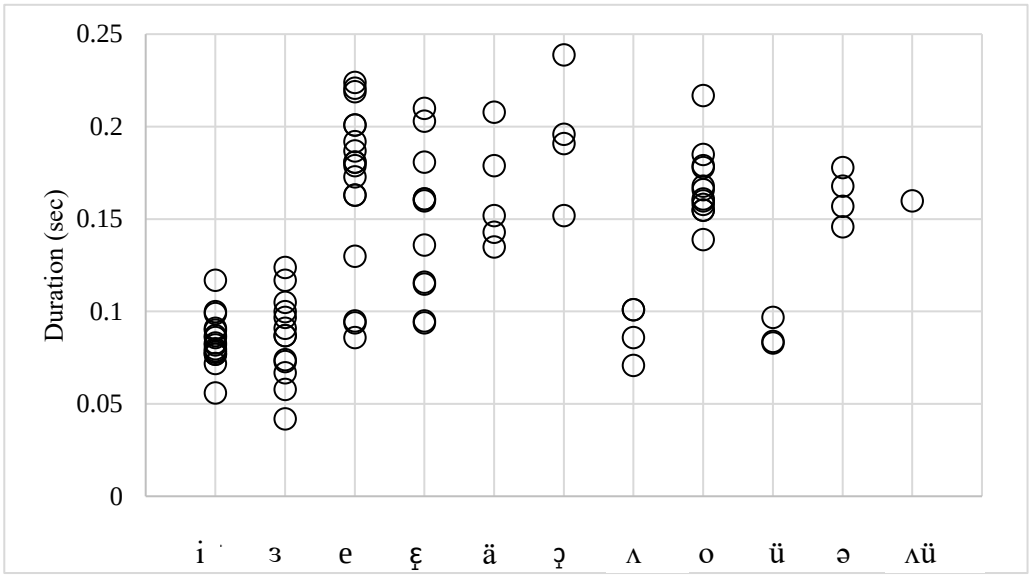


Figure 7: The duration of vowel phonemes before /t/ in location 17.1 Kingarth by Rothesay (Isle of Bute)

6 Prospects and plans

Even though they have their own limitations, the unpublished LSS datasets associated with LAS3 are a source of information far in excess, in both detail and coverage, of what is available in the published atlas, and thus they provide an opportunity for a much deeper understanding of the diachronic and synchronic phonetics and phonology of the dialects of Scots. A number of analyses by the current author illustrate this point. In Maguire (2016), I analysed the phenomenon 'Pre-R Dentalisation' (PreRD), a feature which involves the dentalisation of /t/, /d/ and /n/ before /r/ and /ər/ (e.g. *try* [t̪ɾaɪ], *dry* [d̪ɾaɪ], *better* 'more good' [ˈbɛt̪ə˞], *thunder* [ˈθʌn̪ə˞]), in the unpublished fieldworkers' transcriptions associated with LAS3. This feature, which is characteristic of traditional Irish English and northern English dialects in England (see also Maguire 2012a), has hardly been attested in Scotland, and is not indicated at all in LAS3, giving the impression that this was not a feature of mid-twentieth century Scots dialects. But an analysis of the unpublished data showed it to be widespread in Scotland (and, not surprisingly, in Ulster), from the south-west to the far north of the country. Furthermore, PreRD in Scotland was accompanied by both the /r/-Realisation Effect (/r/ is realised differently after dental and dentalised consonants, usually as a tap [ɾ]) and the Morpheme Boundary Constraint (PreRD is blocked by 'Class 2' morpheme boundaries, so that *better* 'more good' is pronounced with [t̪] but *better* 'one who bets' has [t]; see Figure 4 for an example) that are also present in Ireland and northern England. The widespread attestation of PreRD in Britain in a form essentially identical to what is found in Ireland points not only to a British origin of this feature of Irish English but also to the antiquity of this set of changes, which must have occurred as early as the Older Scots/Middle English period.

Similarly, Maguire (2017) used the unpublished transcriptions associated with LAS3 to demonstrate that epenthesis in liquid+sonorant clusters (i.e. insertion of [ə] in the stem-level coda clusters /lm/, /rm/, /rn/ and /rl/) is a characteristic of most dialects of Scots. This is another feature which is not indicated in LAS3, though we have every reason to expect that the mid-twentieth century dialects recorded in the survey had this feature, given its attestation in other sources and its presence in Scots dialects today. Because this feature is widespread in dialects of Irish English, including those of Ulster, and is also present in a similar form in Irish Gaelic, it has been argued

(see the discussion in Maguire 2018) that this feature has its origins in language contact in Ireland. But the widespread presence of the feature in Scots, as well as in twentieth century dialects of English, suggests that a British source for it is likely, something which is confirmed by the existence of very similar constraints on the phenomenon in English English, Scots and Irish English dialects, and by its attestation in Older Scots and Middle English. The unpublished LSS transcriptions have thus not only been important for explaining the history of this feature, but have also given us a new, detailed insight into the patterning of it in traditional Scots dialects.

I have also used the unpublished data associated with LAS3 for a number of other studies, including documenting the distribution of the second person plural pronoun *yous/yees* in Scotland (Maguire 2012b), and mapping the phonological border between Scots and English dialects and the extent to which it coincides with the Scottish/English border (see Maguire 2015). None of these analyses would be possible based on LAS3 alone, and there is very little and often no other information on the phonology of most traditional twentieth century Scots dialects so that studies of this kind could not be done without the extensive unpublished LSS data. The worth of this material is great and we are fortunate that it has been preserved, and it is desirable that this unique and important resource is made more widely available for those researching the diachronic and synchronic phonology of Scots. The rest of this section, then, outlines preliminary plans for the construction of an online database bringing together the unpublished transcriptions and wordlist soundfiles associated with LAS3.

Thanks to funds provided by the School of Philosophy, Psychology and Language Sciences at the University of Edinburgh,[4] all of the unpublished fieldworkers' notebooks and the folders of SED responses have been catalogued and digitally scanned (see Figures 3 and 4 for examples). Although an outline catalogue for the audio-recordings exists, a detailed examination of them is needed to ascertain precisely which locations were surveyed and what wordlist data is available for them. This work is currently ongoing. At the very least, it is desirable that digital copies of the notebooks with their associated recordings should be made available to interested researchers online, through a password protected portal.

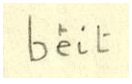
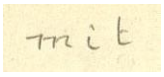
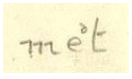
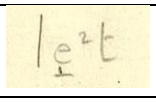
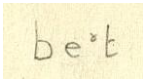
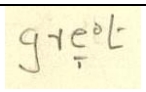
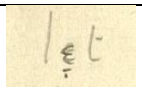
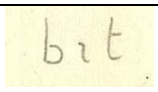
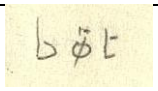
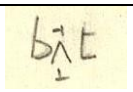
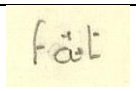
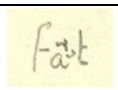
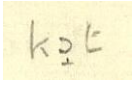
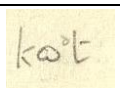
Ideally, however, the data would also be presented in the form of an interactive database. Such a database would combine metadata (including

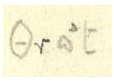
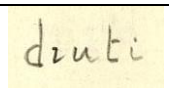
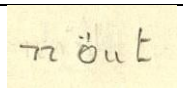
[4] Special thanks are due to Rachel Hosker, Cathlin Macaulay, Caroline Milligan, Stuart Robinson, Hannah Wood, Arron Mark, Ronnie Cann, John Joseph and Heinz Giegerich for supporting this application and project.

location, informant, fieldworker) with transcriptions and soundfiles (in cases where these are available) for each word in the full LAS3 wordist at every location. Combined with a phonemic, and indeed a polyphonemic, analysis of the data, either the original LAS3 one or, better given the problems with the LAS3 analysis described in Section 3, a new one, this would provide a convenient way of accessing this rich material. Table 4 gives a partial example of a data table that could be derived from such a database, showing the alignment of the words in the wordlist with the original transcriptions, the LAS3 analysis, and new (and for the purposes of this article very preliminary) phonemic and polyphonemic analyses for a part of the data for location 24.9 Newcastleton (Roxburghshire).

Given the problems with the phonemic and polyphonemic analyses in LAS3 identified in Section 3, it might be reasonable to ask how a database of the unpublished data would benefit from a new analysis of the same sort. But the crucial point of the critique in Section 3 is that the problems with the LAS3 phonemic and polyphonemic analyses lie not in the concept but in their execution (and indeed explanation) and in the fact that these analyses are given instead of, rather than in addition to, the primary phonetic data. Phonemic and polyphonemic analyses have considerable value and power themselves. A polyphonemic analysis gives us the ability to ask various useful questions of the data, as outlined in Section 2. For example, it allows us to compare the pronunciation and distribution of the /ʌʉ/ phoneme in Highland English with the /ʌʉ/ phoneme in Scots, even though these vary in pronunciation and occur in different sets of words in the two dialect types (e.g. in *down*, *house* and *out* in Highland English and in *colt*, *grow* and *yolk* in Scots). Furthermore, such an analysis provides a means for automatic mapping of certain aspects of the data across all locations. Given a database where every pronunciation in every dialect is associated with a particular polyphoneme, it would, for example, be possible to automatically map the realisations of polyphonemes, which locations have particular phonemic splits or mergers, and which polyphonemes appear in individual words across all dialects. Thus such a database could also become the basis for a new atlas of the phonetics and phonology of traditional Scots dialects in the mid-twentieth century, reinterpreting the LAS3 data in a transparent way that would be accessible to linguists and other users.

Table 4: Example data table for location 24.9 Newcastleton (Roxburghshire)

Word	No.	LAS3 Phoneme	LAS3 Poly-phoneme	Image	Transcription	OSc Source	New Phoneme	New Poly-phoneme	Audio
bite	058	ei	EI		bẹit	i:	ei	ɛi	
meet	002	i	I		mit	e:	i	i	
mate	011	eᵊ	E		meᵊt	a:	e	e	
late	012	e˖ˈ	E		leˈt	a:	e	e	
bait	017	eᵊ	E		beᵊt	aɪ	e	e	
great	008	e˞ᵊ	E		gre̝ᵊt	ɛ:	e	e	
let	031	æ	E		lɛt	ɛ	ɛ	ɛ	
bit	026	ɪ	Y		bɪt	ɪ	ɪ	ɪ	
boot	020	ø	Y		bø̞t	ø:	ø	ø	
but	053	ʌ	W		bʌ̟˖t	ʊ	ʌ	ʌ	
fat	038	ɑ	A		fɑ̟˃t	a	ɑ	a	
fault	040	ɑ	A		fɑ̟˃t	aʊ	ɑ	a	
cot	043	ɔ	O		kɔ̟t	ɔ	ɔ	ɔ	
coat	048	ʊᵊ	O		kɷᵊt	ɔ:	ʊə	o	

throat	050	ʊᵊ	O		θrɷᵊt	ɔː	ʊə	o	
out	051	u	U		ut	uː	u	u	
duty	064	ɪu	U		dɪuti	ɪʊ	ɪu	iu	
nowt	063	ou	WU		nǫut	ɔʊ	ou	ʌu	

7 Conclusions

This chapter has outlined the nature of the data in LAS3, why it looks the way it does, what it can tell us, and some of the problems with it. In many ways LAS3 (and the wider LSS) was an astounding achievement, the like of which we will struggle to repeat in the twenty-first century (even ignoring the rapidly changing linguistic landscape of Scotland). But it is also a highly frustrating source of information on the traditional Scots dialects of the twentieth century, as often leaving us scratching our heads or wanting to know more as informing us about their phonologies. No doubt many of the decisions that were made regarding the analysis and presentation of the LAS3 data were motivated by a range of factors that may not seem obvious to us now, and it is easy to find fault in hindsight. Indeed it may well be the case that the original researchers saw LAS3 as only one product of the phonological survey, and that other uses for the original data were envisaged (compare, for example, the series of publications based on the SED, including Anderson 1987, Kolb *et al.* 1979, Orton *et al.* 1978, Upton *et al.* 1994, and Viereck and Ramisch 1991, 1997, which add considerably to our understanding of the data gathered in the original survey). But there are things about LAS3 that could have been better had the original researchers had the time, space and computing power that we have now. Given that all of the original data that the atlas is based upon plus a lot more data than it could ever contain still exist, we owe it both to the original researchers and to Scots studies more generally to make these materials available and analyse them more fully. This article has outlined why this should be done and gives some indications of how this might be achieved and of the kinds of results that can arise from revisiting LAS3. Not only will this provide us with a much more

extensive view of the phonetics and phonology of Scots; it will also form an important basis for future investigations of the language.

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