Phonetic variation, sound change, and identity in Scottish Gaelic

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Abstract

This thesis examines language variation and change in a context of minority language revitalisation. In particular, I concentrate on young fluent speakers of Scottish Gaelic, a minority language of Scotland that is currently undergoing revitalisation. Data from three groups of speakers are presented: older speakers in the Isle of Lewis, a Gaelic heartland area in north-west Scotland; adolescent Gaelic-speakers in Lewis learning the language in immersion schooling; and adolescent Gaelic-speakers in immersion schooling in Glasgow, an urban centre where Gaelic has not traditionally been spoken as a widespread community language.

The sociolinguistic analysis examines potential language changes, explores patterns of linguistic variation, and uncovers the role that Gaelic plays in identity formation for each of the participants. In order to gain an insight into the role of Gaelic in different speakers' lives, I report on ethnographic studies carried out in Lewis and in Glasgow. The phonetic analysis then explores patterns of variation in the production of laterals, vowels, and tone and intonation.

The results indicate large differences between the speech of older and adolescent speakers in Lewis, while differences between young speakers in Lewis and Glasgow suggest that Glasgow Gaelic is developing as a phonetically and socially distinct variety of the language. For example, older speakers in Lewis speak Gaelic as a partial tone language, unlike young people in Lewis and in Glasgow. Differences are also present between young people in Lewis and in Glasgow, such as in the acoustics of the vowel [ʉ], the production of the lateral system, and intonation patterns.

The developments detailed in this thesis are the result of a complex interaction between the internal sound structure of Gaelic, language contact with varieties of English, identity construction, and differing conceptions of the self. All of these factors are conditioned by the status of Gaelic as a minority endangered and revitalised language. In exploring these avenues, I advance an account of language variation and change and apply it to a context of minority language revitalisation.

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Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, that this thesis is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

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Chapter 1

Introduction

This thesis is a sociophonetic study of language revitalisation in Scottish Gaelic. I examine the social context and phonetic productions of Gaelic speakers in three communities: older speakers from the Isle of Lewis, adolescent speakers from the Isle of Lewis, and adolescent adolescent speakers from Glasgow. The Isle of Lewis is home to the densest concentration of Gaelic speakers in the world, and the older Lewis speakers were chosen to represent the speech of an older generation brought up in a Gaelic-speaking environment in Gaelic-speaking communities. The two groups of adolescent speakers are participating in Gaelic-medium secondary education, a scheme developed as part of Gaelic revitalisation measures (MacLeod 2003). Younger Lewis speakers were chosen to represent young people growing up in a Gaelic heartland area. The speech of these adolescents is compared to the older Lewis speakers in order to assess the possibility of language change across generations. Young people in Glasgow represent a non-traditional Gaelic-speaking area, where Gaelic immersion schooling has been introduced as a result of language revitalisation. Glasgow does however have a long history of Gaelic-speaking immigration (see for example Withers 1998), which will be fully explored in Chapter 3. Most young people in the Glasgow sample are not from Gaelic-speaking backgrounds and have access to the language entirely through immersion schooling.

Scottish Gaelic is a Celtic language, closely related to Irish and more distantly related to Welsh (Fife 2010, 5). The language spoken in Scotland is referred to in English as /galɪk/, and the language sub-family made up of Irish, Scottish Gaelic, and Manx is known as /geɪlɪk/. Around 1% of the population of Scotland have some knowledge of Gaelic according to the latest available figures (2001 census). Although endangered today, Gaelic was the language of the majority of the Scottish population in early medieval times, and was also the language of the medieval Scottish kings.

This thesis uses ethnographic and acoustic phonetic methodologies. The aim of the ethnographic portion is to uncover the role Gaelic plays in the everyday lives of the participants and provide data to inform explanations of linguistic developments in the Gaelic language. The main research questions addressed here are:

1. Is Gaelic changing across generations in heartland communities such as the Isle of Lewis?

2. Are new dialects forming as a result of language revitalisation measures in non-traditional Gaelic communities such as Glasgow?

3. What is the role of identity construction in language revitalisation developments?

In responding to these questions I aim to contribute to knowledge about what the study of minority endangered and revitalised languages can offer to models of language variation and change.

In Chapter 2 I examine previous literature relating to language revitalisation, sociophonetics, and sociological and sociolinguistic studies of language and identity. This review outlines the theoretical background to my study and allows a contextualisation of the research questions.

Chapter 3 provides information on the Gaelic language, and includes the social and historical context for the current linguistic situation.

Chapter 4 details the methods used in this study, firstly the participant observation conducted in each community and secondly the interview techniques used to provide phonetic material. This chapter also introduces the different phonological features analysed and explains why these particular features were chosen.

Chapter 5 describes the results of the ethnographic fieldwork conducted among older Lewis Gaelic speakers, younger speakers in Lewis, and younger speakers in Glasgow. Specifically, in this Chapter I aim to investigate the everyday experiences of the participants and their language use, and obtain a sense of what it means to be a Gaelic speaker.

Chapters 6–8 are phonetic analysis chapters. In each of these chapters I discuss previous research on the relevant feature, the specific methodology used, results of the analysis, and a short discussion of how the results relate to the main research questions of this thesis, above. Detail on the reasons behind the choice of each linguistic feature is in Section 4.6. Chapter 6 deals with the analysis of laterals in Gaelic. The specific research questions addressed in this Chapter are detailed below, and fully justified in Section 6.1.

1. Is there phonetic evidence for three distinct laterals in Scottish Gaelic?

2. Is there any evidence of change in this system? An if so, why might this be?

3. Are there differences between young speakers in Lewis and in Glasgow?

Chapter 7 considers variation in the vowel [ʉ]. The specific research questions addressed in this chapter are detailed below, and fully justified in Section 7.1.

1. Are there intergenerational differences between speakers in Lewis?

2. Is there evidence of a distinct variety of Glasgow Gaelic which is different from traditional Lewis Gaelic?

3. Does vocalic variation pattern with local identity affiliations?

4. What are the reasons for any differences between speaker groups in these data?

Chapter 8 concentrates on tone and intonation, and addresses the following research questions, which are justified in Section 8.1.

1. Do speakers use the intonation model described in the previous literature?

2. If speakers do not use the intonation model described in the literature, what do they use?

3. Are there differences between speakers in Lewis and speakers in Glasgow?

4. Are local identity affiliations reflected in tone and intonation productions?

All of the features analysed indicate large differences in the phonetic productions of adolescent speakers compared to older speakers in Lewis. Specifically, younger speakers are less likely to produce palatalised laterals than older speakers, younger speakers produce backer [ʉ] vowels, and display less evidence of coarticulatory influence on their vowel sounds, and younger speakers overall show no evidence of Gaelic's reported use of lexical tone. All the linguistic analyses also show that Glasgow Gaelic is linguistically distinct from Gaelic in heartland areas such as the Isle of Lewis: Glasgow Gaelic contains fewer palatalised laterals, backer [ʉ] vowels, and greater use of accentual rises in intonation than Lewis Gaelic. Identity is found to play a key role in several areas of language use: firstly changing conceptions of the self, and the social context of Gaelic are linked to using Gaelic at all in Chapter 5, and secondly the use of vocalic variation and intonational variation (Chapters 7 and 8) are reflective of locally relevant social identities among Glaswegian and Lewis young people.

Chapters 9 brings together results from the analysis chapters and shows how they answer the research questions above. I discuss the linguistic data with reference to the social and historical context for Gaelic, and the ethnographic fieldwork detailed in Chapter 5. It is argued that social change over the lifetime of the older speakers in this study has led to a shift from Gaelic being something that is given and 'the way things are' to a language that is used through an act of reflexive choice. The decision to use Gaelic or not as a peer group language is affected by the social context of decline and previous stigma associated with Gaelic. This shift in the position of Gaelic, and social change towards a more reflexive society means that young people do not use the language among their peers. I argue that these developments have contributed to the large discrepancies in the speech of older speakers and adolescent speakers. The linguistic differences emerge directly from the context of obsolescence and revitalisation, increased contact influence of English, and the internal sound structure of the language. The social differences between the Gaelic spoken by older speakers and the Gaelic spoken by younger speakers are so large that they lead me to problematise the notion of language change inferred from comparing generations. The lack of a consistent community trajectory of Gaelic

speakers suggests it is perhaps more appropriate to conceptualise the phonetic developments described here replacement of one linguistic variety with another. Chapter 10 then concludes the thesis and discusses directions for future research.

Chapter 2

Linguistic and social background

This thesis considers sociophonetic aspects of language revitalisation in Scottish Gaelic. I firstly examine whether young speakers learning Gaelic through revitalisation measures speak differently to older speakers in Gaelic heartland communities, Uig and South Lochs on the Isle of Lewis, and whether this can be considered language change. The speech of Lewis adolescents is compared to that of adolescents learning Gaelic in immersion schooling in the non-traditional setting of Glasgow, and I assess whether the speech of these young people can be considered a new variety of the language. Although Gaelic immersion schooling is a recent development in Glasgow, the city does have a long history of Gaelic-speaking immigration, explored in Chapter 3. These developments in the Gaelic language are discussed within a context of identity construction and whether this plays any role in the case of language variation and change described here.

In this Chapter I examine previous literature relevant to the context of this thesis. Firstly, I define what is meant by language revitalisation, the social context of the linguistic developments described here. As this thesis is partially concerned with phonetic and phonological change in social context, I then discuss different models of language change from both phonetic and sociolinguistic perspectives. Scottish Gaelic is in intense contact with English so no account of variation and change in Gaelic can be complete without reference to language contact. Section 2.3 discusses previous studies of language contact and how these are of relevance to the current study. One of the research questions asked here concerns the potential development of a new variety of Gaelic in Glasgow, and I therefore review previous studies of new dialect formation and koineisation within this section on language contact. Section 2.4 explores sociological and sociolinguistic discussions of identity and how these might relate to explaining language variation and change. In Section 2.5 I return to studies of language revitalisation and discuss how detailed linguistic analyses of such contexts fit into the previous discussions of language variation and change, and the relevance of identity construction. These lines of argument are brought together in Section 2.7, which also focusses the research questions for this thesis.

2.1 Introduction: defining language revitalisation

According to King (2001, 3), 'language revitalisation' must be considered in relation to language maintenance and language loss. Language maintenance is the continued use of a language by any particular group. Usually in majority-language contexts, the continued use of a language is taken for granted, but the use or non-use of a language becomes salient in a situation of language contact where the potential for language shift may occur. Language loss describes the situation when a particular group ceases to maintain its language. Language loss is complete either when there are no members of the group left alive, or when the remaining members of the group no longer speak the language that has been lost (Dorian 1981, 8).

Language revitalisation on the other hand is the creation of new functions, or recreation of previous functions, for a threatened language, and the addition of new fora for using that language with the aim of increasing language use and the number of language users (King 2001, 23). This definition is similar to the concept of 'reversing language shift' (RLS) (Fishman 1990, 1991, 2000). The primary focus and ultimate goal of RLS is the reinstatement of intergenerational transmission of a language (Fishman 1991, 92). While this can be considered one element, presumably a desirable one, of language revitalisation as defined here, reinstating intergenerational transmission is not necessarily the primary and essential focus of this process. Similarly, Spolsky (1989, 1995, 2003) makes a distinction between 'language revival' and 'language revitalisation'. For Spolsky 'revitalisation' only refers to the restoration of intergenerational transmission. The definition used here, as in King (2001), refers to a broader concept encompassing efforts to increase the public profile of the language and increase speaker numbers through other methods such as education.

Language revitalisation contexts can differ in whether fluent speakers of the language remain, or no fluent speakers of the language remain. Scottish Gaelic revitalisation is an example of the former category along with languages such as Basque, Breton, Catalan, Quechua, Irish, Welsh, Quebec French. Examples of languages that have been reclaimed from materials recorded in another era such as written texts are Cornish, Manx, Hebrew and Kaurna (Fishman 1991; Zuckermann 2008; Amery 2000). The exact status of Hebrew is debatable, and there is some contention over exactly how much Hebrew was spoken, or not spoken, before revitalisation (Fishman 1991, 289). In writing about Kaurna, Amery (2000, 17) uses the term 'language reclamation' as describing the context where a language with no fluent speakers is revived from recorded materials. Here, I make no distinction and refer to both such situations as 'language revitalisation'.

In contexts of language revitalisation where some fluent speakers remain such as that of Gaelic, the distinctions between 'native speakers' and 'learners' can become blurred and also ideologically charged (Maguire 1991; Davies 2003; MacCaluim 2007; McEwan-Fujita 2010; O' Rourke & Ramallo 2011). Often, speakers acquire the revitalised language through a number of resources which make categorisation as 'native' or 'non-native' impossible. For example, a child may attend immersion schooling in the revitalised language and hear

the language from extended family, but not parents. Another child may hear the revitalised language from one parent but attend schooling and speak to his or her friends in the majority language. A third person might have heard the revitalised language as a child but is not able to produce a sentence in that language. All of these diverse situations make separating speakers as 'native' and 'learners' very difficult, so I have avoided the application of such terms to children in language revitalisation schooling. The contexts in which Gaelic speakers find themselves and how they learned to speak Gaelic are described in detail in Chapter 5.

This section has discussed the definition of language revitalisation, and given some examples of different language revitalisation contexts. This thesis explores language variation and change in a language revitalisation situation, and examines the role identity construction plays in these processes. In order to provide background for these aspects to the research, I will now review different models of language change, followed by models of identity and its role in language. I then return to some detailed linguistic studies of language revitalisation, and explain how these studies are relevant to models of language change, and the context described in this thesis.

2.2 Sound change

How can language change in a context of language revitalisation be conceptualised? It is undisputed that all languages change, but the processes by which change originates and spreads are numerous and varied, as are the reasons why this happens. This section reviews and evaluates models of sound change and assesses their relevance to the situation of language revitalisation described here, and is of particular relevance to the first research questions addressed in this thesis: 'Is Gaelic changing across generations in heartland communities such as the Isle of Lewis?'

Seminal frameworks of sound change such as Weinreich, Labov & Herzog (1968) consider change in stages: the first is *actuation* - where and how does a sound change originate? After actuation, in order for any development to become a language change it must spread throughout the community, become used by speakers, and become part of the language's system (referred to as *transition, embedding*, and *evaluation* in Weinreich, Herzog & Labov's (1968) framework). The discussion that follows will also consider sound change as separable into phases of actuation and spread through a community.

2.2.1 Actuation of sound change

Ohala (1981) sets out a theory that the origin of sound change lies in the misperception of speech. The example given by Ohala, which is supported by phonetic data, is that when a back vowel /u/ is produced with a preceding coronal stop in words such as English 'do', it is likely to assimilate and be produced as a more fronted [y] vowel sound. The listener may deduce (incorrectly) that the vowel in question is always /y/ and reproduce it as such in all

phonetic contexts. In other words, variability in the speech signal as a result of coarticulation may result in the potential for sound change to occur. A similar argument is put forward in Ó Maolalaigh (2003a), who argues that a vowel preceding a voiceless fricative in Scottish Gaelic and Irish sometimes led to the vowel being misperceived as nasalised. Over time this led to sound change to the nasal vowel system in modern Scottish Gaelic and some dialects of Irish. As well as originating in misperception, Ohala (1989) also argues that sound change can originate in the inherent variability of speech produced by individuals. One source of the large amount of variation in speech is the different phonetic contexts in which differing sounds occur. Differences in production and perception result in what Ohala refers to as 'mini sound changes'. These are small adjustments in speech which have the potential to turn into sound changes. 'Mini sound changes' happen all the time though clearly not all of them become widespread across a community.

2.2.2 Variationist models of sound change

Why a certain 'mini sound change' becomes widespread in a certain place at a certain time is the subject of the first volume of Labov's major work on language change, Labov (1994). A major methodological innovation of Labov's work and that of his colleagues, was the use of synchronic linguistic data to infer language change. This was first argued in Labov (1963) and Weinreich, Labov & Herzog (1968) and developed in subsequent work. Previous to this development many linguists considered it impossible to observe language changing, as the process happened too fast (Bloomfield 1933, 347). Labov developed a method based on the apparent-time hypothesis. This model requires observation of several generations of speakers from the same community. Differences between younger and older speakers indicate that if the speech of the younger speakers remains constant, when they are older the language as a whole will show a changed system compared to previous generations. A key assumption of this model is that the speech of young people remains constant over adulthood. If younger speakers use a particular variant to a large extent, but then stop using it as they grow older, this is referred to as 'age grading' and change cannot be inferred (Sankoff 2006). The assumption that adult speakers' speech remains constant across the lifespan has been challenged, for example in Harrington et al.'s work on change in the Queen's speech over time (Harrington, Palethorpe & Watson 2000; Harrington 2006, 2007), and also Evan and Iverson's (2007) study of accent change among university students, and Sankoff & Blondeau's (2007) careful examination of change in different adult individuals. The most effective way to test whether an apparent-time hypothesis is accurate is to return to the community and rerecord the same or similar speakers to see whether change has taken place (a 'real-time' study). However, using data from a wide variety of examples, Labov (1994) shows that in general the apparent-time hypothesis is an invaluable tool in the study of language change. The construct is similarly supported in other works (Bailey, Wilke, Tillery et al. 1991; Bailey 2002), and supported overall in Sankoff & Blondeau (2007).

Using his own apparent- and real-time data as well as numerous other sources and examples, Labov (1994) argues that the answer to why a certain change happens at a certain time in a certain place often lies in structural internal constraints on the particular language variety on question (the 'constraints problem' expressed in Weinreich, Labov & Herzog (1968)). For example, Labov concentrates much of his analysis on examples of vowel chain shifts, where vowels moving in a system have an effect on the other vowels and effectively 'push' or 'pull' them around the vowel space. While terms such as 'push' and 'pull' imply that language change follows some sort of teleological progression, Labov is careful to avoid teleological explanations of sound change (Labov 1994, 549). Instead, he argues that the reasons for why a change happens in a particular direction rather than another are essentially functional. Functionalist accounts of language, such as those argued by Martinet (1955) (in a structuralist framework) and Halliday (1994) among others, state that the principal motivation behind speaking is to communicate information and to be understood (Labov 1994, 548). Functionalist accounts of language change argue that in a context of change, maximal comprehension is retained, i.e. in sound change there is maximal preservation of phonemic contrast. This does not imply the language is trying in some way to preserve contrasts for itself (teleological), but that when speakers talk to one another they need to be understood, and replicated over the language as a whole this has the noticeable effect of preserving the most essential contrasts. While Labov acknowledges that many vowel mergers, for example, result in a loss of phonemic contrast, it is usually the contrasts with least functional load, or the contrasts also realised by additional phonetic features, which are lost. Alternatively, the contrast is instead made in a different aspect of the phonological or linguistic system so that maximal comprehension is maintained (Labov 1994, 604).

The functionalist account refers to why a particular change happens at a particular time, and what constrains the change, but does not describe the mechanism by which innovations proceed through a language or language variety (or across language varieties, see Section 2.3). Labov (1994) explores two seemingly competing hypotheses, firstly the suggestion by the nineteenth century neogrammarian linguists that sound change affects individual phonemes without exception across a whole language (phonetically gradual but lexically abrupt). While the change from, for example, one vowel to another is gradual, all words in a language change simultaneously. The opposing argument is presented in Wang & Cheng (1977), who argue that changes diffuse through a language one word at a time (lexically gradual). While these two arguments appear incompatible, Labov (1994, 542) argues that both processes are apparent in different kinds of linguistic change. Changes that originate below the level of conscious awareness ('change from below') typically diffuse in the phonetically gradual fashion described by the neogrammarians, and changes that come with a high level of social awareness or from borrowings from other systems ('change from above') typically diffuse word by word in the manner described by Wang & Cheng (1977). The underlying causes of changes 'from above' are further explored in Labov (2010), and it is concluded that these types of changes typically originate from social motivations (Labov 2010, 185).

Several accounts have challenged this dichotomy. For example Phillips (1984) shows that low level sound changes (referred to as 'changes from below' in Labov's terminology) can exhibit gradual lexical diffusion which is typical of 'change from above' in Labov's model. Also, Bybee (2002) argues for example that the t/d deletion change in American English is phonetically gradual with different contexts exhibiting differing degrees of 'deletion', and also lexically gradual with high frequency words most affected. Bybee (2002) argues that the lexicon is a crucially important unit in all types of change, not just lexical diffusion type changes as argued in Labov (1994). Some changes, such as the t/d deletion example, proceed from high to low frequency words, whereas other types of change proceed from low to high frequency words. Changes typical of the high to low trajectory are those associated with some kind of phonetic 'reduction' such as t/d deletion. The justification of this is that high frequency words are necessarily used a lot, and listeners are able to predict their form without 'full' phonetic realisation. Less frequent words are less predictable and must therefore be produced in more citation-like form. Bybee (2002) suggests that changes which proceed from low to high frequency words typically originate from analogy: using data from Phillips (1984), Bybee argues that in the case of low frequency words in Old English, front rounded vowels unrounded first due to analogy with the rest of the front vowel system, which contained unrounded vowels. These data suggest the lexicon plays a greater role than is suggested in Labov (1994).

So far, this account of sound change has explored how sound change originates and *how* it spreads, but has not dealt with *why* a particular change would spread through a community, why it would keep doing so across subsequent generations, and what kind of people initiate the spread of change. This is fully explored in Labov (2001) (and many other studies, see for example Tagliamonte 2012). Why sound change spreads is referred to as *transmission* - understanding why and how subsequent generations of speakers do not sound like their parents (Labov 2001, 421), *incrementation* - understanding why and how change spreads to different social groups at different rates (Labov 2001, 446), and *continuation* - understanding why and how language change continues in a particular direction across generations of speakers (Labov 2001, 466). Labov's main interest in this text is in sound change 'from below', which, in his eyes, is the most difficult form of sound change to explain Labov (2001, 20). The main argument Labov presents here is that the motivations for a sound change spreading can be found in social structure. The people who use innovative features and move along sound change tend to be young women from upper working class or lower middle class backgrounds. These people, according to Labov, tend to be those who have adopted symbols of non-conformity including innovative or low prestige ways of speaking, and have access to both working class ways of speaking, and middle class networks (Labov 2001, 501). Due to their mobility between class divisions combined with prominent positions in networks, these speakers have the access and social status to diffuse these variants to the wider community. Labov exemplifies his argument using Eckert's (1989; 2000) study of Jocks and Burnouts at Belten High. The Burnout girls, mostly upper working class or lower middle class students,

produced produced the more innovative speech variants compared to the middle class Jock students. Labov argues that the Burnouts, who adopt symbols of non-conformity such as smoking and rebellious behaviour at school, are examples of those who adopt innovative linguistic features early on within a community (Labov 2001, 432).

A shortcoming of this argument is explored in Milroy & Milroy (1985), who consider in detail the precise nature of linguistic variation and language change in social networks. Their analysis of network structure in Belfast indicates that those people who are most socially central to their particular networks and have most local, dense networks are precisely the people least likely to produce innovative speech, and most likely to retain vernacular features. This poses a problem for Labov's analysis which relies on socially prominent, central network members as the diffusers of language change. Instead, the Milroys suggest that those people who are most mobile and move extensively between multiple networks are the most likely innovators of change (Milroy & Milroy 1985; Milroy 1992). Through careful examination of patterns of /ɛ/ raising and /a/ backing, it is argued that the people at the periphery of social networks, with weak network ties, then pass on innovative variants to 'early adopters' of sound change. Early adopters are central members of networks, who can then diffuse sound changes more widely due to the social prestige associated with being a socially central network member.

2.3 Language contact

Labov's early work does not take into account the linguistic effects of contact with other communities (Labov 2001, 518). At the same time he states that it is essential to examine the effects of language contact in order to build up a fuller understanding of language change (Labov 2001, 20). In later work, (Labov 2007), he explains the difference between *transmission* and *diffusion*. 'Transmission' refers to the 'normal' kind of language change where a language is passed on through subsequent generations, and change occurs internally within the language not as a result of outside influence. Change resulting from outside influence is referred to as 'diffusion' in Labov's (2007) terminology. No community is an island speaking in isolation; indeed Thomason (2001, 8) states that there are no documented examples of languages having developed in total isolation from other languages. As Scottish Gaelic is constantly in contact with English to the extent that virtually every speaker of Gaelic is now bilingual, the effects of language contact on variation and change in Gaelic are especially relevant. The effects of language contact have been of relevance throughout the language's history (MacAulay 1982b,a). In the current context, borrowing from English and extensive code-switching are a normal part of everyday speech in all sections of the Gaelic-speaking community. See Smith-Christmas (2012) for a detailed discussion of the discourse functions of code-switching among different generations of Gaelic-speakers. For example, Gillies (1994, 145) and Ó Maolalaigh (2008b, 185) discuss the impact of other Scottish languages in the medieval period (varieties of Brythonic languages, Pictish, and

Norse) on the emerging Scottish Gaelic language. This section reviews previous literature of relevance in the area of language and dialect contact.

Milroy (1999, 24) takes a strong stance on the position of language contact within explanations of language change: 'no empirical study so far carried out has actually demonstrated that sound change can arise spontaneously within a variety'. What is implied here is that the spread of features in a process of language change is ultimately a function of contact between speakers, and contact must therefore be awarded much attention in the study of change. This stance appears to argue against Labov's (2007) viewpoint that some communities can be easily delimited, and have clear separation from others, so that language change can occur internally. There has traditionally been a split between studies of language contact and mainstream sociolinguistics (Thomason 2003, 687). Sociolinguistic studies of change as envisioned in Labov's work typically examine change within one dialect, or change between similar dialects of the same language. Language contact studies on the other hand tend to examine cases of less related varieties or unrelated languages. Different methodologies and different assumptions have developed in both subdisciplines. However, as noted by Thomason (2003, 688), the supposed differences between language contact and dialect contact situations are not as great as perhaps assumed; moreover the distinction between 'language' and 'dialect' is notoriously fuzzy and impossible to resolve (Trudgill 1986).

For these reasons I have reviewed models of language and dialect contact side by side and no distinction is made. 'Contact' is defined here in a way that is similar to Thomason (2001, 1) as the use of more than one language, or language variety, at the same time. There must be some level of mutual understanding between speakers, though this may be very minimal. Contact does not necessarily have to take place in face-to-face interaction, for example, Thomason cites the religious uses of Classical Arabic influencing various languages. Similarly Stuart-Smith & Timmins (2010) describe the influence of London English on young Glaswegian English speakers via television (as well as face-to-face interaction). A contact-induced change is then a change which 'would have been less likely to occur outside a particular contact situation' (Thomason 2001, 2). Contact-induced changes can be a direct influence of one language becoming more similar to another, or indirect where languages do not necessarily become more similar, but change would not have taken place had contact not occurred (Thomason 2001, 62).

2.3.1 Actuation of contact-induced change

Many authors cite accommodation as the mechanism by which speakers of different varieties who come into contact start sounding more like one another, for example, Trudgill (2008, 243) and Kerswill (2002). Trudgill cites Keller (1994, 100) in saying that humans all have a powerful instinct to 'talk like others talk', and uses communication accommodation theory (CAT) to back up his claims (Giles 1973; Giles, Coupland & Coupland 1991). However, as pointed out by Coupland (2008, 268-269) one of the fundamental assumptions of CAT is that

speakers accommodate in order to linguistically 'move closer'. Within this, identity is central as speakers would only want to 'move closer' in order to present a better self to their interlocutor. Many situations also exist where speakers do not wish to 'move closer' (consciously or unconsciously), for example, in the studies by Stanford (2007, 2008), discussed in more detail below. Another example is presented in Ó Maolalaigh (1999). Using data from the Survey of the Gaelic Dialects of Scotland (SGDS) (Ó Dochartaigh 1997), Ó Maolalaigh shows that the unusual realisation of words ending in *-idh* as [ɪç] in certain south-west Scottish Gaelic dialects could be the result of (consciously or unconsciously) avoiding salient features of nearby dialects.

The precise role identity plays in accommodation is controversial. Trudgill (2008) claims that accommodation is an *automatic* linguistic process. Work by Babel (2010) on the other hand suggests otherwise. Babel's (2010) experimental study compares vowel productions in New Zealand English speakers. Firstly, the participants took part in an assessment of how pro- or anti-Australian they were. Then one group listened to the voice of an Australian flattering them and one group listened to the voice of an Australian insulting them. The rationale behind this was to test whether social biases developed over the course of interaction could have an influence on production. Vowel productions were recorded before and after hearing the Australian voice. Participants did accommodate to the Australian voice they heard, but the extent of this accommodation was not significantly influenced by the flattery/insults they heard. However, the already established pro- or anti-Australian bias did. Those with more pro-Australian tendencies produced mostly more Australian-like vowels.

Babel (2010, 453) notes that accommodation was automatic only in the sense that participants were unaware they were doing it, but the 'automatic' hypothesis does not fully explain the data:

> implicit social biases about how a participant feels about a speaker strongly influence the extent of accommodation. These biases[...], crucially, exist prior to the interaction that elicits convergent speech behaviour.

Trudgill's (2008) claim is that social factors come into play only once accommodation has taken place, and accommodation then strengthens the link between two speakers. Babel's experiment demonstrates, however, that social biases held by participants *before* the experiment were significant predictors of production. This leads to the conclusion that accommodation is simultaneously both a social and an automatic process. The role of identity factors in language change is explored more fully in Section 2.4.

2.3.2 Types of change through language contact

Thomason (2001, 12) describes a typology of the linguistic outcomes of language contact: contact can result in contact-induced change, mixed languages (including pidgins and creoles), or language death. This typology provides the structure for the review below. Similar

descriptions of the linguistic outcomes of language contact are also provided in Winford (2003) and Siemund (2008).

Contact-induced change

Thomason (2001) separates contexts of contact-induced change into two categories: situations where 'imperfect learning' takes place, and situations where 'imperfect learning' does not take place. What is meant by 'imperfect learning' is a context where some speakers are learning a language as a second language (L2). In contexts where no second language learning occurs, the most common contact-induced change is the borrowing of non-basic lexical items from one language to another. In a context where one group of speakers is learning a second language, the most common features transferred via contact-induced change are features in phonology and syntax (Thomason 2001, 68-75). However, it is underlined that these are only tendencies and if contact between languages is prolonged and intense any linguistic features can potentially be transferred.

It is debatable whether the distinction between situations where L2 learning plays a role and those where it does not can ever be fully made. Many situations of language contact are socially complex and extend over centuries, meaning that many speakers will display different levels of bilingualism, and different bilingual capabilities in different domains. For example, Dorian (1981, 114) refers to a 'proficiency continuum' among East Sutherland Gaelic speakers. Some speakers in the community could be considered L1 speakers of Gaelic and L2 speakers of English, but for other speakers this tendency was reversed, and for some no clear distinction could be made. Also, as explored in Section 2.5, it is often difficult to draw a clear distinction between L1 and L2 speakers in the contemporary Gaelic context. It is therefore not clear where such contexts fit within Thomason's typology. The main argument presented, however, remains: if contact is prolonged and intense, any linguistic features can be transferred from one language to another. The example Thomason gives here is that of Greek in Asia Minor, which adopted many of the features of Turkish. In Asia Minor Greek there is heavy borrowing of both content and function words, Turkish phonemes replace mainland Greek ones, some dialects have adopted a vowel harmony rule not present in Greek dialects in Greece, aggluntinating noun morphology has been borrowed, and grammatical gender has largely been lost (Thomason 2001, 74).

A related body of work is reported in the sociolinguistic literature within the framework of dialect levelling and diffusion, describing processes by which dialects (largely of British English) sound more similar over time. Two processes are implied here: firstly how new features spread across the country, this is referred to as 'geographical diffusion' (Britain 2002; Kerswill 2003). In changes that spread via diffusion, it is assumed that new features spread from a populous and economically and culturally dominant centre to other areas. Cities generally adopt innovative features before surrounding rural areas (Kerswill 2003). 'Dialect levelling' on the other hand refers to a loss of locally distinctive features, for example the

reduction in glottalisation of voiceless stops in Tyneside English (Milroy, Milroy, Hartley et al. 1994). Studies conducted within the framework of dialect diffusion typically examine features which appear to be more and more common in British English such as glottal /t/, labiodental productions of /r/, and vocalisation of /l/. The assumption is that somehow features are spreading through Britain as a result of contact (Kerswill 2003). The process by which this happens is not straightforward and unlikely to be solely the result of face-to-face interaction between speakers. For example, Stuart-Smith, Timmins & Tweedie (2007) show that in Glasgow young people using the 'innovative' variants with the greatest frequency are those who are least mobile and least likely to have contact with speakers outside their community. Instead of a simple language contact explanation, Stuart-Smith, Timmins & Tweedie (2007) and Stuart-Smith & Timmins (2010) suggest a complex interaction of direct contact, indirect contact, and social identity factors. The interaction of different kinds of language contact and identity is again explored in all of the following sections and examined in detail in Section 2.4.

Mixed languages/dialects

Language contact between mutually unintelligible language varieties may result in the formation of compromise varieties, made up of two or more languages. In some social circumstances of limited contact a pidgin language emerges, for example, in a trade relationship between communities. Where the social context of contact requires more functions and uses of the language, a creole is formed (Thomason 2001, 197). A similar process is described in the literature on dialect contact as new dialect formation or koineisation. Research carried out in this area is very relevant to the second research question asked in this thesis: 'Are new dialects forming as a result of language revitalisation measures in non-traditional Gaelic communities such as Glasgow?'.

Originally used to describe the variety of Greek spoken across the Hellenic world (Palmer 1980), a koine is defined by Siegel (1985) as:

> the stabilised result of mixing linguistic subsystems such as regional or literary dialects. It usually serves as a lingua franca among speakers of the different contributing varieties and is characterised by a mixture of features of these varieties and most often by reduction or simplification in comparison.

Koineisation is then the dynamic process by which a koine is formed. Koineisation is distinguished from pidginisation, as being more gradual and requiring extended contact (Siegel 1985, 371). Koines have been reported all over the world, for example, Israeli Hebrew (Blanc 1968), Dhuwaya, an Australian language (Amery 1993), Bhojpuri Hindi (Mesthrie 1993), German language koines (Mühlhäusler 1993), and Milton Keynes English (Williams & Kerswill 1999; Kerswill & Williams 2000, 2005). The end point of koineisation is a koine, which is then used as the native language of at least some speakers ('nativised koine'), whilst often serving as a lingua franca for others (Siegel 1985).

Siegel (1985) proposes three types of koineisation, which are characterised by how many stages they undergo before nativisation. These are tabulated in Kerswill & Williams (2000), and reproduced here in Table 2.1. The 'prekoine' stage refers to a period when various forms are used, and some mixing of varieties, and levelling of features has begun to occur. 'Stabilisation' refers to a stage where a compromise system has developed, but it is not used for in-group communication. A koine becomes 'expanded' when it is used as a literary or standard language, and then 'nativised' when passed on to children. Koines do not have to undergo stabilisation and expansion before nativisation, as indicated in Table 2.1, and can simply move from the prekoine stage to nativisation in Type 1 situations, or not become expanded in Type 2 situations.

Stage	**Type 1**	**Type 2**	**Type 3**
1	prekoine	prekoine	prekoine
2		stabilised koine	stabilised koine
3			expanded koine
4	nativised koine	nativised koine	nativised koine

Table 2.1: Types of koine according to Siegel (1985).

A related concept is that of new dialect formation. A distinction is made by Trudgill (2004, 89) between koineisation and new dialect formation. For Trudgill, new dialect formation is an end point of koineisation where the koine becomes a stable variety with its own norms. Siegel's definition of a koine however states that the koine must be a stable variety. These two terms will therefore not be distinguished in this text; indeed Kerswill & Williams (2005, 1023) state that 'koineisation' and 'new dialect formation' refer to the same process. The concept of new dialect formation or koineisation is relevant to the Gaelic situation as one of the research questions investigated here examines whether Glasgow Gaelic can be seen as a new dialect developing as a result of revitalisation measures in Glasgow. In the interests of maintaining consistency, I have opted to use the term 'new dialect formation', but this does not refer to any superiority of this term over 'koineisation'.

Perhaps the most extensively discussed example of new dialect formation in the literature is the case of New Zealand English (Gordon, Campbell, Hay et al. 2004; Holmes & Kerswill 2008; Trudgill 2004, 2008). These studies discuss the formation of New Zealand English and explain what processes were at work in determining how New Zealanders sound as they do today. The linguistic makeup of the new dialect seems to be predictable to some extent from the contributing dialects, and the proportion of speakers speaking them. Specifically, the more speakers of a contributing dialect, the greater role this dialect will play in the new variety (Kerswill & Williams 2000). Alternatively, a very common variant in the speech of a minority group may favour inclusion in the new dialect (Holmes & Kerswill 2008). Lane (2000) examines new dialect formation in a Danish New Town, Thyborøn. According to this study, the linguistic features included in a new dialect also depend on such factors as

'salience' and 'markedness', the least salient and unmarked features favouring inclusion. A similar position is advocated in Kerswill & Williams (2000) and also in Trudgill (1986, 126).

Whatever the linguistic form a new dialect takes, for it to become a widely spoken community variety speakers must interact with one another. This process of uptake and focussing of the new variety usually takes place over the course of two generations, and the birth of children in the community is a vital stage (Kerswill & Williams 2000). Trudgill (2004, 43) is more specific and says new dialect formation will take approximately fifty years. How much, with what engagement, and how frequently speakers talk to one another is community specific. The extent of network ties and engagement is explored in Lane (2000), and it is observed that in contexts of diffuse networks and little inter-speaker communication, new dialects can take much longer to form than predicted by Trudgill (2004).

Another interesting example of new dialect formation can be found in the 'multiethnolects' of Europe (Kotsinas 1992; Quist 2008; Wiese 2009; Cheshire, Kerswill, Fox et al. 2011). These varieties have emerged as a result of contact between multiple ethnic groups of adolescents in urban locations. The linguistic background of these different ethnic groups of speakers is very diverse. The diverse heritage languages are influencing the new modern European language variety spoken by the young people involved. 'Multiethnolects' are not restricted to young people of immigrant background, but also spread to become a general 'youth' variety, not necessarily associated with minority ethnic status.

These previous studies of new dialect formation and koineisation at first appear immediately relevant to the question of a new Gaelic dialect discussed in this thesis. However, it must be noted that the studies described so far of new dialects in New Zealand, Milton Keynes, and Denmark, and the European multiethnolects, all describe social contexts with many donor language varieties forming the new dialect or koine. As will be argued in Chapter 9, these studies have some relevance, but the Glasgow Gaelic context describes a situation where all the young people involved are speakers of Glasgow English, and this influences Glasgow Gaelic. This differs from the cases described above in two ways: firstly in Glasgow the students all speak one variety of English, and are exposed to multiple dialects of Gaelic from their teachers and occasional parents. This differs from, for example, Milton Keynes, where speakers spoke multiple varieties of English and formed a new dialect of English. Secondly, previous studies also focus on the role of children in new dialect formation/koine nativisation, which is not necessarily relevant to the Glasgow Gaelic context as will be explored in Chapters 5 and 9.

Language death

'Language death' describes a situation where speakers of a particular language shift to another language in which their community has become bilingual (McMahon 1994, 285). The language is considered 'dead' when no speakers remain or when the remaining speakers no longer speak the language (King 2001, 4). Although this definition may appear clear, this is

not always the case. The most widely cited example is Latin, which is often considered a 'dead' language, but also developed into the modern Romance languages, suggesting change rather than abrupt language death (Thomason 2001, 223). In the case of 'dialect death' the boundaries are even less clear cut as the distinction between 'death' of a dialect, or gradual merger with a mutually intelligible neighbouring variety is perhaps very difficult to define. In some cases, gradual merger with neighbouring mutually intelligible dialects does not occur, instead speakers become 'bidialectal' in the obsolescing stages of a particular dialect, as explored in the traditional dialect of the Shetland Isles in Smith & Durham (2011, 2012). While the precise definition of 'language death' is a difficult one, the notion is clearly of relevance to the endangered status of Gaelic and I will here review linguistic studies concerning this phenomenon. The process of change observed in a 'dying' language is referred to in the literature as 'obsolescence' or 'attrition'. The changes observed in obsolescing languages are usually due to contact with another language variety.

Linguistic studies of language obsolescence overwhelmingly report rapid and widespread language change. As underlined by Jones (1998, 1) and Dorian (1981, 151), the changes which take place in a dying language are no different from the changes common in other language situations: it is the social context, rate and amount of change that make the situation of obsolescence different. As discussed above, such changes may be directly the result of contact, where the obsolescing variety becomes more like the encroaching variety, or indirect change where change occurs that would not otherwise have taken place had contact not occurred (Thomason 2001, 62). Both direct and indirect transfer are widely reported in language obsolescence studies (Dorian 1978, 1981; Schmidt 1985; Campbell & Muntzel 1989; Silva-Corvalán 1994; Dressler 1991; Mougeon & Beniak 1991; Jones 1998; Broderick 1999).

Several explanations are put forward as to which features change in language obsolescence situations. Firstly the structure of the languages in contact: for example, some obsolescing languages lose phonemic contrasts, but preserve those found in the dominant language. This is exemplified by Campbell & Muntzel (1989, 186) who claims that speakers of Pipil (El Salvador) have lost contrastive vowel length, but this change is not unexpected given that dominant Spanish does not have contrastive vowel length. Similar cases are reported in Dressler (1991, 100) and Andersen (1982), and represent examples of what is referred to as 'indirect transfer' in Thomason (2001, 62). The change in Pilpil could be cited as an example of a general trend towards simplification of the obsolescing language, or reduction in 'marked' features. However, *which* features are lost or reduced in Pilpil is crucially informed by the structure of Spanish. This kind of change in obsolescing languages is referred to as 'negative borrowing' in Dorian (2006). Jones (2005) makes a further nuance and describes 'covert transfer' as a context where the *rate* of use of an obsolescing language feature changes as a result of contact. For example, Jones (2005) cites the case in Mougeon & Beniak (1991, 160) where the preposition *chez* 'at the house of' is used at an increasingly lower frequency than *à la maison de*, literally 'at the house of' due to contact with English and the obsolescing nature

of this variety.

The second explanation for change in language obsolescence contexts is functional. For example, if a language has three ways of expressing a concept, according to Jones (1998, 250), at least one will be redundant and susceptible to loss in an attrition situation. A similar argument is made by Andersen (1982) who argues that those distinctions with the least functional load are most susceptible to loss. This line of argument is followed in Nance & Stuart-Smith (2013), who argue that the reduction in pre-aspiration in Gaelic stop consonants among younger speakers may partially be due to the low functional load of the pre-aspirated vs. not pre-aspirated contrast in Gaelic stops. In a situation of severe language attrition, forms are lost which do result in a loss of meaning, for example, the merger of the future and conditional tenses in some East Sutherland Gaelic speakers (Dorian 1981, 140). This may also have a functional explanation: in situations of language decline the threatened language tends to be used in restricted contexts (McMahon 1994, 285). It may be that in the case described by Dorian (1981, 140) speakers no longer needed to distinguish between future and conditional time for the functions in which Gaelic was used, so these tenses eventually merged (although Dorian does not explicitly argue this). A third potential explanation is that typologically unusual features tend to be lost (Thomason 2001; Jones 1998; Campbell & Muntzel 1989).

No contact-induced change

A final possibility in a context of language contact is that no contact-induced change occurs. This appears to be the exception rather than the norm, but does happen. For example, Stanford (2007, 2008) is a study of dialect contact in the Sui minority, China. The Sui ethnic group practise endogamy, so men marry women from neighbouring village clans who speak a different dialect to their husbands. In a context of such intense language contact we might expect the wives to start speaking with dialect features belonging to their husband's community, or vice versa. This, however, is not the case and Stanford demonstrates that this holds true even on the fine-grained level of phonetic realisation of tone. Stanford explains this through the fact that wives wish to maintain a different identity, and this social motivation is strong enough to overcome any automatic tendency towards accommodation.

This apparently unusual case highlights the need to explore all possible explanations in a context of language contact. Poplack, Walker & Malcolmson (2006) and Poplack, Zentz & Dion (2012a,b) argue for caution in assuming change must take place in language contact contexts, and instead suggests for a careful examination of all the possible evidence before suggesting contact-induced change has occurred. Although contact-induced change may be the likely reason behind any change, the change may have occurred through internal mechanisms (Labov 1994), or may be a feature of discourse repertoire among bilingual speakers with separate grammars (Poplack, Zentz & Dion 2012a), and this possibility must not be dismissed without thorough consideration.

2.4 Identity and language change

The study cited above, Stanford (2007, 2008), highlights the role of identity as an explanatory factor in sound change or the non-occurrence of sound change. Similarly, Babel (2010) indicates that the mechanism by which sound change occurs is not purely linguistic and automatic but can involve social identity factors. This section reviews firstly the sociological literature on the nature of identity, and secondly its role and relevance in studies of language variation and change with particular emphasis on second- and third-wave variationist studies. The literature reviewed here is of special relevance to the third research question asked in this thesis 'What is the role of identity construction in language revitalisation developments?'

2.4.1 Defining identity

According to authors such as Giddens (1991), late modern society is characterised by increased fluidity and dynamism. The institutions of the social world are no longer constant, and dictated by history and tradition, but are continually changing. We now live in a 'runaway world' (Giddens 2002). Similarly, social identity is no longer relatively fixed and stable, but is instead fluid and dynamic. This notion of identity is supported by anthropological studies such as those by Barth (1969) and Cohen (1986). To what extent identity is something that is reflexively constructed by individuals, and to what extent individuals are constrained by social structure, is a matter of intense debate. I here review the two opposing strands to the argument about the nature of identity in late modern society, before examining some more recent accounts which attempt to tie together the two approaches.

The reflexively constructed self is described by Giddens (1991); Beck (1992, 1994); Beck & Beck-Gernsheim (2002). According to these authors the current world is experiencing an unprecedented pace and scope of social change (Giddens 1991, 16). For example, Giddens and Beck claim that in the late modern world we are increasingly influenced by global risks such as the threat of nuclear warfare and climate change. As well as these global risks increasingly dictating our lives, labour markets, fashion and personal contacts are increasingly globalised: we lead our lives in a dialectic of the global and the local. In this context, identities are no longer solely local, but global tendencies allow us to pick and choose lifestyles from a large array of options: 'in our present day world the self [...] has to be reflexively made' (Giddens 1991, 3).

Reflexivity involves choosing how we want to live and present ourselves to the world. Those living in economic hardship may seem to have less choice about their lifestyle than others, posing a challenge to this theory. Giddens maintains, however, that reflexivity can apply to those living in reduced circumstances as well: 'lifestyle choices include the choices made under conditions of severe material constraint' (Giddens 1991, 6). Reflexivity refers not only to personal choices, but also to societal level tendencies: modern society itself is also inherently reflexive (Giddens 1991, 20):

> Modernity's reflexivity refers to the susceptibility of most aspects of social activity, and material relations with nature, to chronic revision in the light of new information or knowledge.

What is implied here is that in the modern world it is increasingly difficult to accept anything as 'given'. Increased mobility and contact with different cultures, coupled with the decline of traditional religious and other institutions has led to a continual process of making choices. Faced with a continual stream of new information we have learnt to accept that the new 'way of doing things' is continually negotiating change.

In short, Giddens and Beck highlight agency as crucial in identity construction and negotiation. The idea that the individual has complete freedom in constructing themselves seems a little overoptimistic, and provides an excessively weak account of the social structures still constraining agentive choice in everyday life today (Adams 2006). Another objection to reflexivity as the dominant pattern of self-formation is that this view, according to Adams (2003), presents modern western society as the pinnacle of civilisation. Traditional cultures are implied as naive in accepting the status quo and not reflexively fashioning themselves. This hints at ethnocentrism and an offensive portrayal of certain cultures (Adams 2003). Also as explored in the previously mentioned work of Barth (1969), identity is something continually constructed as renegotiated by all cultures in many different circumstances. An alternative view of identity to that of Giddens et al. can be found in the notion of *habitus* in the work of Pierre Bourdieu.

Bourdieu acknowledges the possibility of individually motivated action, but foregrounds history and social structure in determining individual identity. The concept Bourdieu uses to put forward his model of identity in the social world is habitus, a system of dispositions which are ingrained in individuals through socialisation in their early years: 'habitus is laid down in each agent by his earliest upbringing' (Bourdieu 1977, 81). This results in an unconscious and long-lasting tendency towards particular actions and patterns of cultural consumption. Habitus is historically determined and transmits existing social structures such as class (Bourdieu 1977, 82):

> the habitus, the product of history, produces individual and collective practices, and hence history, in accordance with the schemes engendered by history. The system of dispositions – a past which survives in the present and tends to perpetuate itself into the future by making itself present in practices structured according to its principles[. . .] – is the principle of continuity and regularity which objectivism discerns in the social world without being able to give them a rational basis.

Although individuals believe they are acting in rational and meaningful ways, they are in fact reacting in predictable ways determined by their habitus. However, the above citation does emphasise that the habitus produces *tendencies*, rather than entirely predictable actions and tastes. Within this model the individual has freedom to renegotiate and act spontaneously.

While leaving room for individual spontaneity, the habitus also has generative capacity, which can determine how individuals react in circumstances they have never encountered before: 'The habitus is the necessity internalised and converted into a disposition that generates meaningful practices and meaning-giving perceptions' (Bourdieu 2010, 166). Social actions or practices are generated in relation to the field currently occupied by the individual, summarised succinctly as (Bourdieu 2010, 95):

[(habitus)(capital)] + field = practice

A field is a particular social space in which individuals compete for certain forms of power and/or capital. For example, in the artistic field, artists compete for cultural superiority and authority. Individuals occupy multiple and overlapping fields in their everyday life (Bourdieu & Waquant 1992, 16-17). It is the relationship between the habitus and the field occupied which determines social practice. Capital, according to Bourdieu (1986) is the force which drives the social world. It is a potential capacity to produce profit and reproduce more capital. In Bourdieu's model there are three kinds of capital: economic, cultural, and social. Economic capital is the easiest form to conceptualise: it is money and the rights to property. Cultural capital is a long lasting disposition towards certain kinds of cultural consumption and cultural achievement. In material form, cultural capital can be owned in the form of paintings, books, or works of art. Cultural capital can also be attained in the form of educational qualifications. Social capital is concerned with connections and relations to other people with social capital. Bourdieu gives the example of a hereditary title as a material form of social capital, but other kinds of connections and relationships are difficult to acquire. The different forms of capital are linked: for example an individual must have sufficient economic capital to be able to take the time necessary to acquire social and cultural capital.

Within Bourdieu's framework, language is one social action which is also partially shaped by the habitus and its relation to the field. Habitus defines a certain propensity towards saying things in a certain way. Although each human has the capacity to speak, the way in which we speak and how we know what to say in certain social situations is informed by the habitus (Bourdieu 1991, 37). In this treatise on language and power, Bourdieu argues that although the habitus allows generation of tendencies to speak in certain ways, what ways are socially acceptable is ultimately defined by the 'linguistic marketplace', a system of symbolic power relations and censorships which is imposed on every individual (Bourdieu 1991, 52). While the individual ultimately has freedom to speak how they choose, social constraints to some extent impose limits on this choice and affect its outcomes.

Although Bourdieu's work claims to end the age-old debate between structure and agency in sociology, some authors have claimed that habitus is an overly deterministic model of the self, for example Jenkins (1992, 77): 'it is difficult to know where to place conscious deliberation and awareness in Bourdieu's scheme of things' and McNay (1999, 102): 'habitus suggests a layer of embodied experience that is not immediately amenable to self-fashioning'. Bourdieu's writing does at some times suggest that there is room for reflexive action from

the habitus 'the habitus, like every "art of inventing", is what makes it possible to produce an infinite number of practices that are relatively unpredictable' (Bourdieu 1990, 55). However, this unpredictability is limited and cannot usually be deliberately manipulated (Bourdieu 1977, 94):

> The principles em-bodied in this way are placed beyond the grasp of consciousness, and hence cannot be touched by voluntary, deliberate transformation, cannot even be made explicit.

Bourdieu argues for reflexivity, but does not refer to reflexivity in the same way that Giddens does. For Bourdieu, reflexivity refers to the way sociology should be carried out. Sociologists should examine the biases their own background, and position in the academic field, bring to research. Reflexivity is: 'the systematic exploration of the unthought categories of thought which delimit the thinkable and predetermine the thought, as well as guide the practical carrying out of social enquiry' (Bourdieu & Waquant 1992, 40).

Reflexivity as defined by Giddens fails to account for some notion of constraint on individual voluntarism, and Bourdieu's habitus is sometimes considered overly deterministic in its account of self. Several authors have searched for a compromise in the debate surrounding the nature of identity, for example, Adkins (2003); Sweetman (2003); Adams (2006). It is argued in Adkins (2003) that the crossover from traditional to reflexive society has been uneven: some are fully reflexive while others are not. In this uneven distribution of reflexivity, it is women who are more likely to be the 'reflexivity losers'. This sidesteps Giddens' unlikely claim that everyone has equal resources to lead a reflexive lifestyle (Giddens 1991, 6). Sweetman (2003)'s model is perhaps the most convincing hybridisation of habitus and reflexivity. Sweetman argues that in contemporary society reflexivity is becoming part of the ingrained habitus (Sweetman 2003, 528):

> for increasing numbers of contemporary individuals, reflexivity itself may have become habitual, and that for those possessing a flexible or reflexive habitus, processes of self-refashioning may be second nature rather than difficult to achieve.

Although this reflexive habitus is becoming increasingly common, certain groups in society may lack the resources necessary to actually act reflexively. As summarised by Bauman: 'all of us are doomed to the life of choices, but not all of us have the means to be choosers' Bauman (1998, 86), quoted in Sweetman (2003, 525). This tendency towards the reflexive habitus is a very recent development: Sweetman argues that elderly and middle-aged people are more likely to be governed by a habitus as defined by Bourdieu, whereas younger generations are more likely to possess the new reflexive habitus Sweetman argues for (2003, 545). Finally, Sweetman questions whether or not a reflexive habitus is desirable, citing the 'dis-ease' felt by the petit-bourgeoisie in Bourdieu's work. Borrowing Goffman's (1990) metaphor of the stage, Sweetman claims that contemporary individuals are spending less and less time relaxing 'offstage' and instead must constantly perform 'onstage'.

These later accounts of the nature of identity appear convincing: identity is something personally constructed to a certain extent, and this is a feature of late modern society. However, there are constraints on the extent of this personal construction and choice. All individuals are constrained by history and socio-cultural context to some extent, but some are constrained more than others. These constraints follow predictable patterns along common sociological distinctions such as gender, age and class.

2.4.2 Identity in sociolinguistics

Eckert (2012) describes variationist sociolinguistic studies as carried out in three waves representing distinct theoretical viewpoints. Each wave has been concerned with identity in some form, though the theoretical framework used to examine it differs in each case. Studies carried out in the first wave of variationist study take linguistic variation as their starting point and attempt to correlate patterns in variation with patterns in social structure such as social class or generational group. A canonical first-wave study is Labov's (1966) study of variation in New York department stores. In second-wave studies, the focus shifts to a more ethnographically informed micro-analysis of particular communities, whilst still drawing correlations between social group identity and linguistic variation, for example, Labov (1963) and Milroy (1980). Within studies conducted in the first-wave framework, identity is seen as a somewhat static concept, unlike second-wave (and third-wave) variationist studies, which see identity as the fluid and dynamic construct described in the sociological review, above. Such studies see language as one of many resources mobilised in the construction of identity, and attempt to understand the place of linguistic variation within the identity practices engaged in by participants.

Instead of conceptualising a particular variant as meaning that a participant is, for example, working class, third-wave studies see linguistic variation as ultimately unspecified. The meaning of variation is constructed by speakers as they engage in social manoeuvring or identity construction (Eckert 2012). Even sociolinguistic variables which have previously been considered 'stable' in meaning can take on a wide range of meanings across different groups through interaction. For example, the variable cited in Eckert (2008), DH-stopping, is explored in Labov (1966, 2001) as a 'stable' variant associated with class divisions. Eckert (2008) suggests that DH-stopping can, and continues to, take on new indexical meanings in different communities such as becoming associated with the German farming community in Wisconsin (Rose 2006), or the Cajun renaissance in Louisiana (Dubois & Horvarth 1998).

A particularly fruitful line of research within second- and third-wave variationist perspectives has been conducted using the community of practice framework. Drawing on work by Lave & Wenger (1991), and Wenger (1998), community of practice is defined by Eckert & McConnell-Ginet (1992) as:

> [A]n aggregate of people who come together around mutual engagement in an endeavor. Ways of doing things, ways of talking, beliefs, values, power relations

– in short, practices – emerge in the course of this mutual endeavour.

The implication is that a community of practice is a group of people characterised by meaningful engagement with one another. Over the course of time the group develops shared practices including ways of speaking. Sociolinguistic studies conducted in the community of practice framework have demonstrated that different communities make use of different linguistic practices as one means of differentiation from other groups (Eckert 2000; Moore 2003; Alam 2007; Mendoza-Denton 2008; Drager 2009; Alam & Stuart-Smith 2011; Lawson 2011; Jones 2012). Many of these studies are conducted in adolescent communities. The reasons for this research interest in adolescents are multiple. Firstly, adolescence is a socially interesting life stage, described by Eckert (2000, 15) as a 'social hothouse'. More specifically, adolescence is a liminal stage between childhood and adulthood important for the construction of self and one's relationship with the world (Eckert & McConnell-Ginet 2003). Secondly, this socially interesting time also coincides with the biological changes brought about by the onset of puberty, leading to both a social and physical/psychological transition period (Kirkham & Moore 2013).

The interest of adolescents to the study of language change has long been recognised (Eckert 1988; Kerswill 1996; Labov 2001; Tagliamonte & D'Arcy 2009). Many studies describe an 'adolescent peak' where adolescents use an innovative variant more than any other age group in a community (Trudgill 1974; Ash 1982; Cedergren 1988; Tagliamonte & D'Arcy 2009). The implication of this is that studies of adolescent language variation can give an insight into the most recent developments in a particular variety. While discussions such as Labov (2001) demonstrate that adolescents are particularly innovative in their use of variants, micro studies such as Eckert (2000) indicate that not all adolescents are innovative, but rather certain individuals, or groups of individuals. Work on variation conducted within the identity informed framework, such as community of practice studies described above, can be extremely informative in describing *who* are the innovative individuals or groups in a community, and *why* sound innovations might be adopted and spread (Labov 2010, 189). The role identity plays in sociolinguistic variation is clearly widespread and significant. Identity is not only of relevance to variation in first language contexts, but is also relevant to structuring variation in second language contexts, as demonstrated in Rindal's (2010) study of Norwegian learners of English.

Work into language and identity conducted within the variationist framework is heavily informed by the interaction between habitus and reflexivity discussed above. Bourdieu (1991) describes how the habitus in relation to the linguistic market place can lead to the adoption or rejection of certain linguistic features. Detailed ethnographic work such as that conducted using the community of practice model can show how this functions at the small group level. Similarly, such studies indicate who are the 'reflexivity winners' and 'losers' referred to in Adkins (2003), i.e who has the social resources necessary to make a move towards linguistic innovation, and who does not.

2.5 Studies of language revitalisation

The previous sections have highlighted the role identity construction can play in explaining patterns of linguistic variation and change, and have provided some theoretical background in models of change and models of identity and its role in language. I now return to the context discussed in this thesis: language revitalisation, and explore some detailed linguistic studies of language revitalisation contexts. These studies are linked to the concepts discussed above in Section 2.5.6. This section is not intended as an exhaustive review of language revitalisation situations around the world. Instead, I here review selected linguistic studies of several languages undergoing revitalisation which are relevant to the context discussed in this thesis, as they explore specific linguistic changes in revitalisation contexts.

2.5.1 Welsh (Jones 1998; Gathercole & Thomas 2009; Morris 2013)

Unlike in Scotland, the Welsh language has long been associated with the Welsh nationalist cause (Williams 2005, 49). In 2001 Welsh was heralded as a case of language revitalisation success when census figures indicated an increase in Welsh speakers ending a trend towards decline. In 2001 21% of the population of Wales could speak Welsh. At the time of writing in spring 2013, results for Welsh (but not Gaelic) in the 2011 census had just been published. These latest results showed a slight decline to 19%, to the disappointment of Welsh language activists. Nevertheless, these figures indicate a language which has a substantial number of speakers representing a large proportion of the Welsh population. Many of these speakers are young people for whom Welsh is now compulsory in school. Young people were the focus of a studies by Jones (1998) and Morris (2013).

Jones (1998) is a detailed study of Welsh dialects in two contrasting communities in Wales: Rhymney in the south, and Rhosllannerchrugog in the north. Jones recorded young speakers in schools in the two communities and compared their Welsh to the speech of adults local to the two areas. Both children in Welsh medium classes and children in Welsh as a second language classes were recorded. While the southern town was a post-industrial town with only 6.7% Welsh speakers, the northern town in the study was also post-industrial but had a much greater proportion of Welsh speakers (38.1%). In both areas Jones found large differences between the speech of young people in Welsh schooling and the speech of older speakers in the community. While this study is mainly morphosyntactic in nature, the results are still of great relevance to the current study: specifically, Jones found many speakers did not produce initial mutations[1], did not produce some complex aspects of Welsh morphosyntax, and included borrowings from English in their speech. In both communities Jones found evidence that the local dialects were being eroded in favour of a more standardised Welsh

[1] 'Initial mutations' refers to a set of consonantal modifications which occur to word initial consonants in Celtic languages in certain morphosyntactic conditions. For example in Gaelic a subset of word initial consonants tend to become fricatives in mutating contexts e.g. *màthair* 'mother' /maːhɪɾʲ/; but *mo mhàthair* 'my mother' /mo vaːhɪɾʲ/.

(Jones 1998, 297). Jones says this is a direct result of revitalisation measures creating a standard which is taught in schools and shown on televisions, and then reproduced by young people. Jones (1998) also found differences in the speech of the students who used Welsh at home with parents, and those who did not. Specifically, those who used Welsh at home were more likely to speak Welsh similar to older speakers. These results are supported by other studies such as Gathercole & Thomas (2009) and Morris (2013): both of these studies find production differences in the speech of children who use Welsh at home and those who do not.

2.5.2 Irish (Maguire 1991; Ó Curnáin 2007; Ó Giollagáin 2007)

Irish has been widely supported in the Republic of Ireland since its independence, but as yet has not become a widely spoken community language (Ó Néill 2005a, 280). In the census of 2002, 9% of the population said they spoke Irish every day, and 42% of the population said they had some knowledge of Irish. This includes a large number of school-age children for whom Irish is compulsory. The 2001 census of Northern Ireland revealed that 6% of the population claimed fluency in Irish, 10% saying they had some knowledge of the language. Since the partition of Ireland in 1920, Irish has not enjoyed as much support in Northern Ireland as in the Republic, though this is slowly changing with the growth of new Irish media and Irish-medium schools (Ó Néill 2005b, 328).

One significant development for Irish revitalisation both in Northern Ireland and more generally was the founding of the Shaw's Road Community in West Belfast. In 1969 eleven families who had learned Irish as adults decided to build an Irish-speaking community in which to raise their children as Irish speakers. Set against the context of the Troubles in Northern Ireland, the establishment of this community was an extremely impressive achievement. The community still continues to thrive to this day. Maguire (1991) is a linguistic study of Irish spoken in the Shaw's Road Community. While she mostly concentrates on the macro sociolinguistic questions of Irish in education and the shift of the local community towards Irish, Maguire does identify some interesting patterns in the Irish of the children in the Shaw's Road Community school, which have direct relevance to my analysis of Gaelic. These are: reduction of the case system, simplification of the phoneme system, lack of initial mutations, and influence of English on vocabulary, morphology and syntax Maguire (1991, 197). As the current study is a sociophonetic one, I will here detail the phonetic tendencies noted by Maguire. Maguire states that the Irish of young people in Shaw's Road is heavily influenced by local English. Additionally, she says that young people's Irish is characterised by a general lack of distinction between palatalised and non-palatalised consonants, as this distinction is not present in English. Specifically, Maguire notes the sonorant sounds, /l n r/, where young Irish speakers often do not distinguish different Irish phonemes (she does not specify which ones have merged). This tendency was also observed in the speech of some young Gaelic speakers in the present study and is fully explored in Chapter 6.

While not specifically conducted within language revitalisation context, Ó Curnáin (2007) notes several developments in his comprehensive study of County Galway (Republic of Ireland) Irish, for example, a reduction of long diphthongs to short productions, monophthongisation of diphthongs (Ó Curnáin 2007, 397). Some initial consonants are produced as fricatives, for example /t/ and /s/ are produced by some young people as /h/ (Ó Curnáin 2007, 407), and one speaker is reported as having a merger between palatal and alveolar laterals (Ó Curnáin 2007, 414), which will be returned to in Chapter 6. Similarly, Ó Giollagáin, Mac Donnacha, Ní Chualáin et al. (2007, 11) note large differences in the speech of young people learning Irish through Irish medium education and the older Irish-speaking generations.

2.5.3 Hebrew (Ravid 1995; Zuckermann 2008)

Before the twentieth century Hebrew was used as a literary language among educated Jewish people, but was not spoken as a vernacular. With the creation of modern day Israel the language was revitalised to become both an official language of the country, and the language of daily interaction for its people (Fishman 1991, 289). While the widely held view is that the language spoken in Israel today represents a continuation of Biblical Hebrew, some recent work has disputed this claim stating instead that the language is a contact language formed by combining Biblical Hebrew with the modern first languages of Israel's founders such as Russian, Polish, Yiddish and Ladino (Zuckermann 2008). Ravid (1995) is a detailed psycholinguistic study of child and adult acquisition of Hebrew inflectional morphology. She considers factors such as the koineisation of Hebrew, literacy in the language, age and gender and produces a sociolinguistically informed discussion of developments in the modern Hebrew inflectional system. Relevant to the current study are the parallels found in Ravid's work between change in Hebrew and koineisation processes, as well as the significant influence of sociolinguistic factors. Reference to some specific phonetic changes occurring can be found in Zuckermann & Walsh (2011), who state that the prosody of modern Hebrew resembles Yiddish prosody instead of typologically related Arabic, and that the sound corresponding to the grapheme *'ayin*, which has no equivalent in Indo-European languages, is not produced by the vast majority of speakers.

2.5.4 Canadian French (Mougeon, Rehner, Nadasdi, McKinnie, Uritrescu 2003-2008)

A large body of variationist sociolinguistic research has examined the speech of students learning French in immersion schooling as part of revitalisation measures in Canada (Mougeon, Rehner & Nadasdi 2004; Nadasdi & McKinnie 2003; Nadasdi, Mougeon & Rehner 2005, 2008; Uritescu, Mougeon, Rehner et al. 2004). In all of these studies young people are compared to older speakers who have learned French via intergenerational transmission. These studies look at what is referred to as 'Type 2 variation', which refers to sociolinguistic

competence, and ask whether students in immersion schooling use linguistic variation in the same way as speakers who acquired French in their families. Specifically, these authors examine the use or non-use of variants, the rate of variant usage, the constraints on variation, and the effect of other factors such as interaction with the French-speaking community outside of school hours. Mougeon, Rehner & Nadasdi (2004) examine a range of grammatical and phonological variables and detail a number of widely observed trends in the 'Type 2 variation' of young immersion speakers. In summary, young people in immersion schooling do not use linguistic variants in the same way as speakers acquiring French via the family; immersion speakers tend to under-use vernacular variants and over-use formal variants. Speakers who have contacts in the French-speaking community tend to use mildly informal variants to a greater extent than young people who only use French at school.

2.5.5 Māori (King, Watson, Keegan & Maclagan 2009)

Māori is a Polynesian language which was spoken in New Zealand before the arrival of European settlers. According to the 2006 census, 4.1% of the New Zealand population were able to speak Māori. Since the 1980s Māori has been subject to revitalisation measures, the most successful of these has been the establishment of *Kōhanga reo* 'language nests', or pre-school Māori immersion nurseries. More detailed information on the recent sociolinguistic status of Māori can be found in Harlow (2007, 192-223). King, Watson, Keegan et al. (2009) is a linguistic study comparing the speech of younger speakers learning Māori through revitalisation measures to two generations of older speakers. The study considers changes in Māori vowel and diphthong systems and demonstrates that young speakers are significantly different to both generations of older speakers. Specifically, their Māori monophthongs mirror changes happening in the New Zealand English vowel system such as the raising of /ɛ/ and the fronting of /u/. While the authors cannot rule out Māori-internal change, they suggest that it is highly likely changes happening in English are being transferred to the vowel system of Māori. Māori traditionally differentiates between phonemically long and phonemically short vowels, but these authors show that young speakers produce less of a length distinction between long and short vowels than older speakers. Also there is some evidence to suggest that certain diphthong categories are merging among younger speakers.

2.5.6 Language revitalisation summary

In concluding, King, Watson, Keegan et al. (2009) suggest some specific directions linguistic developments in minority language revitalisation contexts often take, which are of relevance to the current research: [1] sound changes will parallel sound changes occurring in the community-dominant language; and [2] phonemes which do not occur in the dominant language may be lost. Jones (1998) and Maguire (1991) additionally suggest that changes happening in language revitalisation contexts may involve a loss of certain structures found in traditional varieties of the language, and which structures are affected will be conditioned

by the structure of the community-dominant language. Evidence from Welsh (Jones 1998; Gathercole & Thomas 2009; Morris 2013) suggests that the language background in the homes of young people will also have some effect on their production of the minority language. These statements will be applied to the current dataset and their relevance examined.

2.6 The status of revitalisation or 'new' speakers

Some of the linguistic tendencies in language revitalisation contexts above, especially in immersion schooling situations, may mirror those of second language (L2) learners; for example the lack of certain complex structures, and contact influence from a dominant other language. However, the language revitalisation situation is different due to the cultural, and sometimes linguistic, background that revitalisation speakers bring to their language development. In this respect, revitalisation speakers are more similar to heritage language speakers. Heritage speakers often grow up with some access to a minority language in the home, and cultural or other families ties to that language, but in a bilingual context where another language is community-dominant (e.g. Fishman 2001; Valdés 2001; Montrul 2010). Heritage language speakers typically acquire the heritage language in the home from one or both parents and other family members. They simultaneously, or sequentially, become dominant in the majority language of the community. Typically, older siblings will speak to majority language to their younger counterparts, and heritage language children usually speak the majority language to one another (e.g. Montrul 2010, 10). A large amount of research has been conducted comparing heritage language speakers to native speakers and L2 learners of the heritage language. These studies find that heritage language speakers typically achieve competence in between that of native speakers and L2 learners in phonetics/phonology (Yeni-Komshian, Flege & Liu 2000; Au, Knightly, Sun-Ah et al. 2002; Knightly, Sun-Ah, Oh et al. 2003; Oh, Sun-Ah, Knightly et al. 2003; Godson 2004), morphosyntax (Silva-Corvalán 1994; Polinsky 1997, 2006; Polinsky & Kagan 2007; Polinsky 2008; Song, O' Grady, Cho et al. 1997; Montrul 2004; Montrul, Foote & Perpiñán 2008; Montrul & Bowles 2009; Montrul 2010; Kim 2007; Rothman 2007), and lexicon (Polinsky 1997, 2005, 2006). Heritage speakers are often characterised as 'incomplete' acquirers, e.g. Montrul (2008), who have not achieved 'full' or 'native-like' competence.

In other respects, revitalisation speakers are dissimilar from heritage speakers: in the case of Gaelic and many other revitalisation contexts (Hebrew perhaps excepted), there is no 'homeland' where the language is spoken in a virtually monolingual context. When the revitalised language is spoken, it can always be assumed that the interlocutors will both be bilingual and be fully fluent speakers of another, community-dominant, language. The emerging term used in conjunction with revitalisation speakers is 'new' speakers of a language. This has been used with reference to Welsh-medium school pupils (Robert 2009), Catalan speakers (Woolard 2011), Breton (Timm 2010), Galician (O' Rourke & Ramallo 2013), Irish (O' Rourke 2011; O' Rourke & Ramallo 2011). 'New speakers' represent a range of speakers

ranging from heritage speakers, immersion-school speakers, and adult L2 speakers. All are identified by the community as fully fluent, though may not have the authenticity and social recognition reserved for older speakers of traditional dialects (McEwan-Fujita 2010; O' Rourke & Ramallo 2013). As is clear from the above Section, there are few detailed linguistic studies conducted in revitalisation contexts on new speakers. This study aims to address this gap. I return to the question of the status of new speakers and the linguistic outcome of their unusual social and linguistic status in Section 9.3.5, and in Section 10.3.

2.7 Summary and remaining questions

A constant theme throughout this discussion has been the relationship between linguistic constraints and the role of social factors such as identity construction in the process of language change. In the actuation of change, sound change can originate in speech production errors and misperceptions as discussed in the work of Ohala, or social factors such as contact between speakers of different languages/dialects can play a role as discussed in the language contact section. In order for sound change to spread, speakers must talk to one another, or have contact in some indirect way. The result is that usually speakers end up sounding more like one another, either via an automatic process of accommodation, or accommodation informed by social identity biases, as considered in Babel's experiments. The particular variants that change and are spread appears constrained by language internal structures, but also determined by varieties put in contact via social processes. Who takes up which language changes first and why they might do that appears to be socially motivated, discussed at the macro level in the work of Labov among others, and at the level of detailed ethnographic work in the work of Eckert and other variationists.

However, as the above discussion of language revitalisation studies has indicated, the particular situation of language change in revitalisation contexts is understudied. No studies exist considering the linguistic outcome of language revitalisation in Scottish Gaelic, and few revitalisation studies consider both the role of language contact and linguistic constraints on change as well as the construction of social identity. The aim of this thesis is to draw together the strands of research discussed above, asking specifically:

1. Is Gaelic changing across generations in heartland communities such as the Isle of Lewis?

2. Are new dialects forming as a result of language revitalisation measures in non-traditional Gaelic communities such as Glasgow?

3. What is the role of identity construction in language revitalisation developments?

These questions aim to contribute to the discussion about the nature of sound change, by providing data from an understudied language in the unusual social context of language

revitalisation. The following chapter provides background information for the context of Scottish Gaelic today and the language's revitalisation. Chapter 4 describes and justifies the specific methodology used in this thesis. Chapter 5 then discusses the ethnographic fieldwork carried out to examine the role Gaelic plays in the lives of the participants, and Chapters 6–8 look at language variation and change in Gaelic, and how identity construction can be one factor in explaining patterns in the participants' use of linguistic variation.

Chapter 3

Scottish Gaelic

3.1 Introduction

This chapter discusses the Gaelic language, its historical situation and contemporary status. I begin by introducing the language in a national context (Section 3.2), and then go on to discuss in detail the status of Gaelic in the two areas of study in this thesis: the Isle of Lewis (Section 3.3), and the city of Glasgow (Section 3.4). A map showing the location of the fieldwork sites is in Figure 3.1.

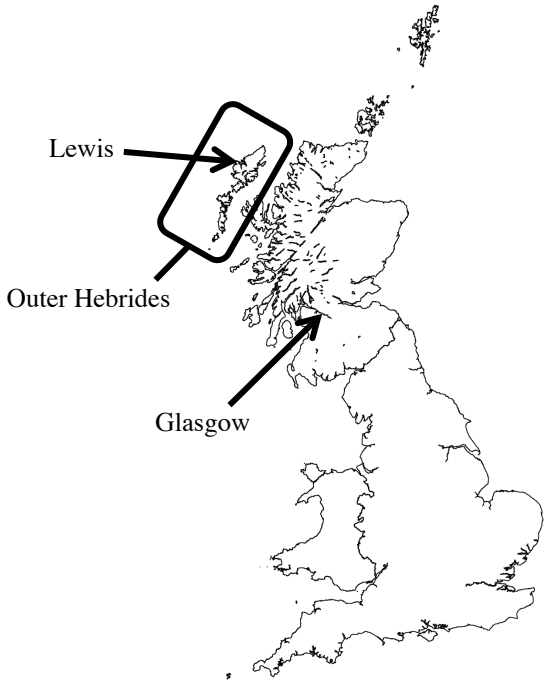

Figure 3.1: Map of the UK showing the main locations discussed in this thesis: Lewis in the Outer Hebrides, and Glasgow.

3.2 Gaelic in Scotland

3.2.1 Historical background

Gaelic was originally the Irish language of Irish monks, missionaries, and kings who colonised Scotland around the fifth century AD. Their Irish language which later became known as Gaelic expanded across much of Scotland from the medieval kingdom of Dál Riata in Argyll (MacKinnon 1974, 14). This view is challenged by, for example, Campbell (2001) and Dumville (2002) who argue that instead of a mass migration from Ireland, the early medieval period was characterised by greater movement of peoples in both directions between modern Scotland and Ireland. Originally Gaelic-speaking people were known as the *Scotti*, and their language was the 'Scottish' language. When Gaelic speakers first arrived in Scotland, there were many other languages in the area: Pictish in the north, Cumbric in the south, Norn - a dialect of Norse - in the north and westerly islands, and the Anglian language of the northern English in the far south. From the fourth to eleventh centuries Gaelic-speaking people achieved political, religious and cultural supremacy over Scotland, and it is thought that at this time the majority of the people living north of what is now Scotland's central belt (between Glasgow and Edinburgh) were Gaelic-speaking (MacKinnon 1974, 15). Exactly when Scottish Gaelic became linguistically distinct is a matter of some debate. While Jackson (1951) argues that this process happened perhaps in the 1400s, Ó Maolalaigh (2008b, 187) instead argues that in the twelfth century text, *The Book of Deer*, there is evidence which suggest a distinct Scottish variety existed at this time. When Scottish Gaelic came to be recognised as a socially distinct language is again, debatable, although Horsburgh (2002, 239) argues this occurred in the 17th and 18th centuries, through the translation of religious texts into the Scottish language, and the cultural revival movements discussed below in this Section.

From the eleventh century onwards, the story of Gaelic in Scotland is largely one of decline. There is little consensus over why Gaelic began to decline in medieval Scotland, though Withers (1984, 19) suggests several reasons: firstly, the Scottish court was moved from the Highlands to English-speaking Lothian, secondly during this period the Roman church began to exert more influence than the Celtic version of Christianity and religious practices were increasingly oriented southwards. Also, in 1071 the Scottish king Malcolm married an English-speaking wife who knew no Gaelic. Finally, the medieval period was marked by a cultural change from tribalism to feudalism as well as increasing trade with the English-speaking south. All of these subtle cultural changes of alignment may have together sparked a tendency towards decline. Around the time of this movement away from the cultural supremacy of Gaelic in Scotland, the division of the country into Highlands and Lowlands begins to appear in texts from the 1300s onwards (MacInnes 1989, 90). This ideological and geographical distinction was created around the fourteenth century largely around a 'them and us' linguistic division. Interestingly, the corresponding Gaelic terms, *Gàidhealtachd* and

Galldachd respectively, appear to have emerged much later than their English counterparts (McLeod 1999). Significantly during the fifteenth - sixteenth centuries, Gaelic gradually stopped being referred to as the 'Scottish' language, and started being called 'Irish' (Withers 1984, 22). This marked a weakening association between Gaelic and Scottish national identity which has never been reversed.

In the eighteenth century two other large political events had significant consequences for Gaelic: firstly the Act of Union in 1707 linked Scotland and England under one parliament. This again aligned the Scottish court with the English-speaking south and created more political distance from the Gaelic-speaking areas (Ó Néill 2005c, 341). Secondly, the Battle of Culloden in 1746 had substantial repercussions for Gaelic: the Jacobite army attempted to take the English/Scottish throne, and was supported by many Highland clans. The battle was a catastrophic loss for the Jacobites, and drew attention to the Highlands as never before (Withers 1984, 104). After Culloden wearing Highland tartan and playing the pipes was forbidden, and the confidence of the Highlanders was sapped. The increased attention northwards also led to the arrival of 'improvers' who sought to educate and civilise the Highlands, largely by imposing English culture and language (Withers 1984, 104). At this time the Highlands and Islands were carved up into large private estates; the effects on local economies are discussed in Section 3.3.1.

When schools were first built in an organised way in Gaelic-speaking areas, the education provided was largely in English. The aim of such schools, mostly run by Christian charities, was to educate the local people in English. Private landowners and religious organisations attempted to educate Highland boys in English ways, and as well as providing basic literacy, they also sent them to Lowland Scotland to learn skilled trades. Charity schooling through English was seen as a way of making the Highlands and Islands a civilised part of the British Empire (MacKinnon 1991, 74). These measures were extremely effective in anglicising the southern Highlands, but seem to have had little effect on the community language of more remote and northerly areas (Withers 1984, 252). The educational policy of providing education in English continued until the 1980s, although the Society in Scotland for Propogating Christian Knowledge (SSPCK) had been providing some instruction, mainly religious in Gaelic since the eighteenth century (MacKinnon 1974, 40). The lasting legacy of the policy of English-dominant education, as well as the emotional difficulty of having to learn English on arrival at school and being forbidden to speak your native language, was a general downgrading of Gaelic and a constant reminder that the language was not considered suitable for education or public life.

While educational policy in Gaelic-speaking areas has, until recently, sought to reduce the use of the language, Gaelic has traditionally retained a much stronger presence in religious life. Those trying to 'civilise' the Highlands in the eighteenth century saw worship in Gaelic as a necessary step to evangelising the people and keeping them away from the 'dangers' of Catholicism. The only problem in the way of this policy was a shortage of ministers able to speak Gaelic and able to cover vast areas of remote and inaccessible land. Despite

numerous schemes and bursaries aimed at recruitment, the Church in Scotland has always suffered from a lack of ministers with appropriate linguistic background. In 1843 the Church of Scotland split in two over theological disputes and the Free Church of Scotland was created. 470 ministers out of 1200 joined the new church; 101 out of 201 Gaelic-speaking ministers (Withers 1984, 136). Despite these difficulties in Gaelic ministry, the Church continued to be a bastion of Gaelic long after language shift in areas of the southern Highlands, and the Gaelic translation of the Bible provided a basis for literacy in Gaelic for many people educated only in English (Meek 1990).

As well as official policies, perhaps the most effective measure for anglicising Gaelic-speakers was a general cultural downgrading of their language and way of life, referred to by McIntyre (2009, 144) as 'a nearly 400-year pogrom of cultural genocide'. During the nineteenth century in Lowland Scotland works of literature, particularly works in English, were of high cultural value. A culture such as that of Gaelic-speaking Scotland, which was traditionally and simplistically viewed as an oral song and story-telling culture, was seen as inferior and impoverished (MacKinnon 1974, 43). Interestingly in the eighteenth century a Celtic cultural revival movement arose centered around the poetry of Ossian published by Macpherson. Macpherson claimed to have discovered some third century Scottish-Irish poetry from the Highlands, written by the bard Ossian. It was later demonstrated that the poems were adaptations of Gaelic oral poems that had recently been transcribed, but nevertheless readers across the world were fascinated by the idea of an ancient tartan-clad romantic Gaelic hero. Ironically public opinion simultaneously considered the contemporary Gael as culturally backward, and carried on eroding the Gaelic language (Withers 1984, 112).

The previous paragraphs have set the backdrop to the social and political situation which have led to the decline of Gaelic in Scotland as a community language. The events of the medieval period and subsequent centuries led to a gradual decline in Gaelic usage across much of Scotland. In the twentieth century this decline became more rapid: widespread social and economic change opened up travel and employment opportunities as never before. Increased mobility and changing economic circumstances, coupled with the cultural persecution of previous centuries and gradual erosion of Gaelic's prestige have led to some of the most severe linguistic attrition happening very recently: in 1881 the census recorded 231,594 Gaelic speakers, which dropped to 58,552 in 2001 (Ó Néill 2005c, 347).

3.2.2 Gaelic Scotland as an 'internal colony'

The term 'internal colonialisim' comes from a work by Hechter (1999) who wished to describe the development of nationalism in Celtic areas of Britain. The text was first published in 1975 and set against a background of social and political change in America and elsewhere in the 1960s and 1970s. Central to Hechter's argument is the notion of 'core' and 'peripheral' regions in modern European states (inspired by work conducted by Wallerstein (1976)). Hechter describes how most modern states are made up of several distinct cultural groups.

The 'core' region is where central government was first established, and over time the 'core' group of people establish cultural and economic dominance as well as political leadership. In contrast the 'peripheral' regions have distinct cultural practices, sometimes language, religion, and beliefs. In a process of national development local peripheral cultures are subsumed by those of the dominant core group. In some states, this cultural assimilation process is far from successful and complete. Here, Hechter cites the examples of Belgium and the United Kingdom (Hechter 1999, 8).

As an alternative development to cultural assimilation, a situation of 'internal colonialism' can develop. In an internal colonial model, modernisation and industrialisation take place in different ways and at different rates across the core and peripheral regions. As the core region is modernised first, it has a leader's advantage in the labour market and becomes more economically advantaged. Politically advantageous roles in the state are reserved for those who have most access to economic capital and prestige, denying those in peripheral regions. The peripheral regions lag behind in economic development and political power, which leads to greater disadvantage. If industrialisation takes place in peripheral regions, it typically involves industries dependent on the core, and suited to the export market. The economy of the periphery is therefore subject to fluctuations in the international market. Instead of eventual cultural and economic homogeneity, the internal colonial model suggests that regions can become increasingly divergent. Internal colonialism may eventually result in the growth of a nationalist movement and calls for independence of the peripheral region(s).

In the introduction to the second edition of this work, Hechter admits that the example of Scotland is not a clear-cut internal colonial model. Instead of merely being a peripheral region, Scotland had its own industrial revolution and distinct cultural and economic development pattern (Hechter 1999, xix). This point is also made in Connell (2004). However, considering the Highlands and Islands compared to the rest of Scotland (leaving aside England for the moment), the internal colonial model does have striking relevance. For example, a feature of the economic development of island communities was their dependence firstly on exporting kelp, and then exporting wool. These industries were subject to the fluctuations of the international markets and these fluctuations had several significant effects on local social and economic development (see Section 3.3.1). In support of the view that the Highlands and Islands were considered 'other' and to some extent 'colonial' compared to the Lowlands of Scotland is the inclusion of a full-scale model Highland village at the Empire Exhibition of 1938 in Glasgow. This exhibition aimed to showcase the British Empire in industry, achievement and power. One of the highlights of the 1938 exhibition was 'An Clachan', a model Highland village including post office, blacksmith's forge, a ruined church, and a land owner's castle. 'Real-life' Highlanders had to live in the village as exhibits in the large-scale museum of imperial power the Exhibition represented (McArthur 1986; Lorimer 1999).

Similarly, the use of English to educate young people in Gaelic-speaking areas at the expense of their native language is reminiscent of discussions of language use in post-colonial contexts around the world (e.g. Fanon (1986); wa Thiong'o (1994)). Fanon (1986) describes

how he feels that his native Martinique Creole is a powerful part of his self identity, but colonialisation has given the islanders an 'inferiority complex in the soul' (Fanon 1986, 19). Part of this inferiority complex is achieved through the imposition of French as the language of education, and children in school are taught to avoid creolisms and avoid creole usage. Fanon describes how black men must 'become white' and speak the language of white people (French) in order to become accepted in mainland France. Wa Thiong'o, a Kenyan writer, discusses the effects of being educated in English (1994). He states that the 'biggest weapon of imperialism' is a 'cultural bomb', a range of methods of cultural domination including the imposition of a colonial language (wa Thiong'o 1994, 3). As a child, wa Thiongo's native Gĩkũyũ (his spelling) was stigmatised at school, and all lessons were taught in English. He sees the use of English as a powerful form of cultural domination and its usage in schooling leads to children accepting their own culture is inferior from their earliest years (wa Thiong'o 1994, 18).

Noticeable social and geographical distinctions between the Highlands and the Lowlands remain to this day, firstly in the commonly made distinction between the two regions. As explained above this distinction was first made in medieval times along linguistic lines, but persists in popular perception as well as administrative boundaries to this day (Withers 1984, 22). The social geography of the Highland and Island region is also distinct from the Lowlands. Chalmers & Danson (2006, 240) report that the Highlands and Islands is one of the least densely populated regions in the EU, with an average of 9 people per km^2, compared to the EU average of 116/km^2. A report by the European Union statistics agency on data from 2009 found that the Highlands and Islands is one of the poorer regions of the EU, compared to neighbouring North-East Scotland which is the 14th richest region in the EU (Eurostat 2012). The consequences for Gaelic of this distinct local geography and socioeconomic disadvantage are predictable: all models of language loss and revitalisation suggest a language is unlikely to gain speaker numbers unless socioeconomic equality is achieved (Fishman 1991; Thomason 2001). The history of the Gaelic language, and changes occurring in synchronic Gaelic, must be considered with this social and historical background in mind.

3.2.3 Gaelic today nationally

The most recent available figures on numbers of Gaelic speakers come from the 2001 census. Although at the time of writing the 2011 census has been carried out, no results have yet been published. The census in 2001 indicated that there were 58,552 people in Scotland who could speak, read, or write Gaelic, down from 65,978 in 1991. Traditionally, census figures for those who have some knowledge of Gaelic are reported. The questions used on the census have varied slightly, but here the numbers reported are those who can either speak, write, or read Gaelic, or some combination of all three. The census figures are self-reported, and each person defines what being able to 'speak' a language actually means. Despite the obvious inaccuracies resulting from such an approach to counting Gaelic speakers, the tendency to

declining numbers over time is clear. The tendency is also towards an ageing population - in the 2001 census, half of Gaelic speakers were aged over forty. The number of people with knowledge of Gaelic recorded in the census from 1881-2001 can be found in Figure 3.2. In 1941 there was no census due to the Second World War. More detailed analysis of Gaelic in the 2001 census is available in Scottish Government (2005).

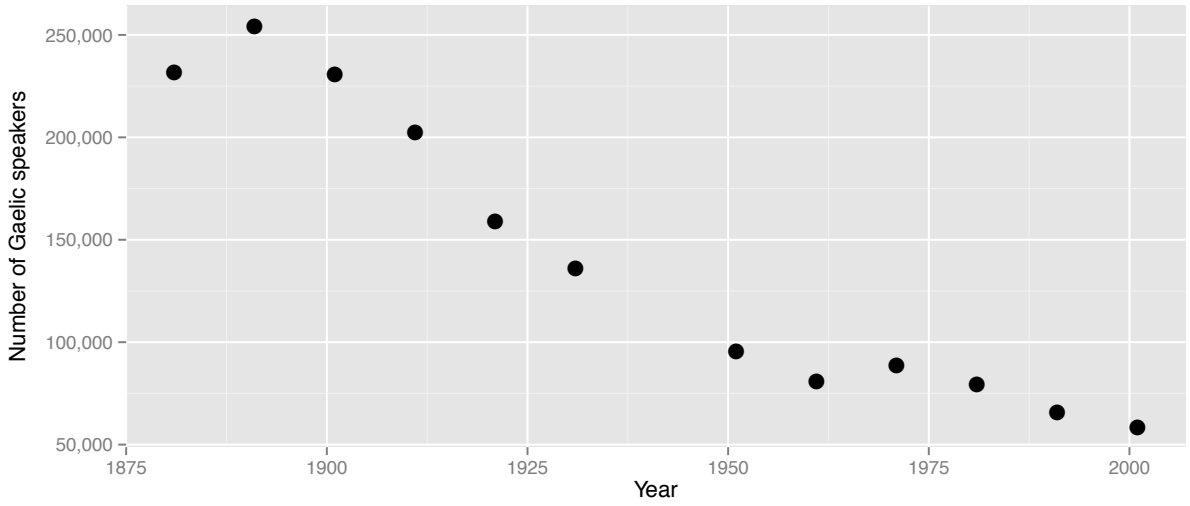

Figure 3.2: Number of Gaelic speakers according to censuses from 1881-2001

Official support

Gaelic has benefited from official support and funding in recent years. The UK ratified the European Charter for Regional and Minority Languages in 2000 and gave legal recognition to languages such as Gaelic. Although the Charter is brief and worded in a perhaps deliberately vague fashion (Cormack 2004), its ratification nonetheless shows a willingness by the UK government to support minority languages. This section details some of the political measures being taken to support Gaelic. Many of the initiatives and several plans below are new, and their success can only be fully judged over a long period of time. Nevertheless, the outlook for Gaelic appears positive.

The term ‘Gaelic renaissance’ has been used to refer to the period from around the 1980s to the present where Gaelic has enjoyed unprecedented political support, funding and cultural promotion (Macdonald 1997; Oliver 2002). This support increased especially after the Scottish devolution in 1997 and the appointment of a minister responsible for Gaelic (Oliver 2002, 15). The Gaelic Language Act in 2005 formalised a desire to secure ‘the status of Gaelic as an official language of Scotland commanding equal respect to the English language’ (Scottish Parliament 2005). The Act contained legislation for the formation of a public body, Bòrd na Gàidhlig, responsible for the protection and promotion of Gaelic, and the drawing up and implementation of Gaelic Language Plans.

The main aims of the Bòrd na Gàidhlig are (Bòrd na Gàidhlig 2013):

- to increase the number of persons who are able to use and understand the Gaelic language
- to encourage the use and understanding of the Gaelic language
- to facilitate access, in Scotland and elsewhere, to the Gaelic language and Gaelic culture

Under the Gaelic Language Act, the Bòrd na Gàidhlig must draw up a National Plan for Gaelic every five years, and also identify public bodies who must draw up Gaelic language plans of their own (see section 3.4.2). The first National Plan for Gaelic was approved in 2007 and sets out its aim and vision as follows (Bòrd na Gàidhlig 2007):

> Our aim is quite straightforward: to put in place measures that will create a sustainable future for Gaelic in Scotland.
>
> Our vision is to create a sustainable future for Gaelic in Scotland in which the language will be:
>
> - the preferred language of an increasing number of people in Scotland
> - the mother tongue of an increasing number of speakers
> - supported by a dynamic culture in a diverse language community

The first National Plan was further supported by an action plan produced in 2010, *Ginealach Ùr na Gàidhlig* (Bòrd na Gàidhlig 2010), which aimed specifically to increase speaker numbers. The second National Plan for Gaelic was launched in 2012 and aims to build on the first plan by increasing speaker numbers further and concentrates on six key areas: [1] improving the transmission of Gaelic in the home, [2] increasing use of Gaelic in workplaces, [3] more training and support for Gaelic teachers, [4] improvement of the profile of Gaelic in the Arts and Tourism, [5] support for Gaelic in local communities, and [6] improving the translation and corpus planning facilities for Gaelic (Bòrd na Gàidhlig 2012, 5).

On a practical level, the National Plans for Gaelic have led to projects such as auditing learning opportunities, holding Gaelic sports competitions, providing work experience placements for students, and creating a national publicity campaign and funding a research network, Soillse. Many other public bodies exist for the use and promotion of Gaelic such as Stòrlann, an organisation established in 1999 for the production and distribution of Gaelic educational materials (Stòrlann 2013), and Commun na Gàidhlig, which works with local organisations and initiatives to promote Gaelic at local and community level (Commun na Gàidhlig 2013).

A survey in 2011 aimed to obtain the view of adults in Scotland towards Gaelic (West & Graham 2011). Using a sample which included both Gaelic users and non-Gaelic users, the researchers found that around half of people in Scotland are in favour of Gaelic usage (51%). Very few people are actually against Gaelic (9%), but a large number of people (38%) had no opinion. The authors suggest that these results show a lack of engagement among the general

population. Among Gaelic speakers, 85% were in favour of increasing Gaelic use in Scotland. Overall the report found people in Scotland recognised and valued Gaelic's contribution to history and culture (West & Graham 2011, 6).

Education

As part of the National Plan for Gaelic 2007-2012, the Scottish Government pledged to increase the number of Gaelic speakers. One of the immediate actions cited in the Plan in order to achieve this was increasing the availability and uptake of Gaelic-medium education. Education is perceived as a major way of promoting the language and encouraging uptake amongst a new generation of Gaelic speakers (Bòrd na Gàidhlig 2007, 12).

Gaelic was not mentioned in the 1872 Education Act for Scotland, but since 1918 schools in Gaelic speaking areas have been required to teach the subject in one form or another. This was, however, often very minimal and involved teaching Gaelic language and literature through the medium of English (MacLeod 2003, 1). It was not until 1980 that the first Gaelic-medium playgroups were set up, and the first Gaelic-medium classes opened in Glasgow and Inverness in 1985. Gaelic-medium uptake and provision has been steadily increasing since 1985, but as noted by McLeod (2003, 15), other countries have taken minority language education much further: for example, in Wales all pupils must study Welsh until the age of 16. In 2010-2011 there were 2316 pupils in Gaelic-medium primary education, 410 pupils in Gaelic-medium secondary, and 802 children in Gaelic nurseries. This education was provided at 60 primary schools, 14 secondary secondary schools, and 58 nurseries (Commun na Gàidhlig 2013).

The vast majority of Gaelic-medium provision occurs within already existing English medium schools, where Gaelic-medium provision occurs in parallel with English-medium provision. The only free-standing Gaelic-medium school combining primary and secondary facilities is in Glasgow, and is one of the fieldwork sites in this research. At the time of writing, there is only one other free-standing Gaelic-medium primary school, located in Inverness. A free-standing Gaelic-medium primary school will open in Edinburgh in August 2013. The school in Glasgow currently remains the only free-standing Gaelic-medium secondary school.

The choice of which schools should provide Gaelic-medium facilities is often not based on educational criteria, but on where there is vacant accommodation and a willing parent body (Ward 2003, 36). Most schools teach via the immersion method, where pupils are taught exclusively in Gaelic for the first three years, and English is gradually blended in. As discussed by Stephen, McPake, McLeod et al. (2010) however, provision in Gaelic pre-school education is very varied ranging from total immersion to mostly English with some Gaelic songs and activities. Secondary education such as that provided in Glasgow is almost exclusively in Gaelic, and pupils are able to sit Gaelic-medium standard grades (exams taken at 15-16) in many subjects. Lessons not conducted in Gaelic at Sgoil Ghàidhlig Ghlaschu are due to teacher shortages, which is often cited as a major problem impeding the expansion of

Gaelic-medium provision (e.g. Ward (2003, 38)).

Two studies notably have looked at the attainment of pupils in Gaelic-medium education compared to English medium pupils of similar demographic characteristics. The studies were designed to provide data in support of the government policy for increasing Gaelic-medium provision, and allay fears that Gaelic-medium education could be detrimental to pupils' development in English and progress in other subjects. Both of these studies found that Gaelic-medium had no negative effects on pupil attainment and indeed Gaelic-medium pupils did better than their English medium counterparts in several areas (Johnstone, Harlen, MacNeil et al. 1999; O'Hanlon, McLeod & Paterson 2010). An interesting element to come out of such research was the demographic characteristics of pupils in Gaelic-medium streams. According to Johnstone, Harlen, MacNeil et al. (1999, 52), there were fewer Gaelic-medium pupils receiving free school meals (a measure of deprivation) than English medium pupils, 6% compared to 19%. Similarly Stockdale, MacGregor & Munro (2003, 43) found that highly educated parents were significantly more likely to send their children to Gaelic-medium schools, and O'Hanlon, McLeod & Paterson (2010, 42) cite the widely held perception that parents with children in Gaelic-medium are more likely to be middle class.

Children attending Gaelic-medium are not necessarily from Gaelic-speaking families. Stockdale, MacGregor & Munro (2003) studied Gaelic-medium provision in Ullapool (Ross and Cromarty), Laxdale (Isle of Lewis) and Castlebay (Isle of Barra), and report that 56% of children were from families with no Gaelic at all. In Glasgow officially 80% of the children at the Gaelic School are from English-speaking families (Glasgow City Council 2010, 63), though in my sample of second year students at the secondary school the proportion was much higher. Stockdale, MacGregor & Munro (2003, 7) also report that children in Gaelic-medium are more likely to be from families which have moved into Highland and Island areas, specifically from England, rather than families with long established links to the area. Those most hostile towards Gaelic-medium were non-Gaelic speakers with established links to the area, and uptake of Gaelic-medium education is lowest in areas which are, according to the 2001 census, more Gaelic-speaking. Interestingly therefore: Gaelic-medium pupils are largely from middle class highly educated backgrounds with non Gaelic-speaking parents, and Gaelic-medium schools are most successful in less Gaelic areas.

Four universities in Scotland provide degree courses in Gaelic and Celtic studies: Aberdeen, Edinburgh, Glasgow and the University of the Highlands and Islands. At the University of Glasgow students can enter Gaelic degrees at three levels: beginner, Higher Gaelic (exam taken by Gaelic learners at 17), or fluent speaker (those with the exam for fluent speakers: Higher Gàidhlig). Degrees in Gaelic can also be combined with other subjects such as Music, History or Law. The universities of Dundee, St. Andrews, the West of Scotland and Strathclyde provide Gaelic courses, but not to degree level. Sabhal Mòr Ostaig is a college on the Isle of Skye, part of the University of the Highlands and Islands (UHI). Sabhal Mòr Ostaig provides immersion courses in Gaelic language and culture at a variety of levels. UHI also provides Gaelic language courses at a number of its other colleges such as Lews Castle

College in Stornoway.

It is difficult to determine exactly how many people are learning Gaelic through night courses, summer courses, university courses etc., but according to MacCaluim (2007) there were around 8000 adults learning Gaelic in 1995. Many of these people remain perpetual beginners and few progress to fluency (Scottish Funding Council 2007).

Gaelic Media

Gaelic in the media has a long history and this is perhaps one of the areas most widely visible and commented on by the general public in Scotland. Currently, there is a BBC Gaelic radio station, Radio Nan Gàidheal, and a BBC Gaelic television channel, BBC Alba.

The BBC first formed a Gaelic radio department in 1935, and Radio Nan Gàidheal was formed from several existing Gaelic services in 1985. Programs are broadcast in Gaelic every day, though on Saturday afternoons the service switches to a Scotland-wide BBC Scotland coverage of the football. Radio Nan Gàidheal is available on FM radio across Scotland, and also through digital radio and online.

In 1989 funding was provided by the Westminster government to form the Comataidh Telebhisein Gàidhlig, a service dedicated to providing television in Gaelic, which broadcast its first Gaelic programs in 1993. Television programs had previously been broadcast by local television services in a limited form, but this new committee in 1989 aimed to increase the Gaelic provision from 100 hours annually to 300 hours (Cormack 1993). The entirely Gaelic channel, BBC Alba, was created in 2008. This channel currently broadcasts for most of the day every day in Gaelic, with some English coverage being given to sports at the weekend. However, until recently BBC Alba was only available on satellite and on the internet, and was thus unavailable to many potential viewers. A review of the BBC channels in 2010 found that around 220,000 people were viewing BBC Alba already, figures comparable to many other satellite channels. The review decided to make BBC Alba freely available on digital television in 2011.

Arts and culture

Gaelic enjoys a very strong cultural profile, with many learners citing Gaelic music in particular as what first encouraged them to learn the language. An Commun Gàidhealach, (The Highland Society) organises the largest Gaelic cultural event annually, the Mòd. This is a Gaelic traditional music and singing competition, with medals for group and individual performances. The Mòd is televised on BBC Alba and attended by thousands of participants and spectators. Choirs taking part must have a certain quota of Gaelic speakers, and each member of the choir has to complete a Gaelic conversational assessment before the competition in order to make sure the required standard has been reached. As well as singing competitions, a number of music festivals are organised annually with a strong Gaelic component. The largest Celtic music festival in Scotland is Celtic Connections in Glasgow. The festival takes place in

January every year over three weeks and a number of the events are in Gaelic or played by Gaelic-speaking musicians. Gaelic music is perhaps the liveliest and most active sector of the Gaelic arts, but Gaelic theatre and other cultural Gaelic events are also active, and groups such as the Fèis movement coordinate such activities for young people. Pròiseact nan Ealan is an organisation coordinating cultural activities on a national scale, and An Lòchran fulfils the same function within Glasgow.

3.2.4 Gaelic and identity

A government policy report into attitudes and the Gaelic language, West & Graham (2011), investigated the links between Gaelic and identity using a quantitative interviewing methodology with around 1000 participants. The researchers asked how important Gaelic was to feelings of national, personal, and local identity, and why. Researchers defined 'national identity' as conceptions of Scottishness, and 'local identity' as local affiliations to local communities and/or islands. 40% of all informants said Gaelic was important to their sense of national identity, and 92% of the fluent Gaelic speakers in the sample said this was the case. In the case of local identity, only 22% of participants said Gaelic was important to their local identity. This was highest in the Highlands and Islands (51%) and lowest in more southern areas. The main reasons for Gaelic contributing to a sense of local identity were because Gaelic was seen as a national language, or part of Scotland's history. Similarly, Munro, Taylor & Armstrong (2011) found that a very high proportion (89%) of residents in the rural Lewis community of Shawbost cited Gaelic as being important to their local sense of identity. Overall, 22% of West & Graham's (2011) participants considered Gaelic important to their personal identity, though this was 89% amongst fluent Gaelic speakers. The reasons given for this were that Gaelic was part of personal or family history, or that it was part of Scottish history and heritage. This report was commissioned as a government report, rather than evaluative social research and as such does not relate these findings to wider social structures and tendencies.

A different approach is taken in Oliver (2002). This is a detailed sociological analysis of the role Gaelic plays in the identity construction of young people both in Gaelic immersion schooling, and non Gaelic speakers. Using qualitative analysis of interviews and focus groups, Oliver (2002) examines data from young people in Gaelic immersion schooling in Glasgow and Portree, Skye, and compares them to young people from Portree not undertaking Gaelic classes. The results suggest that all the young people interviewed cite being Scottish as their primary identity. Oliver suggests that a Gaelic identity is not in competition with this primary Scottish identity, but is maintained alongside it. A notion of Gaelic identity is not particularly strong among the young people he interviewed, with young people claiming Gaelic was something that happened at school to which they were not particularly attached. However the young people in Skye in particular tended to maintain links with Gaelic as part of their heritage and history (Oliver 2002, 176), and placed greater importance on the ability to speak

Gaelic (or not) in identity construction.

These studies suggest, in different ways, that Gaelic occupies a complex place in the national and local identities of Scottish people. The role of Gaelic in identity negotiation, and the use of linguistic variation in this process at a very local level is one of the main themes explored in this thesis.

3.3 Gaelic in the Isle of Lewis

Lewis is the most northerly part of the Outer Hebrides or Western Isles chain of islands, located off the north west coast of Scotland. Lewis is around 50 miles long and is separated from the next 'island' in the Outer Hebrides chain, Harris, by a mountain range. The rest of the Lewis is mainly flat, windswept, and covered in rocks and peat bog. Lewis is accessible by ferry or plane. The ferry takes around three hours from Ullapool in the north-west Highlands, which is itself around five hours journey from Glasgow or Edinburgh. Alternatively, a ferry connection is available from Harris to Uig in north-west Skye. Stornoway is the main town on Lewis, and is also the largest town in the Outer Hebrides. Around 8,000 people live in Stornoway, which is approximately half of the population of Lewis. Fieldwork for this thesis was carried out in three locations on Lewis: Uig, South Lochs, and Stornoway. These particular locations are discussed in detail in Chapter 5 and are shown in Figure 5.1.

3.3.1 Social history of Lewis

> The past, in the Highlands and Islands at any rate, casts a long shadow
> (Hunter 2010, 288)

In order to understand the current linguistic situation in Lewis, it is essential to refer to the social and economic history of the island. This section outlines some major events which have led to the current makeup of the island's cultural and social space.

Crofting is a way of farming distinctive to the Highlands and Islands of Scotland. It replaced the ancient system (runrig) where crops were rotated and animals grazed on common land. In a crofting system, land is divided up into small plots, each one farmed by one family. On traditional crofts, highland cattle grazed, potatoes were grown and peat was cut (for fuel). Hunter (2010) describes how crofting was initially established in the Western Isles as a means of creating an almost unlimited supply of cheap labour. From the eighteenth century onwards Scotland was carved into large estates managed by aristocrats from Scotland or England. These landlords required a seasonal workforce over the summer in order to process kelp (seaweed used in the production of iodine) which was at the time an extremely lucrative industry. Residents on their estates were given plots of land, crofts, which were deliberately small so that the crofters were forced to seek extra income through kelp harvesting (Hunter 2010, 62). A situation which was already far from ideal for the crofters became much worse

in the 1820s when the price of kelp fell dramatically. Landlords began to realise how much money could be made from sheep farming, and re-landscaped their estates for this purpose.

Sheep require grazing land and landlords saw little further use for their tenants. Large areas of the Highlands and Islands were freed up for sheep in what has become known as the Highland Clearances, occurring across most of the nineteenth century. Tenants were removed either directly by force, or indirectly, when landlords raised rents to impossibly high levels and tenants were forced to move. Crofts were moved from prime pasture land to areas which were undesirable even for sheep. Many of those who could afford the passage emigrated to Canada, Australia, the United States, and other locations, leading to a Gaelic-speaking diaspora especially in Canada (Nilsen 2010). Life for the crofters left behind was clearly not viable in the long run: plots that were deliberately created small were split between successive generations of children and most people lived on extremely poor and infertile land. All of this led to a dependence on potatoes, the only crop which could produce sufficient nutrition in a small area of boggy peaty land. The potato harvests of 1845-47 were almost entirely blighted leading to widespread famine. Lewis was perhaps not the worst affected area of the Highlands during the Potato Famine (Hunter 2010, 126) since the then landlord, James Matheson, was more generous than many in helping his tenants to emigrate. This had the double advantage of clearing Matheson's land and avoiding the death of his tenants from starvation.

Life for crofters was slow to improve but some rights were gained during the Land Wars of 1884-96. During this period some of the large sheep farms and deer parks across Scotland were occupied by starving and landless peasants, such as South Lochs in the south-east of Lewis in 1887. The landlord who owned the estate converted the land use from a sheep farm to a deer park in the 1880s, and in 1887 desperate crofters and people who owned no land at all broke into the deer park and slaughtered around 200 deer. The deer park was subsequently occupied by the local people until they were removed by the Police (Macdonald 2004, 251). In this period of upheaval the Crofting Act (1886) was passed which entitled crofters to compensation on any improvements they had made to their houses in the case of eviction. Before this Act, crofters were disinclined to make any improvements of repairs to their houses, as landlords could evict them at any time. Also if the house was improved, the landlord would be inclined to charge a higher rent. This situation led to extremely poor living conditions in many houses, which improved significantly after the 1886 Act. Despite this improvement land shortages were still acute and landlords were unwilling to turn over sections of their estates to be farmed by local inhabitants. In addition to this the First World War provided an excuse/distraction to landlords who stalled handing over land to crofters and landless small-scale farmers until the 1920s and 1930s. It was not until 1994 that communities won the right to actually buy their own land from the landlords and run the area as a community enterprise. This scheme has proved popular, and in 2010 more than half the land in the Outer Hebrides was under community management, with more than two thirds of the population living in these areas (Hunter 2010, 310).

This social background of clearances and crofting has given the Isle of Lewis, and the Highlands and Islands more generally, a distinctive local geography. In rural areas, modern houses are built on the old croft plots, often alongside the previous small stone dwellings. Many families still keep sheep and chickens on their crofts, as well as immaculately maintained gardens, and space for digging peats. The result, coupled with ongoing depopulation of rural areas, is that houses are very spread out, sometimes with a few hundred metres between houses even within one village. Each village contains around 5-30 houses usually spread along one road, and each parish on the island (Stornoway excluded) includes around ten such villages.

3.3.2 Gaelic in Lewis

Historical background

Although Lewis is now, according to the census, the most Gaelic-speaking place in the world, this has not always been the case. Gaelic first arrived in the island some years after the first missions to Scotland by Irish speaking monks in the 5th century AD (Macdonald 2004, 19). However, when Viking raiders and then settlers arrived in Lewis in the eighth and ninth centuries, it is thought that the indigenous male population was almost entirely exterminated and replaced with Norse speakers from Denmark, Norway and Sweden. It is assumed that around this time the language of the island shifted from Gaelic to Norse (Macdonald 2004, 21). Colonisation by the Vikings appears widespread and complete, due to the high number of Norse place-names in Lewis today (Macdonald 2004, 29). This view is, however, nuanced in Cox (1991, 488) who suggests that the largely lexical (and not morphosyntactic), borrowings from Old Norse in Lewis place-names suggest a greater degree of bilingualism than is implied in Macdonald (2004). Similarly, Oftedal (1962) shows that in Gaelic's wider lexicon outside of place-names there are relatively few Norse borrowings, indicating language contact might not be so extreme as the place-name evidence suggests. The historical evidence for this early period in Lewis' history is scant, as many of the records dating from this time come from more southern-oriented English and Irish sources (Woolf 2007, 275). Much evidence is drawn from the *Orkneyinga Saga*, a text written in Iceland between the late twelfth and early fourteenth centuries (Woolf 2007, 277). Lewis and the rest of the Outer Hebrides were ceded to Scotland in 1266 at the Treaty of Perth. Although the exact date can never be certain, it is thought that language shift from Norse to Gaelic took place during this century or just after (Ó Néill 2005c, 341).

Gaelic today in Lewis

According to the 2001 census, 75% of the population have knowledge of Gaelic, compared to 1% nationally. These data are expected to change somewhat with the release of the 2011 census data figures, which were unavailable at the time of writing. In order to gain some

insight into recent Gaelic-speaking figures in Lewis, a survey conducted in 2011 found that 66% of the population in the rural westside community of Shawbost self-identified as fluent Gaelic speakers (Munro, Taylor & Armstrong 2011, 6). These speakers are largely concentrated in the over 50s age group. The linguistic features of Lewis Gaelic as discussed in the linguistic analysis chapters, as they become relevant to this analysis. Attitudes towards Lewis Gaelic are discussed in Section 5.2.1.

The council serving Lewis, the Western Isles Council, is known by its Gaelic name, *Comhairle nan Eilean Siar* (literally 'Council of the Isles Western'). According to its Gaelic Language Plan, the Comhairle is the largest employer in the Western Isles, and aims to provide bilingual services for its large number of bilingual employees, and the people whom the council serves (Comhairle nan Eilean Siar 2007, 3). The Comhairle answers every letter received in Gaelic with a Gaelic answer, and ensures that bilingual staff are on every reception desk so that services can be accessed in Gaelic. Meetings of at least three out of five committees and the full council are conducted through Gaelic, and all Gaelic-essential jobs are advertised in Gaelic only.

Throughout Lewis, Gaelic is extremely visible on roads and other signage. In some areas the only place-names on road signs are in Gaelic with no translation provided. Businesses make an effort to provide signage in Gaelic, though these are mostly large companies with offices in Stornaway such as the large supermarkets: the Cooperative and Tesco, and the ferry company, Caledonian MacBrayne.

One of the Comhairle's aims for Gaelic is to improve and develop Gaelic through arts and cultural activities. The result of this is immediately observable at Stornoway's Gaelic arts centre, An Lanntair. Books in Gaelic are sold in the shop, the centre hosts Gaelic concerts and Gaelic-related photo exhibitions, and much of the signage is bilingual. Similarly, the large annual music festival in Stornoway, Hebridean Celtic Festival, showcases Gaelic and Celtic music and provides tannoy announcements in Gaelic and English. In the Western Isles museum in Stornoway, a recent exhibition of the Lewis Chessmen, found on the beach in Uig in the west of Lewis, displayed information primarily in Gaelic with English translations available around the back of the sign boards. A video about the history of the exhibits was entirely in Gaelic with English subtitles. All of these efforts indicate an increasing desire to place Gaelic on an equal or superior footing with English.

At local level, Gaelic appears slightly less visible in the shops and post offices, although most post offices are labelled in their Gaelic equivalent, Oifis a' Phuist, and some Royal Mail vans are labelled bilingually. The amount of Gaelic in the shops and post offices varies depending on who runs the business. Increasingly, business in local shops and other community institutions is conducted in English, with use of Gaelic confined mainly to the over 50s (Munro, Taylor & Armstrong 2011).

Gaelic language courses are run almost constantly at the local campus of the University of the Highlands and Islands in Stornoway. Many more rural communities also occasionally run courses in community centres and these are attended by a mix of people from the local area

and people who have come to the island specially for the course.

3.4 Gaelic in Glasgow

Glasgow is Scotland's largest city, with a population of 1.7 million in the wider metropolitan area (2001 census). Glasgow is located near the west coast of central Scotland. The city is about 50 miles from the capital, Edinburgh, which is located near the east coast. This urban area in the narrow middle of the country between these two cities is known as Scotland's 'central belt'. The city's name, 'Glasgow', comes from the early Brittonic Celtic (not Gaelic) word *glas* 'blue/green'. This is often romantically translated as the 'dear green place' in contemporary references to the city.

Since the nineteenth century, Glasgow has been a centre for industry and trade, specifically the merchant trade, and subsequently around heavy industry (Gibb 1983). In order to reduce over-crowding in the city centre, Glasgow was comprehensively replanned and restructured in a huge building and development plan from the end of the first world war until the 1970s (Maver 2000, 258). This led to the removal of large numbers of the poorer inhabitants of the city who were rehoused in special developments at the edge of the city centre, while the building of New Towns on the city's outskirts attracted many middle class inhabitants to move (Henderson 1974). As a result of this regeneration combined with the previously existing social inequalities, Glasgow is a socially segregated city, characterised by an unequal distribution of wealth (McGregor & McConnachie 1995). From the 1970s onwards following a decline in industrial production, Glasgow has undergone a rebranding towards a city of Arts, culture, and retail, including a stint as the European City of Culture in 1990 (Maver 2000, 216). Despite the successes of redevelopment, Glasgow continues to have the largest number of deprived local areas in Scotland (Scottish Index of Multiple Deprivation), and unemployment is higher than in the rest of Scotland (in 2010, 7.8% compared to 5.3% in the rest of Scotland (Glasgow City Council 2010)).

Withers (2007, 130) notes that 'Glasgow has always been 'the first city' of Gaelic Scotland', and Kidd (2007, 1) refers to Glasgow as 'stronghold' rather than a mere 'outpost' for Gaelic speakers. This situation has its historical roots in migration of Highlanders to Glasgow, and Gaelic continues to be strongly represented in the city, as evidenced by the drawing up of the Glasgow Gaelic Language Plan (Section 3.4.2), which recognises Gaelic's historical and cultural contribution to the city's identity.

3.4.1 Historical background

The prominence of Glasgow for the Gaelic-speaking world is historically due to large numbers of firstly temporary, and then permanent, Gaelic-speaking economic migrants to the city from Highland areas during the eighteenth, nineteenth and early twentieth centuries. Withers (1998) describes successive waves of migrants leaving their homelands due to limited resources and

a large increase in population in the Highlands, as well the Highland Clearances (see above Section 3.3.1).

Before the first official census in 1881, it is impossible to know exactly how many Highlanders and Gaelic speakers were living in Glasgow, but the earliest reference in Gaelic literature to Glasgow comes from a waulking song[1], *Is mise a' bhean bhochd*, dated to the early sixteenth century (Black 2007). Certainly by 1727 Glasgow had a large population of Highlanders as the Glasgow Highland Society was founded during this year (Withers 1989, 115). At the start of the twentieth century, the 1901 census gives 18,517 Gaelic speakers in Glasgow (Withers 1998, 207), but this census did not count children under three as 'speakers' so the real total was probably around 20,000, 3% of the city's population. Since then, numbers of Gaelic speakers in the city have declined, and in the 2001 census there were just under 3,000 people with knowledge of Gaelic living in Glasgow, representing 0.5% of the city's population.

Highlanders who were forced, or chose, to permanently relocate to Glasgow are often portrayed as destitute members of the working class, for example by Hunter (2010). As pointed out by Withers (1998, 135), however, the historical evidence implies many also came from the middle classes, and Highlanders appear to have been employed in a wide range of occupations, such as managerial roles, skilled manual professions, textile and agricultural workers, as well as unskilled labourers. The Highland community appears to have been fairly close-knit, and new immigrants found little difficulty in gaining employment due to help from family or friends (Withers 1989). Another focal point for the Gaelic-speaking community was the founding of several Gaelic churches. When Gaelic churches in Glasgow were most numerous at the turn of the twentieth century, there were twelve churches providing services in Gaelic (MacDonald 1995).

Official attitudes towards the Highland immigrants seem to have been less than favourable. Withers (1998, 133) states that racist ideologies prevailing at the time portrayed the Highlanders (and Irish immigrants) as 'lazy' Celts compared to the 'industrious Saxon natives'. The Gaelic language was cast as a hindrance to betterment, and an 'almost innate oral and physical incapacity' Withers (1998, 133). The *Greenock Advertiser*, 11th June 1852 states (from Withers (1998, 200)):

> We believe that this jaw-breaking tongue is one bar to Highland amelioration and renders our countrymen belonging to the Highland districts foreigners to their fellow-citizens[...] Indeed, it would be a great matter to have Gaelic extinguished altogether as a spoken language. There is no use for it in the world, and it stands in the way of well-doing and well-being of those whose only principal language it unfortunately happens to be.

This exemplifies prevailing attitudes at the time: Highlanders were inherently inferior, and this was due in part to their native language.

[1] 'Waulking' is a traditional method of making tweed.

3.4.2 The current status of Gaelic in Glasgow

Currently, Gaelic enjoys much more official support and positive attitudes than in the past. As a result of the Gaelic Language Act (2005), Bòrd na Gàidhlig was created as an official body to promote and support Gaelic, and increase speaker numbers. As noted above, one of Bòrd na Gàidhlig's roles is to ask selected public authorities to draw up and implement Gaelic Language Plans detailing how the National Plan for Gaelic will be implemented within their organisations. At the time of writing (spring 2013), twenty three such plans have been approved, including a Gaelic Language Plan for Glasgow City Council and also one for the University of Glasgow, and twenty six are in preparation. Glasgow was the first large city council to draw up such a plan, and the document starts off with an ambitious and positive vision for Gaelic in the city Glasgow City Council (2010, 13):

> By 2020, the place of Gaelic in a thriving, multi-cultural Glasgow will be obvious to all. We'll see it around us - in our buildings, on our streets, in our shops; we'll hear it in conversations, in our schools and in the media; we'll enjoy it in all the arts, especially music, dance and theatre.
>
> By 2020, we'll hear Gaelic being spoken by our young people in Buchanan Street,[2] without them feeling self-conscious about it, and people will recognise the language as Gaelic.

The plan outlines how Gaelic will be promoted within the city in education, the Arts, official signage, community partnerships, and also recommended the recruitment of a Gaelic Development Officer for the city, who was then duly recruited.

Attitudes towards Gaelic are not always positive, however, as demonstrated in some of the responses to the draft Gaelic Language Plan for Glasgow (Glasgow City Council 2010, 33):

> One in five respondents [out of 172] disagreed with the Council supporting Gaelic, with 15% strongly disagreeing that it is important for the Council to promote Gaelic. Some people found nothing at all useful in the Plan. Indeed, they were totally opposed to any effort or money being spent on promoting Gaelic, maintaining that it is of little relevance to most Glaswegians.

In short, Gaelic enjoys much official support and funding in Glasgow, though some of the city's inhabitants are yet to be convinced of the language's worth and relevance.

The first ever Gaelic-medium Education (GME) class was opened in Glasgow in 1985, and the first all-Gaelic primary school opened in 1999. Glasgow currently provides approximately 600 GME places at primary level, and 150 GME pre-school places at three different facilities (Glasgow City Council 2010, 23). The council hopes to open another GME primary school in the south of the city soon. The secondary section of the Glasgow school opened in 2006 when the school was moved to a bigger site. When I conducted my fieldwork, there were

[2] Buchanan Street is the most prestigious shopping street in Glasgow.

around 300 pupils in the secondary section, from S1-S6, and the number of pupils grows each year. Tertiary education in Gaelic is provided by the University of Glasgow, University of Strathclyde, and Stow College. The University of Glasgow is the site of a major Gaelic language action strategy, which resulted in the appointment of the first university Gaelic Language Officer in 2009, and the University's Gaelic Language Plan, mentioned above, among many other actions (Cottar, Dunn & Ó Maolalaigh 2010). The Council also runs night classes for Gaelic learners free of charge.

Glasgow City Council employs a Gaelic Arts Development Officer and has an organisation devoted to promotion of Arts in Gaelic, An Lòchran. A study by Chalmers & Danson (2011) found that Gaelic arts and culture bring around £4million every year to the economy in Glasgow, through festivals, concerts and exhibitions. The BBC's all-Gaelic television channel, BBC Alba, has its headquarters in Glasgow, as does the Gaelic Books Council. All of these activities substantially contribute towards job creation and economic activity in Glasgow (Chalmers & Danson 2011).

As well as official organisations, Glasgow hosts a multitude of community and informal Gaelic-related groups. For example, Church services are still held weekly in Gaelic in one of the city's churches (St. Columba's Church of Scotland). Also, pub quizzes are held monthly in Gaelic in one of the Highland-themed pubs of the city, conversation groups meet regularly, and the old Highland societies organise cèilidhs, dinners, and other social events.

3.4.3 Summary: Background to Gaelic in Glasgow

This section has described the historical background to the Gaelic language in Glasgow and traced its usage by inhabitants of the city from the eighteenth century until the present day. Firstly spoken by migrants to the city, Gaelic now enjoys substantial official recognition and support culminating in the Council's first Gaelic Language Plan in 2010. Glasgow is now at the centre of Gaelic revitalisation measures including housing Scotland's only fully Gaelic-medium secondary school. In the following section the context of Gaelic in Glasgow is compared to the Gaelic on the Isle of Lewis, the second fieldwork site for this thesis.

3.5 Summary

The information presented here points to a simultaneous situation of both language decline and language revitalisation. The context of Gaelic does not present a straightforward example of either of these two processes. In examining the census figures in isolation, while admitting they are self-reported figures and may contain some discrepancies from year to year, the picture is one of language obsolescence after a long history of social persecution. But on a national level, and at community level in Glasgow and in Lewis, this is not accurate: the Scottish government and local authorities are making intense efforts to promote and revitalise Gaelic with the hope of increasing the figures from the census. Even then, the raw numbers do

not display the changing social context of Gaelic. Previously considered a language spoken by the 'uncivilised' in a geographically remote and 'culturally backward' part of Scotland, the social context of Gaelic is now changing beyond recognition: today Gaelic is at times used as the sole language for educating future generations of speakers, and is the source of multiple employment possibilities both in the traditional heartlands of the language, and in urban central Scotland. These new jobs in Gaelic are not only in traditional occupations such as weaving and crofting, but many are high-status and highly-paid such as in media, education, arts, administration and politics. Gaelic is now a language with substantial economic and social capital, which has previously not been the case. The language is also more nationally and locally visible and has increased presence and status in the media and in national politics. While the Gaelic language has previously been associated with obsolescence (Dorian 1981), language revitalisation is a significant new factor in the social history of the language. This thesis concentrates on the linguistic outcome of these new social developments and looks to social and linguistic explanations for language change. The following chapter describes the methodology used in this thesis, and then Chapters 5–8 describe the results of the social and linguistic analyses.

Chapter 4

Methodology

This chapter discusses the methods used to collect data for this thesis and justifies their use. While the broad methodologies are outlined here, detail on the exact phonetic analyses carried out can be found in the corresponding chapter for the particular feature in question. This thesis employs mixed methods, combining qualitative ethnography with quantitative phonetic analysis. The aim of using mixed methods was to investigate linguistic changes, but also gain a better understanding of the social motivations behind change using qualitative data. Qualitative data analysis, such as the ethnographic methods used here, aims to understand the social world through the experiences of the research participants. Such research typically takes a constructionist view of the social world, and aims to understanding the meanings behind social structures, and the participants' relationship to them (Bryman 2004, 266). Qualitative research's emphasis on meaning, participant experience, and a social constructionist viewpoint mean it is immediately amenable to investigating identity as defined in Chapter 2, Section 2.4. Here I combine this qualitative examination of identity construction with variationist sociolinguistics, a typically quantitative framework (e.g. Tagliamonte (2006)). The quantitative analysis allows the examination of patterns in speech and the exploration of their relationship to socially relevant categories identified over the course of the ethnographic fieldwork.

The ethnographic methodology used here to gain an insight into the use of Gaelic in identity construction among the participants is explained in Section 4.1. The linguistic analysis is conducted within a variationist sociophonetic framework, which is explained in Section 4.2. The research was conducted among three groups of speakers: older speakers in Lewis, adolescent speakers in Lewis, and adolescent speakers in Glasgow. The motivation for recording speakers in Lewis and in Glasgow is explained in Section 4.3. Section 4.4 explains how speakers were recruited for interview, and which speakers were analysed in each of the phonetic analysis chapters presented here. Although this Section explains which participants were analysed, the exact justification for which groups of speakers were analysed, and why these particular groups were chosen emerged over the course of the ethnographic research, and will be fully explained in the ethnographic analysis (Chapter 5).

Section 4.5 then discusses the semi-structured sociophonetic interview methodology used

with each group of speakers to collect linguistic and further qualitative data. Which linguistic features were analysed, and how their analysis relates to the research questions in Chapter 1, is explored in Section 4.6. Section 4.7 then describes and justifies the statistical analysis techniques used for exploring patterns in the linguistic data. Section 4.8 describes the ethical approval process for this research, and Section 4.9 summarises the chapter.

4.1 Ethnographic methods

Ethnography has been used to explore and explain the use of linguistic variation in identity construction in several previous variationist sociolinguistic studies, for example, Eckert (2000); Moore (2003); Alam (2007); Mendoza-Denton (2008); Drager (2009); Hall-Lew (2009); Lawson (2011); Jones (2012). Previously, ethnographic methods have been widely used in other areas of sociolinguistics such as the research areas headed by Gumpertz & Hymes (1972). This thesis also draws on ethnographic methodologies, and this section discusses exactly which elements of ethnographic methods are employed.

Ethnography is a family of methods, rather than a method in itself. Although the term 'ethnography' is used to refer to a wide range of different techniques and practices across disciplines, several common themes emerge which define this group of methods: ethnography involves direct and sustained contact with a group of people in the context of their daily lives, and it involves asking questions and listening in an attempt to understand the participants' view of the world (O' Reilly 2005, 3). Participant observation has become established as a central component of ethnographic methods. This practice dates from the seminal work by Malinowski (1922), although it has been adapted to specific times, places, and situations over the years. Malinowski recommended spending long periods of time observing, but also participating in the community under study in order for the participants to become familiar with the researcher.

Ethnography recognises the reflexivity and constant renegotiation of self within the social world discussed in Chapter 2 in the work of Giddens and Bourdieu. The role of the ethnographer then is to listen and learn from local people in their negotiation of their social world. This is explored in the seminal essay on Balinese cock-fighting by Geertz (1973). Geertz explains how cock-fighting is an integral part of constructing what it means to be Balinese. He describes the fights as a narrative of Balinese experience, and his role as an ethnographer is to record such narratives (Geertz 1973, 452):

> The culture of a people is an ensemble of texts, themselves ensembles, which the anthropologist strains to read over the shoulders of those to whom they properly belong.

Ethnography then is listening to how people construct their own social world rather than recording a static notion of culture and tradition as defined by the researcher.

Ethnography, and all social research more generally, also involves acknowledging the researcher's own background, and ensuing biases this may bring to the research (O' Reilly 2005; Wright Mills 1959). When I conducted the fieldwork for this thesis I was aged 24-25 and had been learning Gaelic for 1-2 years. I am from England, and speak English with a northern English accent. As an English person in Glasgow or the Highlands I will always be an outsider, though outsiders in both these areas are tolerated, and especially welcomed in Lewis if they speak Gaelic. Participants had experience of Gaelic learners and students so it was easy for me to slip into this identity with which they were familiar. It is, however, unusual for someone English with no connections to the Highlands to learn Gaelic to fluency, and this prompted much comment, which only served to enrich my qualitative data and help to build a relationship with my participants. My research in both Lewis and Glasgow involved substantial participant observation. I played on my status as an outsider to ask lots of questions about the daily life of the people I was observing, and especially the role of Gaelic in their lives. As well as participant observation, my ethnographic data collection involved interviews, which are discussed in detail in Section 4.5.

4.2 Variationist sociolinguistics and sociophonetics

Variationist sociolinguistics uses quantitative methods to explore the 'orderly heterogeneity' in speech (Weinreich, Labov & Herzog 1968). These authors describe how speech is inherently variable, but this variation is far from random, and follows structured patterns. A framework for analysing such variation is fully explored in Labov (1963) and Labov (1966), and requires sampling from different sections of a population in order to infer patterns about the entire community. As explored in Chapter 2 Section 2.4.2, early variationist studies correlated variation in speech with macro social categories, and explored patterns of change. Variation is now also considered in other ways such as its use in identity construction. This thesis uses variationist sociolinguistic methods and also sociophonetic methods. Sociophonetics can be seen as a subfield of both phonetics and sociolinguistics, which has its origins in the variationist paradigm described above (Foulkes, Scobbie & Watt 2010, 703). Sociophonetics refers to the study of socially conditioned phonetic variation in speech (Hay & Drager 2007), and aims to include methods, techniques, and explanations for variation and change from both phonetics and sociolinguistics (Foulkes, Scobbie & Watt 2010, 703).

4.2.1 Apparent-time

In order to investigate the possibility of change in Gaelic, I have made use of the apparent-time hypothesis. This construct was first used in Gauchat's (1905) study of intergenerational change in Switzerland, and was made popular by Labov's (1963) study of phonetic variation and change in Martha's Vineyard (see Section 2.4.2 in Chapter 2). Labov compared the speech of older speakers to that of younger speakers and inferred that language might be changing

when he found differences between the generations. The assumption is that if young people continue speaking like they do as they get older, differences between generations can represent a snapshot view of language change in progress. This assumption has been shown to generally reflect what does happen in reality (Bailey, Wilke, Tillery et al. 1991), with some exceptions (Sankoff & Blondeau 2007), although there is accumulating evidence that indicates that speakers do actually change the way they talk through adulthood (e.g. Harrington, Palethorpe & Watson (2000); Harrington (2006, 2007); Evans & Iverson (2007)). However, as explained in Sankoff (2006), a large number of real-time 'retests' of apparent-time explanations have shown that largely those studies which claim apparent-time change are upheld after real-time comparison. With these caveats in mind I have compared the speech of older and younger Lewis speakers in order to assess the possibility of language change in Lewis (research question 1).

4.3 Fieldwork sites

As explained in the preceding chapter, the situation of Gaelic today is simultaneously one of language decline and endangerment, and one of revitalisation. Language revitalisation is taking place both in the language's traditional heartlands in the Highlands and Islands, and also in urban areas. This thesis focusses on the sociophonetic outcome of these language revitalisation measures. Two areas were chosen to represent the Gaelic heartlands, and the urban sites of revitalisation respectively. The Isle of Lewis was chosen to represent a Gaelic heartland community because it is where the densest concentration of Gaelic speakers live (MacKinnon 2010). Partly for this reason, and also because of the location of many Gaelic media facilities in Lewis, the Lewis dialect is one of the most audible on Gaelic radio and television. Lewis speakers, perhaps as they are more numerous than many other dialect speakers, are well-represented in Gaelic-essential jobs such as political positions, teaching, and the arts. Also, as will be explained in Section 5.2.1, over half of the Gaelic-speaking teachers at the Glasgow school were from Lewis. Glasgow represents the new urban community as this is where many of the current revitalisation methods are implemented, and the city is home to the country's only Gaelic-medium secondary school. Glasgow has also traditionally been the destination of choice for economic migrants from the Highlands and Islands wishing to remain in Scotland, as explored in Chapter 3.

The decision to observe and record adolescents in a school environment at both fieldwork locations was motivated by four factors: firstly, it is easier practically to access adolescents in school as this is where they spend much of their time, and the school provides a structured framework through which to contact young people. Secondly, most of the adolescents in Glasgow only speak Gaelic at school making it essential to work with them in a school environment. Thirdly, as adolescents spend much of their time at school, this experience is a formative social context, as observed by Bourdieu (2010, 85) and Eckert (1989). Fourthly, as discussed in Chapter 2 Section 2.4.2, adolescents occupy an interesting and important position

in discussions of language change (Eckert 1988; Kerswill 1996; Labov 2001; Tagliamonte & D'Arcy 2009).

4.4 Sampling of participants

This section explains the justification and methods used to recruit participants in each of the groups of speakers analysed. In each community, slightly different methods were used so these are detailed in the following subsections.

4.4.1 Older speakers in Lewis

The older speakers in Lewis were recruited via a snowballing method in two rural areas of the island: Uig and South Lochs. On the ferry over on my first visit to Lewis I met a chatty resident from Uig. He directed me to my first participant, and I followed up his advice on neighbours who might be willing to talk to me. In South Lochs I recruited participants by asking in the local shop, and then following up contacts suggested by the initial participants. The interviews were conducted in a quiet room in the participants' homes. Participants were generally very happy to talk to me and were extremely welcoming.

Recruiting participants was not easy. Although people told me on a regular basis that there were many Gaelic speakers in the area, they found it difficult to name specific people who were well enough to talk to me. My first interviews in Uig were carried out in summer 2010. When I returned in summer 2011 one of my initial seven participants had passed away, and one had gone into a care home because she could no longer stand the loneliness, and was becoming increasingly confused. On several occasions I followed up on recommendations for recruiting more participants and I spoke to the person's husband or wife on the phone. They told me that the person I was hoping to speak to was either too deaf or too confused or both to participate. Some participants had impaired vision so were unable to complete any reading tasks. At each interview I had to adapt my methodology according to the abilities of the participant. Seven interviews were conducted with older participants in summer 2010, and twelve interviews were conducted in summer 2011. The material collected in summer 2010 was not used in the phonetic analysis as the data were not recorded to a high enough quality. The data from 2010 contributed to the ethnographic observations described in Chapter 5, but no biographical and language use data were collected from the 2010 participants (method described in Section 4.5), so they are not referred to in the quantitative analyses of these data (Section 5.3). Two of the participants from 2010 were reinterviewed in 2011. The data collected in 2011 was recorded to very high quality, but due to the audible effects of lost teeth and smoker's voice quality, the data from several participants was unsuitable for acoustic analysis. Out of the twelve interviews collected in 2011 I selected those six with the most data, clearest voice quality, and fewest audible effects as a result of lost teeth.

Obtaining informed consent using a written form and information sheet was difficult for

some participants due to impaired vision. In order to make sure each participant knew what my research would entail I read through the information sheet with them, translating it into Gaelic for those who were unaccustomed to speaking English. The form was written in English so that those who were unable to read Gaelic would be able to read it. Two older participants were slightly suspicious about the research and having an official looking information sheet and consent form in English seemed to make the research more legitimate and addressed their concerns. Despite these challenges it must be emphasised how welcoming the people I did interview were, and I am much indebted to the inhabitants of Uig and South Lochs for their cooperation and support. Copies of the Lewis older speakers' information sheet and consent form are in Appendices A.1 and A.2. These forms were printed on University of Glasgow headed paper.

4.4.2 Younger speakers in Lewis

In Lewis, I interviewed the single Gaelic-medium class in S2 (the second year of Scottish secondary education where students are aged 13-14). There were eighteen students in the class. Written consent was sought from parents before interviews were conducted, and students were encouraged to take part via a £5 voucher that they could spend online on books or music downloads. A copy of the information and consent form sent to parents is in Appendix A.3. This form was printed on Lewis school headed paper. There were eighteen pupils in the Gaelic-medium S2 class and I interviewed sixteen. Of these the twelve who contributed the most data were analysed quantitatively. One girl did not complete the word list so is not included in the analysis using this data (Chapter 6).

4.4.3 Teachers in Glasgow

Interview speech from teachers in the schools in Lewis and in Glasgow was not collected due to availability of the teachers. These individuals had a heavier workload than their English medium counterparts as they were required to translate much of their own material for use in the classroom and were not able to take time to take part in an interview. Five of the teachers at the Glasgow school were however recorded reading a word-list in order to provide some comparative data: four from Lewis and one from South Uist. The four teachers from Lewis in this sample were used for the analysis of lateral productions (Chapter 6). The consent and information forms used with the teachers were the same as for the older Lewis speakers. In order to account for the influence of different teachers, I included the school class of pupils in Glasgow, and the primary school they attended as factors in the linguistic analyses of variation among Glasgow speakers.

4.4.4 Younger speakers in Glasgow

All students in the two classes I observed (see Chapter 5) were approached for interviewing. Written consent was sought from their parents and the recordings were conducted during school time. After the initial hurdle of them remembering to take the piece of paper out of their bags at home I had no difficulty recruiting willing volunteers. Students were encouraged to take part with a £5 voucher as in Lewis. The head teacher at the Glasgow school asked me to send an initial information sheet to parents at the start of my research. This was originally printed on Glasgow school headed paper and a copy is in Appendix A.4. A separate recording consent form was then sent, a copy of this is in Appendix A.5. In total I interviewed twenty eight students out of a possible thirty one.

Out of the twenty eight Glasgow students interviewed, I conducted a quantitative analysis of twenty one. Two girls were excluded as they did not provide enough speech data, two girls and one boy were excluded as they had moved to Glasgow less than two years ago, one boy was excluded as he had English parents and both his Gaelic and English were noticeably different from the rest of the students, and one further boy was excluded from the phonetic analysis due to only a small amount of data being provided.

4.4.5 Summary: Sampling of participants

This section summarises the above explanations of how many participants were recruited in each area, and indicates which participants were used in each linguistic analysis. The total number of participants recorded and analysed phonetically split by speaker group and gender is provided in Table 4.1. The sections above explain why the particular numbers of participants were analysed out of the overall sample recorded. The linguistic analyses in Chapter 6–8 use data from both the word-list section of the interview and the interview itself. The number of participants who completed the interview and the word-list is summarised in Table 4.2 (the interview and word-list participants are subsets of the total 43 speakers indicated in Table 4.1). Chapter 6 uses data from the word-list, and Chapters 7 and 8 use data from the interviews. More information on the individual participants and their demographic and linguistic background in provide in Chapter 5, Section 5.3.

Speaker group	Speakers recorded female	male	Total recorded	Subset analysed female	male	Total analysed
Lewis old	6	6	12	3	3	6
Glasgow teachers	4	1	5	3	1	4
Lewis young	6	10	16	6	6	12
Glasgow young	16	12	28	12	9	21
Total	34	30	61	24	19	43

Table 4.1: Total participants recorded and the subset analysed in each of the groups of speakers. The seven older speakers from Lewis recorded in 2010 are not included here as their data was not quantitatively analysed. Observations made during these interviews do however inform the ethnographic account in Chapter 5.

Speaker group	Interview participants female	male	Total	Word-list participants female	male	Total
Lewis old	3	3	6	3	0	3
Glasgow teachers				3	1	4
Lewis young	6	6	12	5	6	11
Glasgow young	12	9	21	12	9	21
Total	21	18	39	23	16	39

Table 4.2: Subsets of participants who were analysed phonetically.

4.5 Interview methodology

In ethnographic studies, there is often little distinction between participant observation and a formal interview. Any interviews tend to be unstructured in order to allow the participant to elaborate on their view of the world, and an interview can occur in opportunistic informal settings (O' Reilly 2005, 115). While inspired by this approach, my research was subject to several practical constraints: firstly, the need to obtain large quantities of speech data in Gaelic from each individual, secondly, the need to obtain very high quality sound recordings for acoustic analysis, thirdly the need to obtain consistent demographic information from each participant. For this reason my interviews were conducted in a slightly more formal manner, though attempts were made to provide as ecologically valid a setting as possible.

Previous work in sociolinguistics has adopted the Sociolinguistic Interview, as defined by Labov (1984, 32-33) as the methodological tool of choice. I here used an interview technique aimed at collecting data for sociolinguistic analysis, but without adhering rigidly to the methodology advocated by Labov. The interviews were semi-structured as this provided the best possible balance between gaining specific information and allowing participants to elaborate on topics of interest.

Typically, the aim of collecting data for a sociolinguistic analysis aims to collect 'the vernacular' (Tagliamonte 2006, 8). 'The vernacular' refers to a baseline of an individual's

speech which they would use in a relaxed informal setting, referred to by Sankoff & Thibault (1980, 54) as 'everyday speech', or as 'real language in use' (Milroy 1992, 66). Why it is so crucial to try and collect 'the vernacular' is explained by Labov (1984, 29): 'the vernacular' is the most systematic form of speech, where sociolinguistic differences are most apparent. It is also a baseline context, and other speech styles are defined in relation to this baseline. The first of these arguments could be viewed as a little circular: sociolinguistics finds that 'the vernacular' is the most systematic form, but this is only ascertained from analysis of speech that is labelled by the analyst as an example of 'the vernacular' and then examined. The analyst only knows this speech is 'vernacular' because of the patterns within it. The second argument in favour of 'the vernacular' is that it is a baseline context, which assumes some kind of underlying speech system. Instead it is perhaps more fruitful to consider speech within each context without recourse to a notion of which context is the baseline.

A difficulty associated with using data from sociolinguistic interviews to infer patterns in 'everyday speech' is the necessity of recording participants. In other words, the aim of variationist sociolinguistics is to ascertain how people speak when they are not being recorded, but we must necessarily do this by recording speakers. Labov (1984, 30) refers to this situation as the 'Observer's paradox': 'Our aim to observe how people talk when they are not being observed [...] We refer to it as a paradox since it can never fully be solved completely in principle'. While this difficulty can never fully be overcome, it can be mitigated by ensuring conditions which put participants at their ease, and allow them to express themselves without making radical alterations to the behaviour they exhibit outside of interview contexts. Several innovative methods have attempted to mitigate the effects of a recording context on speech. For example providing the participants with recording devices and allowing them to record their own data (Podesva 2007; Smith, Durham & Fortune 2007, 21; Podesva 2011; Sharma 2011), or allowing participants to talk to one another without the interviewer present (Stuart-Smith, Timmins & Tweedie 2007; Snell 2008, 2010). As will be fully explored in Chapter 5, many of the younger participants in this thesis only used Gaelic in certain formal contexts, and as will be demonstrated, did not use Gaelic for peer-group interaction. For these reasons I chose to conduct interviews in order to encourage them to speak Gaelic, and interviewed students individually as group interviews would have been ecologically invalid. The long period of time I had spent conducting ethnography and getting to know participants before recording helped to put participants at ease during the interview setting. Many of the participants I worked with were familiar with interview contexts, and had previously been interviewed by Gaelic researchers, or Gaelic TV and radio. This was especially prevalent among the young speakers, due to the high demand for young people's comment on Gaelic TV and radio, but relatively small number of young people who speak Gaelic.

All participants were interviewed in Gaelic using a Labovian style sociolinguistic interview combined with an ethnographic semi-structured interview methodology. If participants had a lot to say about a particular topic, I asked follow-up questions to encourage them to elaborate.

Slightly different interview methods were used for each of the groups of speakers interviewed, so the methods are discussed separately here.

4.5.1 Older speakers in Lewis

The interviews among Lewis older speakers were conducted in a quiet room in the participant's house and generally lasted around 40-45 minutes, with occasional interviews lasting 90 minutes. All participants were recorded in Audacity using a Beyerdynamic Opus 55 headset microphone, a Rolls Live mixer and a USB audio interface. The sound files were recorded to a laptop computer at 44,100Hz, 16 bit quantisation. The headset microphone was adapted slightly for some of the older participants who were deaf and would not easily be able to maintain conversation with an earpiece covering one ear. The headset was placed around the participant's neck leaving the microphone around 4-5cm from the mouth. Participants commented that this was not an uncomfortable arrangement, and they had soon forgotten that the microphone was there. Indeed they commented that this setup was even preferable to having a table top or hand held microphone constantly in front of their face. In general the older speakers were unable to read Gaelic, so where this was the case I did not carry out a word-list task as with the young speakers. Where participants were able to read Gaelic, I asked them to read a word-list. Words were presented on my computer screen in an iPhoto presentation (similar to Powerpoint, but in a format which allowed me to randomise the order of the pictures with a script). Each word was presented three times in random order, and was written in large letters with an accompanying picture of the desired lexical item. The words were chosen to be of maximum familiarity to the participants, whilst containing some of the linguistic features I was interested in. With the participant, I then filled in a short demographic questionnaire about their place of birth, other places they had lived, parents' and grandparents' places of birth, and aspects of language use. The background questions asked are Section 4.5.5, and the results are reported in Section 5.3 and in Appendix B.

Due to the Gaelic-centric nature of my research, I did not conduct any of the interview in English, contrasting with interviews among the young people (see below). The older speakers recruited were willing to take part in sharing their knowledge of Gaelic, and then asking them to speak English could have been insulting and inappropriate, as well as challenging for some speakers.

I realised after conducting a few interviews that in traditional Lewis households visiting friends, neighbours or relatives follows an almost ritualistic schedule. Participants incorporated my visit as a researcher into this formalised framework of visiting. Often I would be greeted at the door by a member of the participant's family who would direct me to the parlour where the participant was waiting for me. The interviews most often took place in the formal parlour rather than 'backstage' in the kitchen (Goffman 1990). Tea or coffee was always provided as well as large amounts of cake and biscuits. As well as being willing to answer my questions, the participants were very eager to know about my own background,

and interviews were more a sharing of information than me gathering information, especially when I knew the participant well. The majority of my interviews with older people in Lewis were conducted in this manner, as were visits when I was not recording. Only when I began to know families well and could drop in unannounced did the visit move to the kitchen.

4.5.2 Younger speakers in Lewis

Among young people in Lewis I worked with each participant for one lesson, fifty-five minutes. The interview itself was conducted first, and typically lasted 30-45 minutes. As with the older speakers, I also asked the younger participants about their place of birth, parents' and grandparents' places of birth, and home language use. Among the younger speakers, I took this opportunity to ask questions in English and discuss answers in English in order to elicit some additional data in English. Finally the students were asked to read the English reading passage 'The boy who cried wolf' to provide some read data on their English. This reading passage was chosen as more representative of all the sounds in English than the more commonly used 'The North Wind and the Sun' (Deterding 2006), as well as more relevant to young people. The passage is in Appendix C.

The headset microphone proved invaluable for recording in a school situation. As a guest in the school I was given little say in the room I was allocated for recording the students, and although the room was quiet and empty, the noises of the surrounding school environment were anything but quiet. I had to contend with bells, students outside in the yard, doors banging, and other such noises. Since the microphone was very close to the participant's mouth I could turn the gain down so the surrounding noise was practically inaudible on the recordings. The students were completely familiar with using headsets so were quite comfortable with the recording setup. Instead of using the headset provided with the microphone, I adapted an Xbox headset and taped the microphone to it. This headset was easier to put on and more comfortable than that provided with the microphone. Many of the students actually used exactly the same headset for hours at a time on a daily basis to play computer games at home. Other participants were enthusiastic about using a headset like ones they had seen in television programmes about call centres, or in fast food drive throughs.

4.5.3 Teachers in Glasgow

As discussed above, I did not conduct interviews with the teachers in either school, though some teachers in Glasgow provided word-list data using the methodology described in Section 4.5.1.

4.5.4 Younger speakers in Glasgow

The interview setup and methodology was the same as for the students in Lewis, though the interviews lasted slightly shorter as classes at the Glasgow school lasted 50 minutes instead

of 55.

4.5.5 Biographical and language use questionnaire

The biographical and language use questions asked of each participant are listed below:

1. Name
2. Date of Birth
3. Current postcode
4. Where were you born?
5. Where were you raised?
6. Have you lived anywhere else? (If yes please detail)
7. Where is your mother from?
8. Where is your father from?
9. Where are your grandparents (mothers parents) from?
10. Where are your grandparents (fathers parents) from?
11. What language(s) do you speak to your mother?
12. What language(s) do you speak to your father?
13. What language(s) do you speak to your siblings?
14. What language(s) do / did you speak to your grandparents?
15. What language(s) does your mother speak to you?
16. What language(s) does your father speak to you?
17. What language(s) do your siblings speak to you?
18. What language(s) do / did your grandparents speak to you?
19. Do you attend a Gaelic-speaking social, leisure or religious group? If yes, how often?
20. What language(s) do you dream in?
21. What language(s) do you watch TV in?
22. What language(s) do you listen to the radio in?
23. In what language do you read books?

24. In what contexts do you generally use Gaelic? E.g. specific places, specific people, specific occasions

25. In what contexts do you generally use English? E.g. specific places, specific people, specific occasions

26. Any other comments on your language use?

4.6 Linguistic features

This section explains the linguistic features chosen for analysis, and justifies their examination.

4.6.1 'The variable' in variationist research

A central concept in variationist sociolinguistic studies is that of the linguistic variable. A variable is 'two alternative ways of saying the same thing' (Weinreich, Labov & Herzog 1968; Labov 2008; Tagliamonte 2012), for example producing word-medial or -final English /t/ as a glottal stop or alveolar plosive. Sociolinguists can take the variable as a starting point in any analysis, and observe which variants of a particular variable are associated with which social groups. As explored in Lavandera (1978) it is doubtful as to whether there are ever truly 'different ways of saying the same thing'. Different variants may have subtly different social meanings, or different discourse meanings. For example, the words 'friend' and 'mate' both refer to an acquaintance, but have different meanings in terms of formality. Tagliamonte (2012, 4) acknowledges this fact and states that any notion of a variable must, at some level, be an abstraction, with variants having approximately similar meanings. Another crucial assumption of the sociolinguistic variable construct is the assumption that all speakers have the same linguistic systems. For example, we cannot talk about variants of a vocalic variable, if this vowel is not distinguished by all speakers in their linguistic systems. This is particularly relevant to the current study: in contexts of language obsolescence and revitalisation, linguistic systems are subject to rapid and widespread change, and phonemes not present in the community-dominant language may be lost (Andersen 1982; Dorian 1981; Jones 1998; King, Watson, Keegan et al. 2009). It cannot, therefore, necessarily be assumed that all the speakers in this study have the same Gaelic phonemic system, and indeed Chapters 6 and 8 indicate that the different speaker groups examined here do have different linguistic systems. For this reason I have opted to use the term 'linguistic features' when referring to the particular aspects of Gaelic phonology investigated in this thesis.

4.6.2 Features analysed here

Three linguistic features are analysed in this thesis: Scottish Gaelic laterals, variation in the vowel [ʉ], and tone and intonation, and I here explain why these features were chosen. The

features in this thesis were chosen to provide an overview of the Gaelic sound system for descriptive as well as sociolinguistic purposes. Accordingly, this thesis examines consonants (laterals), vowels ([ʉ]), and prosody (tone and intonation). Each of these features was chosen to provide information for the specific research questions investigated here: whether Gaelic in changing in heartland communities, whether new dialects of the language are forming in urban areas such as Glasgow, and what role identity plays in these developments.

Laterals (Chapter 6) were chosen to investigate a potentially changing feature. The lateral system of Gaelic contains three phonemic laterals and is therefore typologically unusual when compared to other Indo-European languages. The changes described in language obsolescence and language revitalisation situations in Chapter 2 often involve the reduction of typologically unusual features. This may be the case here. Also, English only has one phonemic lateral, which may further motivate a change in the direction of fewer phonemic laterals in Gaelic (indirect transfer). As this Chapter is concerned with the realisation of phonemic contrasts, I used data from the word-list (6.1), which was designed to include (near) minimal triplets for the lateral contrasts. This resulted in relatively smaller token counts (6.2) for each phonemic lateral when compared to the vocalic and prosodic analyses described below. For this reason the use of lateral variation in the realisation of local identity categories is not investigated. The relevance of local identities to phonetic variation is however thoroughly examined in the vocalic and prosodic analyses (see below).

Vowels (Chapter 7), in addition to laterals, were also selected to investigate potential change. A previous study of two generations of Lewis speakers, (Nance 2011), found significant differences in the production of the Gaelic central allophone [ʉ]. Specifically, young adult speakers in Lewis produced [ʉ] with a higher F2 (fronter in acoustic space) than middle-aged speakers. Nance (2011) conducted analysis on a small set of word-list data, and the current study extends the analysis to a larger dataset from interview speech. Vowel variation was also potentially interesting for the investigation of gradient phonetic variation. Examination of gradient acoustic data from Gaelic vowels allowed me to look at how much and to what extent this particular vowel varies. The vowel analysis provides a fine-grained, sensitive, analysis of variation among different speakers, thus allowing an in-depth analysis of the links between variation and social practices. A further advantage of analysing [ʉ] was that it has a near equivalent vowel in Scottish English. The vowel in Scottish English occurs relatively frequently in interview speech, and as such it was possible to extract enough tokens from the section of the interview conducted in English to allow comparison between variation patterns occurring in the young people's English and the young people's Gaelic.

I chose to investigate tone and intonation (Chapter 8) as again, the system of Scottish Gaelic is extremely different to that of English, so it was hypothesised that change may be occurring in this dimension of the young speakers' Gaelic via indirect or direct language transfer (Thomason 2001). Gaelic has been described as a pitch accent language, prosodically similar to Swedish and Norwegian (Ternes 2006), whereas English is an intonation language (Wells 2006). Languages with pitch accent systems are typically likely to lose them over time,

as investigated in a detailed survey of Indo-European languages by Salmons (1992). Features with no parallel in the community-dominant language, which are liable to change anyway, are likely to be subject to accelerated change in contexts of obsolescence/revitalisation (Dorian 1981; Jones 1998). All of this evidence suggests the Gaelic pitch accent system may be an interesting area for investigating intergenerational differences in Gaelic. Additionally, intonation in Glasgow is typically very distinctive, with rises occurring on almost every accented syllable (e.g. Ladd (2008, 126)). This area was therefore also chosen to specifically investigate whether the Gaelic of Glasgow was different to the Gaelic of Lewis.

Although each linguistic feature was chosen for its potential in explaining certain research questions, each feature informed the answer to all three questions. The discussion chapter brings together parts of the results from all of the linguistic features examined in relation to the research questions asked here.

4.7 Statistical analysis

In the quantitative analysis of the phonetic data various statistical models were constructed to examine patterns in the data. The specific models constructed for each phonetic analysis are explained in detail in each of the corresponding chapters, but I here provide an overview of the main methods used and their justification. A sociolinguistic analysis is mainly concerned with assessing the interacting impact of multiple linguistic and social factors (e.g. Labov (2001); Tagliamonte (2012)). The method used here for multivariate analysis is mixed effects regression. Regression analysis allows the modeller to assess the power of individual factors in the model in predicting a dependent variable, and also allows the modelling of factors in interaction. A regression model holds constant all other variables when assessing the power of one factor, or interacting factors. This allows the modeller to say with confidence what contributes to explaining linguistic variation and what does not, all other (measured) factors being held constant. Factors in a regression model are tested against a null hypothesis of contributing nothing to explaining patterns in the data. If the null hypothesis is correct, that particular factor or interacting factors have little or no relevance to explaining the data. If the null hypothesis is not correct the data are well modelled with the inclusion of that particular factor, and it is likely this reflects a pattern in the group of speakers under examination. If a factor contributes to modelling the data, it is referred to as statistically significant. This is when the null hypothesis is rejected (Field, Miles & Field 2012, 50). Regression models are assessed via probabilities. The usual cutoff point for statistical significance in the social sciences is when the null hypothesis has a 1 in 20, or 5% chance of being wrongly rejected. In the statistics literature, a factor being statistically significant is expressed as when $p<.05$ (Field, Miles & Field 2012, 52).

This thesis uses mixed effects regression modelling, a thorough and appropriate method for linguistic data analysis (Baayen 2008; Johnson 2009; Hay 2011; Tagliamonte 2012). Mixed effects models differentiate between fixed and random effects in the model structure, i.e. a

dependent variable is modelled using a variety of independent variables and their interactions, and each one of these can be modelled as 'fixed' or 'random'. Any statistical analysis is assessing whether the patterns in the data are likely to be generalisable outside the given sample. In a mixed effects model, fixed effects are seen as those which do exist in the general population, and random effects are those which do not exist in the entire population. For example, a linguistic study might want to consider the effect of gender on vowel productions. 'Gender' exists outside of any particular sample of speakers so would be modelled as a fixed factor. In linguistic analyses many tokens are generally collected from one particular speaker. It is likely that those tokens will all be similar, and more similar to each other than to the tokens from another speaker. In other words the individual characteristics of each speaker in the sample might affect patterns in the data. Such individual effects are specific to the dataset collected and can therefore be modelled as random effects. The model is adjusted for each of the random effects so predictions are not made on the basis of one or two outlying individuals (Hay 2011, 212). Mixed effects modelling is very conservative and might find factors non-significant when another less conservative model would class them as significant (Type II error). However, the modeller can be more confident that any results obtained from a mixed effects model are robust and do not over-predict the significance of variables (Type I error) (Tagliamonte 2012, 141). Mixed effects regression is a rather new technique in sociolinguistic research. For this reason is it not yet clear how best to calculate p values for t tests carried out on regression coefficients. The method suggested in Baayen (2008, 248) uses Monte Carlo Chain Modelling and this is the method I have employed.

Each time a regression model was constructed, I conducted general-to-specific modelling, which involves building a model with all possible variables included and then removing variables until an optimum model is reached. I removed variables which did not achieve significance defined as where $p < .05$. If a variable's p value was .06, I left it in if it improved the overall model fit. Unlike traditional linear regression, mixed models do not produce an adjusted R^2 value which can be used to compare model fit. Instead R provides two measures of model fit, the Akaike's Information Criterion (AIC) and the Bayesian Information Criterion (BIC). Both can be used to compare one model with the previous, and lower values indicate better fit. The numbers produced are not, however, a normalised measure for comparing one model overall with an entirely different model (Field 2009, 737). To this end I compared subsequent models using the AIC and BIC values and attempted to obtain the lowest values possible.

Mixed effects regression is a parametric statistical technique, and as such is subject to certain assumptions. One of these is the assumption that the data are normally distributed. While some non-normality is tolerated by regression models, when the data are highly non-normal any models constructed will be unstable and inaccurate reflections of the data. Non-normal data were encountered in the analysis of Gaelic laterals (Chapter 6). For this reason non-parametric statistics were used for the analysis of these data. Non-parametric statistics do not assume normally distributed data and were therefore suitable for the lateral

analysis.

In this thesis, numbers in tables are presented to two decimal places unless otherwise stated.

4.8 Ethical approval

This project was granted ethical approval through the School of Social and Political Sciences and the College of Social Sciences Ethics Committee. Before conducting research with under 18s I also obtained Disclosure Scotland clearance. These procedures ensured that the University of Glasgow considered that participants would be fully informed about the nature of the work, and would be able to make an informed decision about whether or not to take part. All of the participants' names throughout the thesis are pseudonyms. However, due to the nature of this research in the small, closely-knit Gaelic-speaking community, I have had to take additional measures in order to ensure the anonymity of the participants involved. For example, when discussing individual patterns of variation in the linguistic analysis chapters (6–8) I have omitted identifying details such as the exact role particular individuals may play in the social hierarchy of their school or community. This also applies to the linguistic behaviour and social practices, occupations, and exact locations of the participants described in the ethnography (Chapter 5). In some cases I have omitted information which may increase understanding of the data and the social context of the communities I worked in. I consider this a necessary decision in order to protect my participants and respect their anonymity. Where detailed information about an individual or community is lacking, it may be for this reason.

4.9 Summary

This chapter has discussed the fieldwork sites chosen and the methods used for data collection and analysis. Data were collected on the Isle of Lewis from older speakers in rural areas and from young people in Gaelic-medium education. In Glasgow, data were also collected from young people in Gaelic-medium education. The data were collected and analysed using two contrasting, yet complementary frameworks: ethnography and variationist sociophonetics. The daily lives of participants were observed via participant observation, and speakers were then interviewed to elicit the data needed for linguistic analysis and provide further ethnographic data. In total 64 speakers were recorded and 43 are analysed quantitatively here. The following chapter is the first analysis chapter, exploring the ethnographic fieldwork conducted among Gaelic-speaking populations. This chapter also explains the social contexts which led to particular participants being recorded as representatives of their particular variety of Gaelic.

Chapter 5

Ethnography

This chapter gives an account of the ethnographic fieldwork I carried out among Gaelic-speaking communities both on the Isle of Lewis and in Glasgow. The aim of this research was to gain a better understanding of the everyday experiences of the participants and their language use, and obtain a sense of what it meant to them to be Gaelic speakers. This ethnographic analysis is used to inform the discussions of linguistic variation, and the role language plays in the construction of identity. Fieldwork was conducted among older Gaelic speakers in the rural Lewis communities of Uig and South Lochs, and among adolescent speakers in two schools: the secondary school on the Isle of Lewis is referred to as the 'Lewis school', and the school in Glasgow is referred to here as the 'Glasgow school'.

Section 5.1 details the fieldwork carried out in Lewis. Within this, Section 5.1.2 discusses work with older rural Gaelic speakers, and Section 5.1.3 explains the fieldwork with younger Gaelic speakers in Lewis. Section 5.2 then details the research conducted in Glasgow. The research is discussed as a whole in Section 5.4.

5.1 Fieldwork in Lewis

In Lewis, according to the 2001 census, 75% of the population have knowledge of Gaelic. This is extremely high when compared to the 1% who speak Gaelic in Scotland as a whole, and means the island is home to the densest concentration of Gaelic speakers in the world. A large number of Lewis speakers can be heard in the Gaelic media on a daily basis, partly because the Gaelic television channel, BBC Alba, has offices in Stornoway, which is the island's main town. Stornoway is also the economic and administrative capital of the Western Isles as a whole. Lewis' only secondary school is located in Stornoway. The island is divided into eight old parishes, which still have ideological as well as geographical importance to the people on the island: Uig, South Lochs, North Lochs, Stornoway, Back, Westside, Point and Ness. Participant observation was carried out among older speakers in two of these areas: Uig and South Lochs, which provide examples of the linguistic and social situation in rural communities where Gaelic is spoken. I also conducted fieldwork in the island's secondary school, referred to here as the 'Lewis school'. Participant observation was carried

out over two years in four time periods: February 2010, June-July 2010, July-August 2011, November-December 2011. The location of Uig, South Lochs, and Stornoway within the Outer Hebrides chain of islands is shown in Figure 5.1.

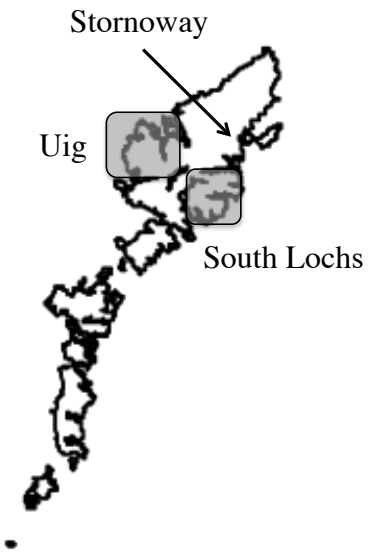

Figure 5.1: Location of fieldwork sites on Lewis

5.1.1 Life on an Outer Hebridean island

Lewis is a fairly remote island. There are several flights a day to the mainland, and two ferries a day to Ullapool in the western Highlands. From Ullapool it takes 5 hours to drive to Glasgow or Edinburgh. Lewis itself is mostly moorland and peat bog, with sea lochs and spectacular beaches all around the coast. The few roads across the island are largely single track, though older participants told me they were happy to have roads at all. One older woman grew up in an extremely isolated community with no road connection at all until she moved aged 25. People used to travel on foot from one village to the next, or in small boats. Nowadays a public bus service runs to even the most remote villages once or twice a day. Each area has its own local shop, though most people travel to Stornoway once a week to visit a supermarket. For those with no transport, local vans deliver meat, fish, fruit and vegetables, as well as provide mobile banking services.

Daily life on Lewis is to a large extent dictated by the weather. While I was working at the Lewis school I was on the island over part of the winter, which brought its own challenges. In December the sun rises around 9am and sets at 3pm leaving very few daylight hours. The flipside of this is that it is light until nearly midnight in June and starts getting light again at 2am. It is not uncommon to see people in small boats on the island's many inland lochs fishing all night for trout in the summer months. In the winter, gales from the Atlantic hit Lewis every few days. Occasionally this results in power cuts. During the winter I spent in Lewis I was staying in Stornoway and the longest power cut we had was for several hours,

though I was told in rural areas it can be several days until an engineer can be found to cross miles of moorland to fix a broken pylon. One such power cut happened in the middle of one of my interviews. Emerging afterwards the pupil and myself found the school had been closed and everyone else had gone home due to lack of light, heat, and fuel to cook school dinners.

The extreme winter gales also affect transport links to the island. The ferries are frequently cancelled, and less frequently the planes as well. Staff and students at the school I worked at frequently found themselves stuck of the wrong side of the sea separating the island from the mainland after travelling back via Ullapool. After a long weekend half-term break in November many pupils did not make it back for school on the first day. Travel disruptions make it very difficult for anyone undergoing hospital treatment. Donald, an elderly man I worked with in Uig, had to receive cancer treatment once a month in Inverness and frequently had to stay on the mainland longer than planned, or delay his treatment a few days. Compared to my own background (introduced in Chapter 4) this dependence on the weather patterns and ferry timetables was completely different, but the inhabitants of Lewis accepted any last minute changes of plan and seemed extremely relaxed about when they would get home, or leave the island.

Church

Church in Lewis is an extremely important part of life and everything stops for the Sunday Sabbath. Many people attend church twice on a Sunday, and older people traditionally spend the rest of the day resting and/or reading the Bible. Even those who do not spend the day reading the Bible are expected not to make excessive noise, run or play sport. People do not hang washing out on a Sunday. Generally speaking, tourists and visitors to the island are held to the same standards. A schism in the Church of Scotland in 1843 led to the formation of the Free Church of Scotland (see also Section 3.2.1). At the Free Church singing anything apart from psalms is generally forbidden, worshippers wear sombre clothing, and women are expected to wear long skirts and smart hats. A further schism in 1893 created the Free Presbyterian Church (Donaldson 1972, 98). People in Lewis embraced the new form of worship provided in the Free Church and Free Presbyterian Church and when in 1900 most churches in Scotland were reunited, Lewis congregations retained the split between Church of Scotland and Free (Presbyterian) Church (Macdonald 2004, 165). The tension between denominations still remains, as exemplified in the small community of Uig, which is served by both a Church of Scotland and a Free Presbyterian Church.

Anns a' bhaile agus san dùthaich. 'In town and in the country'

On arrival in Lewis I initially thought everywhere was extremely rural, but soon realised that a distinction is made by people in Lewis between 'town' (Stornoway) and 'country' (everywhere else). Many of my participants told me about life on Lewis comparing what happens *anns a' bhaile* 'in town' to what happens *san dùthaich* 'in the country'. Stornoway

is the largest town in the Outer Hebrides and is the location of many shops and services including two supermarkets, a sports centre, the council buildings, and a cinema. A social distinction between Stornoway and the rest of the island has been made ever since the town was expanded as a fishing port in the late nineteenth century. This expansion led to the arrival of many (English monolingual) settlers from the mainland (Macdonald 2004). Although this distinction has largely blurred today, the influence of a large number of English-speaking migrants remains, and the 'town' is less Gaelic-speaking than the 'country'. Data from the 2001 census showed that 60% of the Stornoway population had some knowledge of Gaelic compared to much higher proportion, 70-75%, of people in the 'country'. Another social distinction remains: the 'country' areas have much less access to services and are prone to being cut off in extreme weather. For example, the Western Isles Council policy for gritting roads in the event of snow is that roads in Stornoway and the main roads will be gritted and snow ploughed by 7.00am. In the rural villages roads are not gritted before 10.30am. While I was at the Lewis school, the school bus was involved in a (very minor) accident in South Lochs when it skidded on a non-gritted road in one of the rural villages. People in rural areas felt they had to be more self sufficient because of their remoteness from Stornoway, and accepted their lifestyle was different.

5.1.2 Older Lewis speakers

> Is bha t- tòrr dhaoine san àite. Nuair a thòisich a' chlann ann a sheo a' dol dhan a' sgoil bha iad bha mini-bus man tuirt sinn agus van aca do dha thoirt leotha well dha toirt dhan sg- bha bhini- mini-bus agus van eadar an dà bhaile a th'ann seo làn sin. Dol dhan a' sgoil Ùig shìos[...] Chan eil duine dol an-diugh ann ach ach. Sin mar a tha tha a h-uile càil ag atharrachadh. Fhios ad chan eil a bheag air fhàgail ann a sheo an-diugh.
>
> *There were a lot of people in this place. When the children started going to school there was a minibus and a van to take them, to take them [to school]. A minibus, as we say, and a van between the two villages, completely full up! To go to the school in Uig[...] But no one goes there nowadays. That's how everything is changing. You know, there's not much left here today.*
>
> Mary-Ann

The data from the older speakers in this thesis was collected in two rural areas of Lewis, Uig and South Lochs, which are two of the densest Gaelic-speaking areas (Duwe 2006a,b). Both of these communities are isolated, with the most remote villages about an hour's drive from Stornoway down single track roads populated by sheep. Both areas are suffering depopulation and are home to ageing inhabitants. There are few employment opportunities in rural Lewis and young people tend to move away for work in Stornoway or on the Mainland. Crofting is not an economically viable way of life, and although many people farm a few sheep, their

wool is currently of little if any economic value.

In both of these communities, Gaelic is spoken when two people meet who know each other and know they speak Gaelic. This means that people speak Gaelic at Church, when they bump into each other in the shop, among themselves at home, but do not speak Gaelic to anyone else by default. In the shop in Uig, none of the staff except the delivery man spoke Gaelic, so all business was conducted in English. In South Lochs some of the staff spoke Gaelic, including a young girl in her twenties, but business was often conducted in English. The decline of Gaelic in local shops and other community institutions is also noted in Munro, Taylor & Armstrong (2011). In both Uig and South Lochs houses are extremely spread out with large areas of moorland and mountain in between. This means that there is very little opportunity to 'bump in to someone', and there is no possibility of walking down the village street, because such a street lined with houses and local businesses does not exist. Most people drive everywhere and are some distance from even their closest neighbours. Previously each house was filled with a large family, and the whole community would work on one family's croft at a time, then move on to another croft a day later. Now with depopulation, a decline in crofting, an ageing population, and widespread ownership of cars, the remaining inhabitants can become very isolated indeed and the opportunities for speaking to someone at all, let alone speaking Gaelic, are few and far between. An example of a typical Lewis house is in Figure 5.2. Most people live in modern bungalows and often the ruins of the previous stone houses remain in the garden, as is the case here.

Figure 5.2: A typical Lewis house.

Uig

Uig is extremely remote from Stornoway and indeed from anywhere else, but has arguably the most spectacular scenery in Lewis: huge white sandy beaches, green machair (dune land) and in other spots large rocky cliffs. Despite the area's remoteness several families from the Scottish Mainland and England had recently chosen to settle in the area. Although wishing that their community could remain a local Gaelic-speaking one, residents were generally happy about the arrival of these incomers. The primary school had around twenty pupils and incomers sometimes brought families which helped swell the numbers at the school and ensure its survival. Sadly, the Gaelic-medium section at the school was closed in 2008 due to lack of demand. Local people claimed that Gaelic-speaking residents were unwilling to send their children to the Gaelic section as they thought their children would be disadvantaged later on in life. They said that the Gaelic class filled up with the children of incomers to the area and this created tensions with local Gaelic-speaking parents. More and more parents chose to move their children to the English class, and this made matters even more difficult for the children still receiving Gaelic-medium education. In the end there were too few children in the Gaelic class to justify employing a Gaelic-speaking teacher and the Gaelic section closed.

Figure 5.3: Beaches and machair in Uig.

Much of Uig was bought by the residents from the local landlord and local facilities are now community-owned and run as a cooperative. Funds were generated from the UK National Lottery and the European Union and other such sources to provide an extremely well-stocked local shop, equipped with petrol pumps, coffee machine, internet access, and laundrette facilities, also a community centre with sports and internet facilities, and a community café and museum. Local people are extremely proud of these community-led initiatives,

though some noted that the committees which organised these developments were often helped by incomers who were adept at grant proposals and played up the community's Gaelic-speaking nature, without being Gaelic speakers themselves. Uig's spiritual needs are serviced by two churches: the Free Presbyterian Church of Scotland and the Church of Scotland. Both provided weekly services in Gaelic and in English. Despite the strong sense of community in Uig, the demographic makeup was noticeably old and the population declined from 4,500 at the turn of the twentieth century (1901 census) to an estimated 617 in 2009 (Scottish Government 2011). These figures also include the neighbouring island of Bernera, so 'mainland' Uig has even fewer inhabitants. It is common to see ruined houses in the fields surrounding once populous villages.

South Lochs

South Lochs, also known as Park after the deer park in the area in the 1880s, is still owned by a private landlord, although a community buyout plan is under way to buy the area in the near future. The geography of the area is scenic sea lochs and rivers, although it lacks Uig's spectacular beaches, possibly making it less desirable to incomers and tourists. The area has a community centre housed in a building which also includes a youth hostel, shop, café, and archive of local historical materials. There is a small museum in the centre, which mostly displays household items from bygone days. South Lochs was severely affected by the Highland Clearances (see Chapter 3) and was also the scene of one of the most dramatic events in the Highland Land Wars: the occupation of Park Deer Park, where the deer park land was occupied by local people who slaughtered around 200 deer in 1887 (Macdonald 2004, 251) (See also Section 3.3.1). A permanent monument to this significant event was put up in the neighbouring town of Balallan. Post office facilities are in the South Lochs village of Gravir, which also hosts the area's only church, a Free Church. Gaelic services were held once a week. South Lochs is also now suffering severe depopulation.

Social statistics for Uig and South Lochs

To back up these observations, Table 5.1 shows figures from the Scottish Neighbourhood Statistics (Scottish Government 2011). These numbers are based on official population estimates mostly from 2009 and give a snapshot of relevant areas of life in Uig, South Lochs, the Western Isles as a whole, and the Scottish national average. The proportion of Gaelic speakers in each community is based on figures from the 2001 census.

Figure 5.4: The village of Orinsay, South Lochs.

	Uig	South Lochs	Western Isles	Scotland
Population	617	861	26,180	5,194,000
Population as a % of Scottish total	0.01	0.02	0.5	
% children	13.45	18.35	17.23	17.57
% working age	56.08	56.56	57.83	62.55
% pensionable age	30.47	25.09	24.94	19.89
% income deprived	20	20	15	16
Dwellings per hectare	0.01	0.01	0.05	0.32
Urban-rural score	6	6		
Access to services deprivation decile	1	1		
Public transport time to shops	81.2	67.4		
% of population Gaelic speaking	75	75	73	1

Table 5.1: Relevant statistics referring to the communities of Uig and South Lochs compared to the Western Isles as a whole, and Scotland. Source: Scottish Neighbourhood Statistics. Source for Gaelic speaking proportion: 2001 census. Urban-rural score: 1 most urban, 6 most rural.

Summary: Gaelic among older speakers in rural Lewis

In summary Uig and South Lochs have a small ageing population, in an extremely rural setting with sparse housing density. The proportion of Gaelic speakers in Uig and South Lochs (75%) is slightly higher than the proportion for the Western Isles as a whole (73%), and much higher than the 1% Gaelic speakers in Scotland as a whole.

What is means to be a Gaelic-speaker is very different for these older speakers than for the young people in Gaelic-medium education described below. Gaelic is something very

much associated with local life and culture. The language is part of the fabric of everyday existence and is spoken by practically all local people of a certain age. For these members of the older generation, Gaelic was not so much a reflexive choice, but a default way of speaking ingrained from their earliest years.

5.1.3 Adolescents in Lewis

> Cleachd i no caill i, bruidhinn i no bàsaichidh i
> *Use it or lose it, speak it or it will die*

This saying, referring to the Gaelic language, was pronounced at the end of a Gaelic-medium assembly I attended at the Lewis school. It highlights the positive, yet realistic attitude of staff and students at the school: everyone is aware that social change has led to the decline of Gaelic on their island, yet they remain optimistic that this can be altered, if people make the effort. Gaelic-medium facilities are supplied in the Lewis school to one class of students within each year group of the otherwise English-medium school.

Getting started

In order for me to carry out fieldwork in the school in Lewis, initial contact was made with the school's Head, who was happy for me to work in her school. After some initial correspondence I arrived in Stornoway in November 2011 to carry out research up until the Christmas holidays. My contact and initial guide around the school was the deputy head, who was in charge of the Gaelic language effort in the school. From the outset he spoke Gaelic to me and I never heard him use English to anyone, except occasionally to English monolingual students and members of staff. In my efforts to understand the role of Gaelic for students in the Lewis school I was allowed to sit in on any Gaelic-medium classes and activities, and talk to children outside of classes as well. I decided from the outset that I would observe pupils during lesson time as well as during their break times, unlike some previous linguistic studies of school pupils (Eckert 2000; Moore 2003; Lawson 2009), though similar to Snell (2008). It proved an extremely good if not absolutely necessary decision, as I was interested in the students' Gaelic, and as explained below they generally do not speak Gaelic outside of lessons. The Lewis school atmosphere was supportive of my research: the students were excited someone had come up from Glasgow just to study them, and the staff were happy to maintain links with the city where many of them had completed their university education, and had family.

While conducting research in the school, I wore less formal clothes from the staff in order to distance myself from the staff in the eyes of the students. My association with the Gaelic department and Gaelic language activities in the Lewis school did affect how I was perceived by students. At the Lewis school, speaking Gaelic is not something that is shared by everyone, and has to be actively promoted. The Lewis school was making extremely substantial efforts

to promote and use Gaelic within the school context. As I was linked to the Gaelic department and Gaelic activities I did not wish to undermine this effort in any way and chose to speak Gaelic to the students, similar to Gaelic-medium staff and teaching assistants. It is unlikely the students ever saw me as an authoritative staff figure: in a small school on an island news travels fast and all staff and students seemed to know immediately who I was and what I was doing in the school.

School background

The Lewis school is the only secondary school on the island, located in Stornoway. Some of the larger primary schools in rural areas also allow children to complete the first two years of secondary school, but many children choose to go to the Lewis school anyway for the start of their secondary education rather than delaying for two years and then having to move. The Lewis school had around 800 pupils while I was conducting fieldwork. The school is an extremely close knit community, and is an institution serving to strengthen the close knit nature of the island community in general; everyone who lives on Lewis has to go to the school at some point. So in some way, everyone on the island shares this link to the school, and in some way everyone does know everyone else. This means there is a closer link between staff and students than perhaps in some schools on the mainland. In my own urban English school it was extremely rare to see staff outside of school hours, or outside the school buildings. This was not the case in the Lewis school. Many of the staff and students lived in the small town of Stornoway so it was natural for them to cross paths with one another on a daily basis. All of the staff's children necessarily attended the Lewis school, and the staff often had relatives across the island with children also attending the school. The staff were personally acquainted with the families of many of the students. This close knit community feel led to a warm environment throughout the school, with very little bad behaviour.

Each year group generally had four classes in it, depending on pupil numbers that year. In S1 and S2 (the first two years of Scottish secondary education) there were specific Gaelic-medium classes, who had as many of their lessons as possible in Gaelic, and had a Gaelic-speaking form teacher. Although the school would like to continue this into S3 and above, Gaelic-medium classes have proved difficult further up the school as pupils get to choose which options they study for Standard Grade exams, and the Gaelic-medium pupils end up split across lots of different subject combinations. There were, however, separate Gaelic classes for those who studied in Gaelic-medium and those who only started learning the language later on. Students at the Lewis school were encouraged to wear a school uniform of a blue hoodie: bright blue for S1 and S2, and navy for S3 upwards. Prefects in the top year group, S6, wore a blazer and tie. In general, all the pupils kept to this dress code and commented that they felt lucky to be allowed to wear hoodies when lots of other schools enforced uncomfortable ties and blazers.

While the school is relatively geographically isolated and has no close neighbours, this

in no way deterred any of the staff and students from going on lots of school trips around the world. Pupils told me how last year some of them had gone on an exchange to Shanghai, and Canada the year before. Some of the students I worked with had been on trips to France and Germany, and closer to home to Glasgow, Edinburgh, Manchester and Ireland. From a school on an island, a trip to continental Europe or Ireland requires some serious planning. It took three days to get the Germany via two ferries and a long bus journey. To get to Ireland they took two flights and then a six hour bus journey. The students at the Lewis school were well-travelled, despite the long journeys and difficulties involved. This characterised the atmosphere of the school: immensely proud of the Lewis origins, but also outward-looking and culturally aware.

Language in the school

The Lewis school is a bilingual school in a bilingual community, differing from the context in the Glasgow school described below. Signs around the school are in Gaelic and in English, and everyone is aware that efforts are being made to promote Gaelic around the school even if not all of the students use the language. Many of the who did not have Gaelic felt it was their responsibility to learn the language, even though they were in no way obliged to. The Head led by example in this effort. She was a local of Stornoway who was actively learning Gaelic, and had recently given a speech entirely in Gaelic. Staff attended Gaelic lessons after school and a conversation group at lunchtimes. The students were given a list of all of the staff attending classes and told to speak Gaelic to them. This was in many ways successful, and students and Gaelic-learning staff often exchanged a cheery *madainn mhath* 'good morning' to one another on the school corridors. The Gaelic-speaking staff always spoke Gaelic to one another and to me on corridors, in the classrooms, and in the staff room. When a non-Gaelic-speaker was present they switched to English, but as soon as this person left the conversation they would switch back to Gaelic, often in the middle of a sentence.

Within this supportive Gaelic framework some of the students did use Gaelic to one another. I attended classes with the Gaelic-medium students in S1 and S2, and S3 students who had previously been in Gaelic-medium classes. In the S1 classes the pupils regularly used Gaelic to one another throughout the duration of the class. They told me they did not usually speak it to one another outside of class, and my own observations and discussions with the teachers supported this. In S2 and S3 the pattern was more biased towards English. The staff told me that the pupils generally came into the school in S1 happy to use Gaelic with one another in Gaelic-medium classes. As they became more self-conscious adolescents in S2 and S3 however, they preferred to use English. Eventually in S5 and S6 some of the students who wanted to go on and study Gaelic at university came back to the language and started using it again. All the students generally asked and answered questions in Gaelic when directly addressed.

The S1 and S2 students had six of their subjects through the medium of Gaelic. This was

the first year the Lewis school had been able to deliver such a large number of subjects in Gaelic due to previous teacher shortages. Most of the Gaelic-medium teachers were local to the island, with some coming from other Outer Hebridean islands. One teacher had learned Gaelic as an adult. Gaelic-medium classes were challenged by a lack of teaching materials in Gaelic, although the staff said they shared a lot of the material prepared at the Glasgow school with the translation assistance they received. I was amazed at the seamless code-switching and translation abilities of the students. They were often provided with materials in English and expected to discuss them and write about them in Gaelic.

Student background

The students at the Lewis school came from a wide geographical area. Many were local to Stornoway as it is the island's largest town, but for the others a school bus was their method of transport to school. Some of them spent up to 90 minutes on the bus travelling to school and 90 minutes travelling home. Parents commented this was a great improvement on the 'old days' when the bus only came once a term and children were obliged to stay in boarding houses for the duration of their secondary education.

Most of the pupils at the Lewis school were from local Lewis families. The students in Gaelic-medium classes were perhaps from slightly more diverse backgrounds than their English-medium counterparts. One of the pupils I worked with had two parents who had moved to the island and spoke another Celtic language other than Gaelic at home. Another had two parents who had moved to Lewis from the south of England to provide a better life for their children. Many students had one parent who had moved to Lewis for work or marriage. Out of the sixteen pupils I interviewed in Lewis, all except one lived with both their parents. In the Glasgow school half of the children interviewed did not live with both parents. Most of the Lewis parents worked in local services: at the Western Isles Council, on the ferries, at the airport, or in the hospital. A couple of fathers worked away in north-east Scotland on oil rigs. Perhaps reflecting the diverse backgrounds of their parents, none of the pupils I interviewed in the Lewis school spoke Gaelic with both parents. Five of the sixteen students spoke Gaelic with one of their parents, and nine out of the sixteen spoke some Gaelic to at least one of their grandparents. This reflects a tendency identified in Munro, Taylor & Armstrong (2011): even in the most strongly Gaelic-speaking areas such as Lewis, intergenerational transmission of Gaelic is minimal, and the majority of young Gaelic-speakers are learning the language primarily through education. The linguistic background of all the participants is summarised below in Figure 5.5.

Social groups

Due to the nature of my research, my work at the Lewis school was necessarily focussed on the Gaelic-speaking pupils. This meant I was not able to observe entire friendship networks as these often extended outside of the Gaelic-medium classes. There was, however, one

particular 'character' within the sixteen students from whom I collected data who merits discussion. Calum was a boy who knew everyone and knew everything that was happening in the school. At break times he headed to the all weather pitch along with most of the boys to play football, and could be seen going from group to group talking to everyone and appearing to belong in various networks, while being welcomed in them all. He took on the role of 'funny man' of the class, and could always come up with a quick-witted comment relevant to any question. Calum was in no way annoying and the teachers seemed to enjoy his comments and remarks as much as the other students.

Organised activities

The school organised numerous sports and drama activities for the pupils. One of the most active after school groups was the football team. Many of the students I worked with played football and were involved with the club. The girls' team, in particular, were very successful and beat a mainland team 10-0 during the time I was conducting fieldwork at the school. Playing sports matches was not without logistical challenges due to the location of the school. While I conducted my fieldwork the football teams travelled to Arbroath on the east coast of the Scottish mainland for a match. Due to bad weather and ferry cancellations the match and associated travel took around a week.

Summary: Gaelic among young people in Lewis

The Lewis school provides instruction for Gaelic-medium pupils in a language which is still spoken as a community language among many people in the local area. The pupils were therefore directly able to appreciate the utility of knowing the language which was spoken by many of their neighbours and grandparents. However, the areas of the island where Gaelic is strongest are the areas suffering depopulation, a lack of transport links, an ageing population, and lack of employment opportunities. Young people may learn to associate Gaelic with these social and economic difficulties, adding to a negative perception of the language. Such an attitude is not expressed, but is felt in a disinclination to use the language for peer group interaction.

The material challenges such as lack of resources and teachers were very apparent at the Lewis school, implicitly communicating the challenges associated with an education in Gaelic. This was to some extent counteracted by the support of the staff and their dedication to learning and using Gaelic around the school, showing the language was useful, worth learning, and worth using by those in positions of power.

Use of Gaelic in the peer group was very limited indeed among the S2 pupils interviewed for this thesis. Despite the position of Gaelic in the local community, and the supportive school environment, speaking Gaelic was not a naturalised form of communication. In other words these young people had to make a decision to be Gaelic speakers at all, and another distinct choice to use the language in a particular context. The differences between the older and

younger speakers in Lewis resonates with discussions about extent and nature of reflexivity in Chapter 2. Sweetman (2003) argued for a reflexive habitus possessed by younger generations, with older generations and those in reduced economic and social capital more likely to possess habitus as conceived of by Bourdieu (1977). The key of Sweetman's (2003) model is that decisions are open to us in the modern world such as 'Should I speak Gaelic or English?' but these decisions can be made both consciously and semi- or unconsciously. Decisions are taken unconsciously informed by the habitus, the system of dispositions ingrained over years of social and historical trajectory. So while the decision to speak Gaelic or not is an open question to young people, the answer will often be at least partially informed by their own, and the language's social and historical trajectory. This distinction between Gaelic as part of the everyday fabric of life, and Gaelic as a reflexive choice is returned to several times over the course of this thesis.

5.2 Fieldwork in Glasgow

The Gaelic-speaking adult population of Glasgow is a diverse and widely dispersed group of people, and as such provides no comparable group to the Lewis older speakers. There is a small core of language activists, who attend and organise many of the city's Gaelic-related events. Some of these people are traditional speakers from the Islands and many are fluent adult learners from all over Scotland and the rest of the world. These Gaelic speakers tend to be highly educated Gaelic professionals, or interested people working in other professional industries. There are also still a large number of older traditional Gaelic speakers who live in Glasgow but do not actively participate in Gaelic promotional events in the city. I met some of these people at Gaelic church services at St. Columba's, the only church in the city still providing services in Gaelic. The people attending the services were mostly elderly and had moved to Glasgow for work or marriage reasons. Although some had been in the city for over seventy years, they still very much retained the identity of their place of birth: Islay, Ardnamurchan, Lewis, Harris, Uist, among others, and would never think to call themselves Glaswegian. They also all claimed to retain their original dialect, and to my ears this was indeed the case. Most of these elderly Gaelic speakers did not speak Gaelic during the week and only spoke it on Sundays when they came together for Church. Some had English monolingual partners and enjoyed the opportunity to speak Gaelic to others on Sundays. In summary, the nature of the adult Gaelic community in Glasgow is very diverse. There are two noticeably distinct groups of people who often have little crossover: a group of professionals, learners, and activists, and some (often older) speakers from Gaelic heartland communities who do not take part in Gaelic promotional events.

Among the older Gaelic speakers I met at St. Columba's speaking Gaelic was much less of a reflexive choice but something they had done from their earliest years (Bourdieu's model of habitus), as above among different generations of Lewis speakers. Professionals working in Gaelic-related industries tended to have made Gaelic part of their livelihood through a

reflexive choice to speak the language (Sweetman's conception of the reflexive habitus). Similarly, those learning the language and attending Gaelic-related events in the city had at some point chosen to take this path and incorporate Gaelic into their sense of self.

As no older speakers in Glasgow exist who are comparable to the older speakers in Lewis, I concentrated my research on a group of adolescents at the Glasgow school who are comparable to the young people studied in Lewis. Unlike the school in Lewis, the Glasgow school is entirely Gaelic-medium, with no English-medium pupils.

5.2.1 Adolescents in Glasgow

Getting started

The Glasgow school is unique in offering a complete nursery, primary, and secondary education through the medium of Gaelic. While other schools have Gaelic classes within an otherwise English school, this is not the case in the Glasgow school which has no English-medium students. Another such nursery and primary exist in Inverness, but Glasgow is the only secondary. Because of this unique status, and the recent move in 2006 to a larger site, the school is often in the Glaswegian and Scottish press. Due to the linguistic nature of the school and the fact that it is state-funded, there is a lot of media interest, and unfortunately this is often negative towards the Gaelic language. The school is constantly in the public eye and has become understandably wary of journalists. Much of Gaelic television is based in Glasgow, and the Glasgow school brings together a large proportion of Gaelic speakers in the city, especially under the age of thirty. The school is therefore constantly contacted, filmed, and recorded for Gaelic television and radio. As well as this unending media attention, the school is frequently contacted by researchers as it is unique in the world in its Gaelic status. For example, while I was there the Head told me that in one week she had turned down two film crews (one from English-medium television, and one from Gaelic-medium television), and one other student who wished to conduct research in the school.

Fortunately, the Head was willing to allow me into the school, due to the Gaelic-centric nature of my research, but for a limited time period. Initial contact was made through my supervisor who was personally acquainted with the Head of the school, and I thereafter corresponded with her in Gaelic. We arranged for me to start towards the end of the school year in April. School years in Scotland run from mid August to the end of June, but some school years get a head start by beginning the next year's curriculum at the start of June. I was allocated to work with S2, the same age groups as the participants I interviewed in Lewis.

After some negotiation I was allowed to be present in the school for a period of five weeks to conduct participant observation and interviews. This is a short period of time for research of an ethnographic nature, but due to the high number of media and other distractions, the Head felt that any longer would not be possible. Also, the small size of the school allowed me to become much more familiar with the running of the school and with the individual staff and students in a short period of time, which would not have been possible in a larger institution.

While I was in the school, I again usually wore informal clothes to distance myself from the teachers, and the students called me by my first name. Early on they tested whether I would tell members of staff about bad behaviour by playing with a teacher's computer and drawing on the smartboard while I was in the room, and looking towards me to see what I would do. Episodes like this happened a few times, and students quickly realised I was not a member of staff with any authority. The students quickly grew used to my presence in their various lessons and discussed their work and social activities with me from quite an early stage. On one occasion a member of staff attempted to use my presence in the classroom to make the children behave better. She said *You must set a good example as we have a guest in the class*. This backfired when one student shouted out *But we've got to know her now!*, indicating that I was no longer considered an outsider to the class, but had become part of their everyday school life. As the students used English to each other, I spoke to them primarily in English in order to build up a good relationship. They knew I could speak Gaelic as I spoke Gaelic to Gaelic-speaking members of staff during their lessons and followed what was being said.

School background

When I conducted my fieldwork in 2011, there were around 800 pupils in the entire Glasgow school: 500 in the nursery and primary, and 300 in the secondary. Both schools share the same site in the West End of Glasgow near the city centre. A central location was required as many pupils have extremely long commutes from all over central Scotland. The secondary section of the school was at the time very new and opened in 2006. In 2006 and each year after that the school expanded by one year group as a new cohort moved up from primary school. Demand for Gaelic-medium facilities in Glasgow is now so great that there are plans to open a second Gaelic-medium primary in the city in the near future. When I conducted my fieldwork the school had just filled all of the year groups. They expected to expand every year after that as the school's reputation and popularity grew. Most year groups were divided into two classes, and this was the case for S2. There were 24 pupils in one S2 class, and 23 in the other. For more technical and hands on subjects such as drama, science and home economics, these two classes were divided into three smaller groups, resulting in 15-16 pupils per class. I worked with two of these smaller classes.

The Glasgow school has a recommended uniform, but this is only a recommendation and is not rigorously enforced, in line with Glasgow City Council's policy. The recommended uniform is a black jumper and trousers/skirt with a white shirt and tartan tie. Most students came in with a tie somewhere in their bag and were often asked by members of staff to put it on. Many of the boys wore hoodies over their school jumper or instead of the school jumper. The girls generally wore skirts in varying length and design. The most fashion conscious wore tight short skirts. None of the girls wore heels and most wore flat black pumps, trainers or Converse ankle high boots.

The school is small and all the staff know every student by name, and as such provides a supportive and environment for pupils and staff alike. While I was there I never saw anyone fighting and never really experienced genuinely bad behaviour. Occasionally students were sent out of class for talking or giggling too much but this remained minimal. When I started interviewing I tried asking students whether they had ever seen a fight, in order to elicit narrative speech. They just answered that they had never really seen fights in the school (or indeed out of it). My overall impression was that the school was an immensely caring environment and that the staff could give each pupil the individual attention needed.

Language in the Glasgow school

Again I observed students during lessons and at break times, and the use of Gaelic among the students was very limited indeed. I only heard a student address another student in Gaelic once. The student who spoke Gaelic was Darren, a boy known for being a class joker, as well as someone who knew the social rules and knew how to bend them to comic effect. When the students were first getting to know me, they found out I was interested in Gaelic. For my benefit, Darren shouted across the room to Tara, one of the most popular girls, *Ciamar a tha thu?*, a very basic sentence meaning 'How are you?'. Tara wasn't sure how to react, she eventually replied with a grimace looking disgusted that firstly Darren had addressed her across the class at all, and secondly that he had used the socially 'wrong' code of Gaelic.

The official language of the Glasgow school is of course Gaelic. Once a week the children had an assembly with the Head conducted in Gaelic. Often during the morning registration on the other days tannoy announcements were made about happenings in the school that day, and these were always in Gaelic with no English. The Head exclusively spoke in Gaelic to students, as did the office staff. The janitorial and cleaning staff were mostly Glaswegian and spoke no Gaelic, so interacted with the children in English. In the secondary school around half of the teaching staff were Gaelic speakers, as were all the teachers in the primary and nursery sections. As the school expands they hope to recruit more Gaelic-speaking teachers. Among the Gaelic-speaking staff, the vast majority were traditional speakers from the Islands, except one teacher who had learned Gaelic before coming to work in the secondary school. Over half of the Gaelic-speaking teachers were from Lewis. The school had severe difficulties recruiting teachers for specialised secondary subjects such as PE, computing, technology, drama, and French, so these lessons were conducted in English. All staff who did not speak Gaelic were expected to learn, though in practice this was extremely difficult as the staff felt it necessary to have a very good level of fluency before attempting to control a class in the language. Many subjects were taught in Gaelic: English, Maths, Biology, Gaelic, History, Religious Education, Personal and Social Education. Unfortunately the subjects taught through English (PE, Computing, Drama, Technology, Chemistry, Art, Music), tended to be the more fun and creative subjects, which possibly aligned English-medium with hands on and fun activities.

The S2 students I worked with spoke English to each other over the entire course of my research, in class and outside of class. They spoke Gaelic only when directly addressed in Gaelic by a Gaelic-speaking member of staff. When asking questions in a Gaelic-medium class, they usually asked in Gaelic, but if the question was longer than a few words they asked in English. Similarly, when they were trying to irritate the teacher they asked in English. Gaelic is a language that is only suitable for some classroom environments: once a pupil, Miranda, momentarily forgot herself and started asking a question in Gaelic to an English-speaking teacher. Immediately another pupil, Matthew, shouted across the room, *Why are you talking Gaelic?* Miranda blushed, looked embarrassed, and replied *I don't know!*, before continuing in English. Some subjects provided bilingual worksheets for the lessons and the students typically consulted the English side and then turned over the worksheet to Gaelic when the teacher was coming. If put into small groups to work, the students discussed in English and wrote their answers in Gaelic. The students expressed some reservation and almost guilt about their lack of use of Gaelic, when they realised I was there to study Gaelic-speaking teenagers. One commented that they never spoke Gaelic and I wouldn't learn anything about Gaelic from them. Speaking English to one another in Gaelic-medium classes is not unusual and has been reported in previous studies (NicAoidh 2006; Morrison 2006).

Many official exams such as Standard Grades and Highers can be taken in Gaelic. Students at the Glasgow school were given the opportunity to choose which language they would prefer on the day of the exam. The teachers told me that most students take the exam in Gaelic, but some, particularly the lower ability students, choose to write the exam in English.

The Gaelic-speaking teachers usually spoke Gaelic to one another on the corridor, and occasionally used English in the staffroom, especially if a group discussion with non-Gaelic-speakers was taking place. The large number of English-speaking staff meant that if the teachers wanted to have a group conversation it was unlikely that everyone present spoke Gaelic. This meant the automatic language choice in the staff room among the secondary teachers was English. The vast majority of the Gaelic-speaking teachers were from Lewis, and one of the English-speaking teachers was also from Lewis.

As well as lack of teachers, lack of resources was a major obstacle to Gaelic in the classroom. Often the Gaelic-speaking teachers used English textbooks or slide shows and discussed their content in Gaelic. The school employed a translator for two half-days a week who came in to do large booklets for History or Religious Education projects, and the staff said this was very helpful. The Scottish Government provide some help with the development of resources and had recently provided resources to translate a textbook. A teacher remarked that this was a great thing to have, but that the work had been carried out by professional translators, who had translated the book into a very academic register which could not be easily understood by the students. The teacher then had to take sections from the book and simplify them for use in the classroom. Students are expected to conduct independent research for small projects and reading activities, and a quick internet search on any topic is unlikely to yield information in Gaelic. I observed a class writing powerpoint presentations about the

stars for a Science project, and many of them were copying and pasting text from the internet, then translating it extremely quickly word for word into Gaelic. This technique demonstrated an extremely high level of competence in the two languages from a thirteen year old pupil.

Student background

The students themselves tended to come from families where both parents worked in professional occupations such as graphic design, engineering, teaching, accountancy, etc. This background supports previous research into the social background of pupils in Gaelic-medium education suggesting they are largely middle class (Johnstone, Harlen, MacNeil et al. 1999; Stockdale, MacGregor & Munro 2003; O'Hanlon, McLeod & Paterson 2010).

Very few students had Gaelic-speaking family: out of the 28 interviews I conducted with pupils, only three reported one Gaelic-speaking parent (see Table 4.1 for the numbers of participants interviewed, and Figure 5.5 for a summary of linguistic background). None came from families where both parents spoke Gaelic. Several more had Gaelic-speaking grandparents living in the Islands. The pupils lived in a wide geographical area, mostly in small towns around Glasgow, but some came from further afield in Lanarkshire, Ayrshire, Edinburgh and even Clackmannanshire. The pupils closest to school lived less than a mile away, but the boy who lived furthest away travelled 58 miles to get to school and 58 miles to go home again. The mean distance the pupils lived from school was 20 miles. After school a fleet of school buses and private taxis waited outside to take the children home. Most primary school pupils caught a school bus or taxi, but many of the secondary pupils caught public buses and trains. Many of the pupils did not consider themselves Glaswegian. Glasgow is a large city but was not necessarily where they themselves identified with. So far as place is concerned, pupils' identities tended to associate with the small town from which they came: Greenock, Lanark, Barrhead, East Kilbride. The school is overwhelmingly ethnically white. One child I interviewed had Indian grandparents, but there were no other ethnic minority or even partly ethnic minority students in the secondary school.

Social groups

As the Glasgow school is not a big school this leaves students with less choice as to who is included in friendship groups and who is not than would be present in a larger school. Generally speaking there were two main groups within the S2 girls and two main groups within the S2 boys. While I had not initially set out to study this, I realised these groups represented communities of practice (Lave & Wenger 1991; Wenger 1998). The communities of practice were most clearly defined among the female students, but the boys as well showed some practice-based orientations. The students did not have specific names for these groups, merely listing the members when asked about them. For convenience I have named the female communities after their central members, Vicky and Beth, and the male communities after defining activities, football and music. The practices defining each of the groups are

summarised in Tables 5.2 and 5.3.

	Vicky's group	**Beth's group**
Music tastes	pop music	'alternative' indie music
Makeup	foundation and lip gloss	eye liner or no makeup
Uniform	short tight skirt	looser skirt or trousers
Accessories	wide belt around skirt	no belt
School attitude	ambivalent towards school	conscientious students
Gaelic attitude	preferred a 'normal' school	Gaelic was useful for getting a job
Attitude to boys	discussed who fancied who	disinterest
Breaktime location	end of the corridor near the yard	in the hallway near the lockers

Table 5.2: Differing practices engaged in by the different female groups at the Glasgow school

	Football boys	**Music boys**
Breaktime activity	football	music
Breaktime location	yard	music rooms

Table 5.3: Differing practices engaged in by the different male groups at the Glasgow school

In S2, at age 13-14, there was no crossover between male and female communities. For the most part the boys did not talk to or about the girls except when encouraged to in class. Both of the female groups did talk about the boys, but in different ways. Vicky's group often discussed who fancied who and who they would like to go out with, whilst simultaneously maintaining that the school was too small and there were not enough suitable 'men' to choose from. Two girls, Vicky and Rebecca, said they had had boyfriends outside of school before and this was considered risky but 'cool' behaviour among Vicky and her friends. Beth's group also discussed boys, but mostly how they found all of their classmates immature and very uncool. Izzie and Sophie talked about boys from their activities outside school, but in the context of male friends, which was seen as more mature, and less risky behaviour. At breaktimes, Beth's group tended to sit in the corridor whereas Vicky's group hung out further down the corridor nearer to the yard (and possibly nearer the football boys playing in the yard).

> Tha mar[. . .] Aig taobh an radiator anns an hallway càit [sic] a bheil na lockeran erm tha mar duine like nice agus coibhneil. Mise. Agus mar mar tha thu a' dol suas, well tha iad mar tha iad really girly agus erm really snobby. But nice. I'm not trying to be really horrible or anything!
>
> *There's like[. . .] By the side of the radiator in the hallway where the lockers are there are like people who are nice and kind. [Like] me. And then if you go on [out towards the yard], well they are like really girly and erm really snobby. But nice. I'm not trying to be really horrible or anything!*
>
> Sophie, a member of Beth's group describing how she sees Vicky's group

Both groups were actively engaged in the search for coolness, but in different ways. Vicky's group listened to popular music, wore foundation and lip gloss and chose to wear a short skirt as part of their uniform. Beth's group on the other hand preferred more 'alternative' music, wore trousers, and if they wore any makeup it tended only to be eyeliner. The groups were also defined by their attitudes to school and towards Gaelic. As Gaelic is part of the whole ethos of the school, Gaelic and school attitudes were heavily intertwined. While they were by no means bad students, Vicky's group tended to be more ambivalent towards school, and if anyone was sent out of class for giggling, it was usually Vicky or her friends. While they did enjoy their school time, Vicky's group often said they wished they had gone to a 'normal' school, meaning an English-medium one. Beth's group were extremely conscientious in class. Their definition of coolness was associated with the effort to gain academic capital and privileges. For all the pupils at the Glasgow school, Gaelic tended to be seen as something that happened at school, but Beth's group also saw many positives in being bilingual. Many of them commented that Gaelic was useful for getting into university or good for getting a job, suggesting a longer term more instrumental attitude to the benefits of speaking Gaelic.

Among the boys, social divisions tended to centre around the activities engaged in at breaktime and lunchtime. When the bell went, the boys in the football group went to the yard and spent the whole of breaktime playing football. The music boys on the other hand, less interested in sport, spent time in the music rooms and practised guitar, drums, keyboard, and singing. Several of the music boys had recorded indie rock tracks that they uploaded to YouTube. All of the students were permitted to leave school at lunch time and find lunch in nearby cafes. While almost all of the girls went to McDonalds or a local sandwich cafe, the boys often stayed in school eating a school-provided lunch quickly before going back to their music or football activities.

> Tha caraidean agam a tha mar ag èisteachd ri ceòl. Ceòl diofraichte agus rudan mar sin. Agus tha buidheann spòrsail a' dèanamh mar sports. So tha diofar buidheannan ann.
>
> *I've got friends who like listen to music. Alternative music and stuff like that. And there's a sporty group who do like sports. So there's different groups here.*
>
> Joe, a member of the music boys group

Three girls did not fit into the clearly defined female groups. Alice and Catriona formed a small pair on their own, partly engaging with both Vicky's group and Beth's group. Eilidh preferred to interpret the world in her own way. While she was at the top of the maths class, she did not engage socially with the other girls. Eilidh was, however, an honorary member of the music boys' group, and took part in many of their song recording activities by contributing female vocals. She was a very talented singer which may have helped her partial membership of this group. While Eilidh rejected the social structure of the other female students altogether, Alice and Catriona were more typically 'in-betweens' (Eckert 2000, 59). The linguistic

behaviour of in-betweeners is carefully explored in Moore (2003). Here, only Catriona was included in the linguistic analysis as Alice did not provide enough linguistic data and Eilidh forgot to bring her consent form back, so I was not able to fully explore the linguistic detail of in-betweener speech at the Glasgow school.

Organised activities

Organised activities were not widely available to students at the Glasgow school. This was partly due to logistical difficulties: lunch hour was 40 minutes long so too short to organise a club or sports activity, and after school most pupils were reliant on school buses or public transport to take them home. The small size of the school also made it difficult to support a wide range of diverse activities. While I was working in the school the boys could take part in football and rugby teams, but no sports activities were organised for girls. Once a year school pupils from all over Glasgow can take part in the Youth Games, with organised sports competitions in various sports. Some pupils I worked with had represented the school at badminton and football. While there were very few organised activities within the school, the students continually amazed me with the number of activities they took part in outside school. As well as busy social schedules, they were engaged in dancing, football, netball, ice skating, horse riding, computer gaming, camping, sea scouts, sailing and more. One of the most vocal members of the football boys group was absent from school for a week because he was acting in a play about social deprivation in Glasgow at one of the city's large theatres.

Attitudes towards Lewis Gaelic

This thesis compares the speech of Glasgow adolescents to that of Gaelic speakers from Lewis. The reasons behind this choice of comparison are that Lewis is the location of the densest concentration of Gaelic-speakers, several Gaelic media facilities are located in Stornoway so this dialect is widely heard in the media, and the majority of the Gaelic-speaking teachers at the Glasgow school were from Lewis. Lewis Gaelic has developed its own distinctive phonology (see, for example, Borgstrøm 1940 and Oftedal 1956), and has distinct lexical items for several common words. For example, the word for water in many dialects is *uisge*, but in Lewis a distinction is made between rainwater (*uisge*) and drinking water (*bùrn*).

Perhaps due to the distinctive nature of the dialect, there is an attitude in the wider Gaelic-speaking community that Lewis Gaelic is somewhat divergent, and perhaps not a desirable variety to learn. This attitude was not expressed by the young people in Glasgow. When asked explicitly about what they thought of the Lewis accent, the majority replied *Chan eil fios agam* 'I don't know'. Some different opinions were expressed which are listed below. All students in Glasgow were asked specifically whether they thought there were different accents in Gaelic, and what they thought of the Lewis accent. These are the only comments which diverged from variations on 'I don't know':

Mar anns a' bhun sgoil bha na tidsearan againn bho mar Barraigh is Uibhist is Lewis is rudan. Is bha iad a h-uile a' bruidhinn diofraichte.

Like in primary school all our teachers were from like Barra and Uist and Lewis and stuff. And they all spoke differently.

Sarah

Chan eil really fios agam. Tha e quite like strong Gàidhlig. Like pronunciation uabhasach làidir.

I don't really know. It's quite like strong Gaelic. Like strong pronunciation.

Tara

Erm tha e dìreach rud beag diofraichte agus nuair a tha thu bruidhinn Beurla tha e tha thu a' faicinn cho diofraichte a tha e.

Erm it's just a little bit different and when you speak English you see how different it is.

Izzie

Tha mar Leòdhas tha iadsan diofraichte. The best. The right one! LAUGH.

Like Lewis they're a bit different. The best. The right one! LAUGH.

Sophie

Tha e mar like like a granny voice! LAUGH. No tha e well, tha e diofraichte. Like mar really polite.

It's like like a granny voice! LAUGH. No it's well, it's different. Like really polite.

Miranda

Tha iad dìreach facailean diofraichte ach tha iad seòrsa mar an aon rud.

They have different words but they're kind of like the same thing.

Jim

Well tha iad gu math slaodach.

Well they are quite slow.

Will

Seven out of the 28 students interviewed expressed an opinion at all. For the majority, they had no attitude in particular towards Lewis Gaelic, or were unaware of dialectal variation in Gaelic. Out of those who did express an attitude, most said it was 'different', Jim specifically citing different words rather than pronunciation. Sophie was extremely positive about Lewis Gaelic, perhaps because her mother's family are all from Lewis. Three students expressed potentially negative attitudes: Miranda said Lewis Gaelic is like a 'granny voice', though then

went on to say she considers it 'polite' sounding. Tara said the pronunciation was 'strong'; this may be a variation on 'different' and unlike how she speaks. Will expressed the most potentially negative attitude saying Lewis people sound *slaodach* 'slow'. In summary, there is very little evidence in these data to suggest the young Glasgow speakers reflected any of the more negative attitudes found in the wider Gaelic-speaking community towards Lewis Gaelic. Most had no particular attitude towards the variety, or were unaware of specific dialectal variation. The data considered here reflect only overt attitudes towards Lewis Gaelic, future work could also consider covert attitudes.

Summary: Gaelic in Glasgow

The Glasgow school provides the closest thing possible to an entirely Gaelic-speaking school environment. The school is, however, challenged in this effort by a lack of suitable teaching resources, and the difficulties involved in appointing Gaelic-speaking teachers and support staff. In a context where not every person speaks Gaelic, using the language is a matter of reflexive choice, rather than an unmarked action. Evidence for this is the attitude of pupils to using Gaelic: the language is not used for communicating within the peer group, and any disregard for this is heavily criticised as shown in the altercations between Tara and Darren, and Miranda and Matthew. The ability to speak Gaelic is so unusual in Glasgow that students told me they had been asked to 'perform' Gaelic in front of family and family friends:

> agus ach bidh like mo mhàthair agus athair agus mo seanmhair [sic] ag innse daoine agus an uair sin bidh na daoine mar 'Oh bruidhinn Gàidhlig' LAUGH agus bidh mar 'Dè tha thu ag iarraidh orm ag ràdh?'
>
> *And like my mum and dad and grandma tell people [about my Gaelic], and then the people are like 'Oh speak Gaelic' LAUGH. And I'm like 'What do you want me to say?'*
>
> Tara

The challenges faced by the school in procuring the material resources needed for education may partially explain the attitudes of the pupils. Students are implicitly told there are substantial difficulties in Gaelic being used as a language of education, which may relate to their feelings of embarrassment in using the language. Many students commented that they did not tell friends outside of school about the linguistic nature of their school. When I asked Nicola what people said when she told them she went to the Glasgow school, she replied:

> Cha bhi mi ag innse LAUGH tha fhios aig mo mar mo teaghlach is rudan ach chan eil fhios aig cuid de na caraidean agam oir tha iad a' smaointinn gu bheil e mar private school.
>
> *I don't tell them LAUGH. Like my family know and stuff but some of my friends don't know otherwise they'd think it's like a private school.*

Nicola

For these young people then Gaelic is something associated with a lack of resources and challenges in finding appropriate materials and resources. The language is not used for peer group communication, and transgressions are penalised. Speaking Gaelic is a very unusual skill, and young people can be called upon to 'perform' this skill, much to their further embarrassment. The ability to speak Gaelic is sometimes hidden from those not attending the Glasgow school, and the social stigma associated with attendance at the Glasgow school is, according to Nicola, on a par with attending a private school.

5.3 Summary of participants

This Section provides an overview of all the participants in this study based on biographical and language use data collected during the interviews conducted in 2011. The questions asked are in Section 4.5.5. These questions aimed to gain a snapshot into the biography of each person and their language choice with different people. Some details are not reported here in order to protect the anonymity of the people involved, such as home postcode and exact date of birth. Instead, I give the broad location e.g. Glasgow, Greater Glasgow, Central Scotland, Outer Hebrides. Within Lewis, broad parishes rather than individual villages are named. Locations their family members were from are also described in this way. Originally I asked participants in what language they read books. The answers to this question did not prove useful as it became clear many young people did not read books out of the school context, and as many of the older speakers could not read Gaelic, they would never read in this language. These results were therefore discarded. Similarly, very few participants provided any extra information (question 26), so the results of this question are not reported.

Figure 5.5 displays graphically the answers to questions 11-18 and 20-22 regarding the self-reported language choice of participants, and language use in particular contexts. Most of the answers referred to combinations of English, Gaelic, and Gaelic and English. One participant among the Lewis older speakers was brought up in a Spanish-speaking country so reported combinations of Spanish, Gaelic and English. One young Lewis speakers spoke another Celtic language other than Gaelic at home with his parents. One young Glasgow speaker spoke a European language with his father and father's side of the family. Despite these exceptions there is a very clear generational split in the data with the older Lewis speakers using Gaelic in vast majority of contexts, and the young people reporting more English. Young people in Lewis report slightly more Gaelic use than young people in Glasgow, especially with their grandparents.

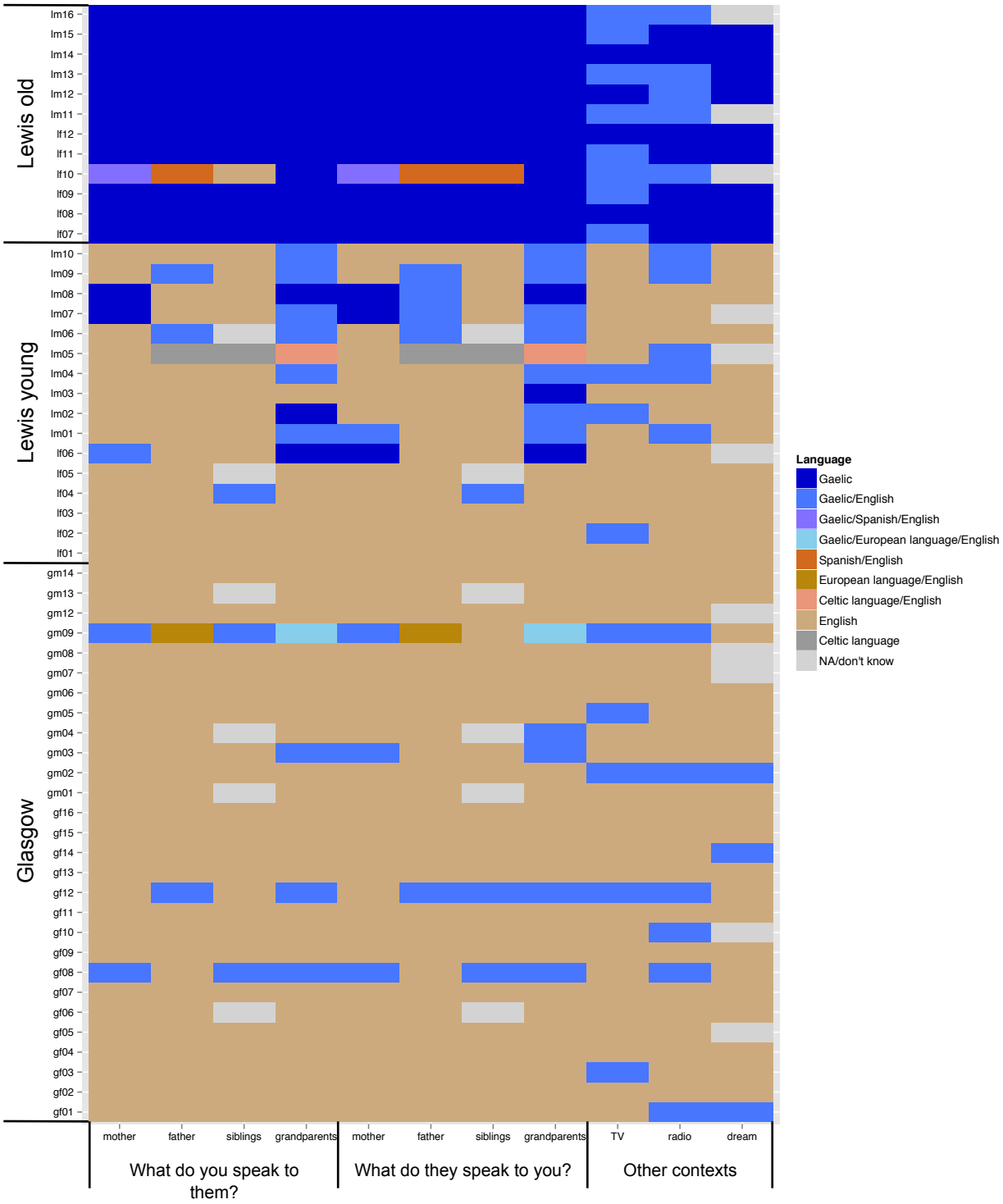

Figure 5.5: Self-reported language use among the participants.

There is a similar generational split between the older and young participants in the places they were born and raised, and places their families were from. With the exception of speaker lf10, Margaret, who was born in a Spanish-speaking country, all the older Lewis speakers are from families located in Lewis. The picture is more mixed for the Lewis younger speakers, and most Glasgow young people are from families in central Scotland and Ireland.

Data from questions 1, 2, 6, 19, 24 and 25 are detailed in Appendix B, along with each participant's speaker group (Lewis old, Lewis young, Glasgow), gender, distance travelled to

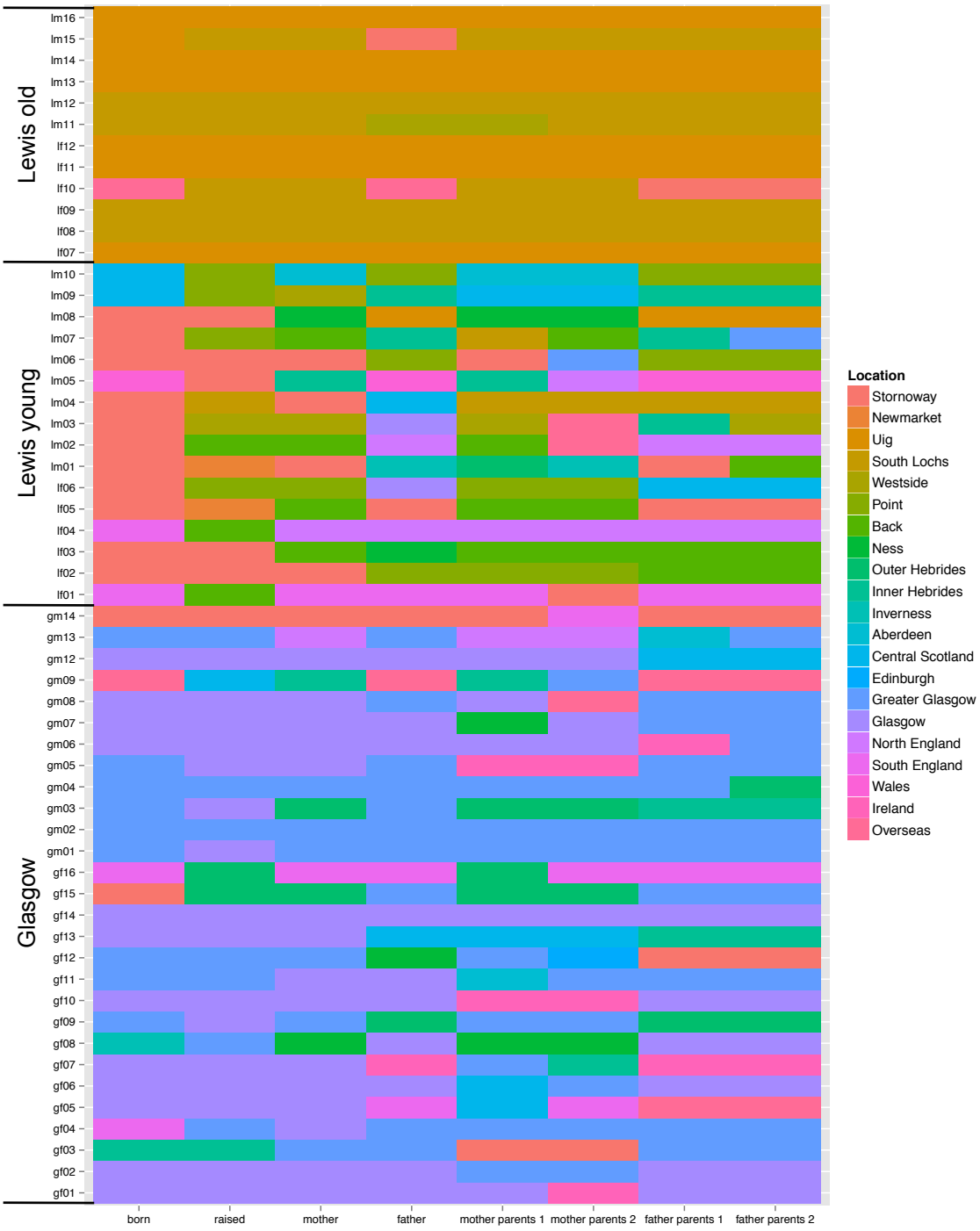

Figure 5.6: Places where the participants and their families were born and raised.

school, primary school attended (coded here as numbers for anonymity), class at the Glasgow school, community of practice at the Glasgow school, and town/country distinction at the Lewis school, in order to provide full (anonymised) information on each person interviewed. The answers to questions 24 and 25 relating to contexts the participants associated with Gaelic and English proved particularly revealing among the young people. The older speakers appeared surprised when I asked them in which contexts they used Gaelic, and in which contexts they used English. The answers were always the same: they used Gaelic wherever possible and English where someone was unable to speak Gaelic. The young people's

answers were more mixed. Full answers are in Appendix B, but word cloud summaries are in Figures 5.7 and 5.8. Word clouds are constructed by displaying most frequent words in larger font using an online tool, Wordle. As can be seen in Tables B.3 and B.4, very few young participants reported taking part in Gaelic social or leisure activities. Some reported attending Gaelic youth groups, known as *sradagan*, though the one in Glasgow had recently closed down.

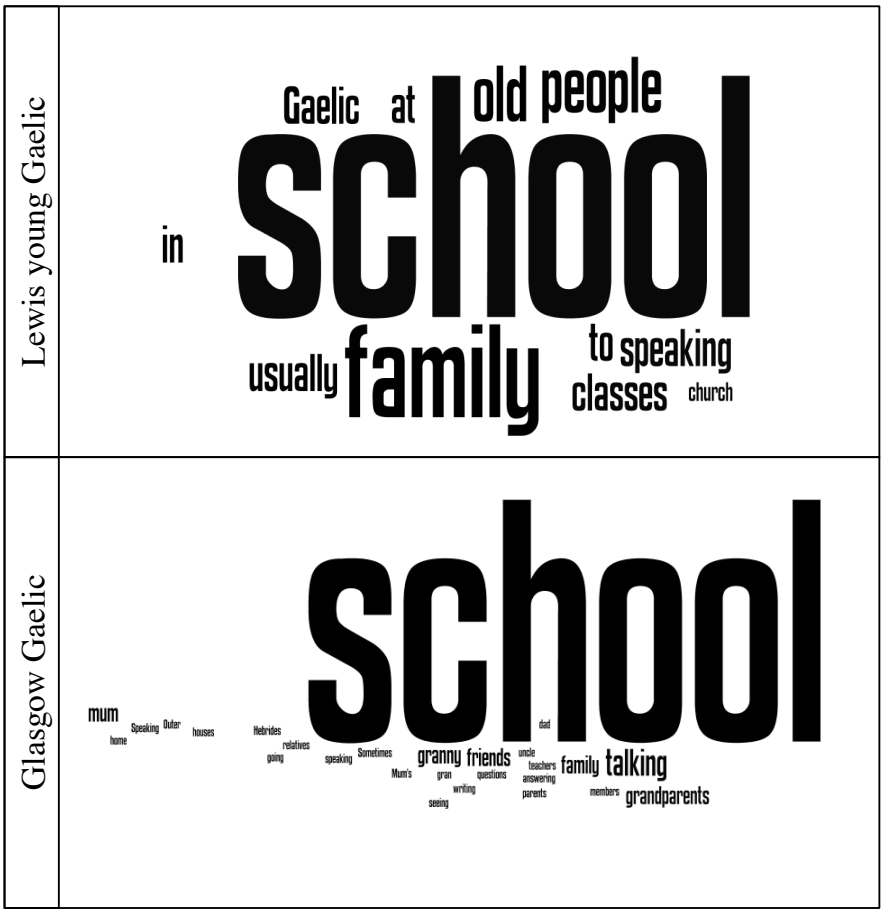

Figure 5.7: Word cloud of contexts young people associate with Gaelic. Top panel Lewis young people; bottom panel Glasgow.

While the word clouds show most frequently mentioned words, indicating which language is associated with which contexts, they do not show that one language is used more frequently than another in that context. For example, the word clouds in Figure 5.7 show that 'school' was very frequently mentioned with reference to Gaelic contexts. This does not mean young people speak exclusively Gaelic at school, nor does it mean that they necessarily speak more Gaelic than English at school, the word cloud instead shows that young people associate Gaelic very strongly with the school context. Indeed, young people in Glasgow mentioned 'school' as their Gaelic context almost without mentioning anything else. Young people in Lewis have more mixed associations for Gaelic, some mentioning particular family members, and older people in the community. Young people in Lewis mentioned frequently school again in their associations with English, along with home, friends, family, and more generally 'everything'. Glasgow young people similarly mentioned 'everywhere', 'everything', 'always',

'talking', as well as home, friends, and, interestingly, 'school'. This inclusion of school may appear surprising in the context of an entirely Gaelic-medium school, but highlights the young people's preference for English as a peer-group language, and the balance of Gaelic and English in which their classes were delivered described above.

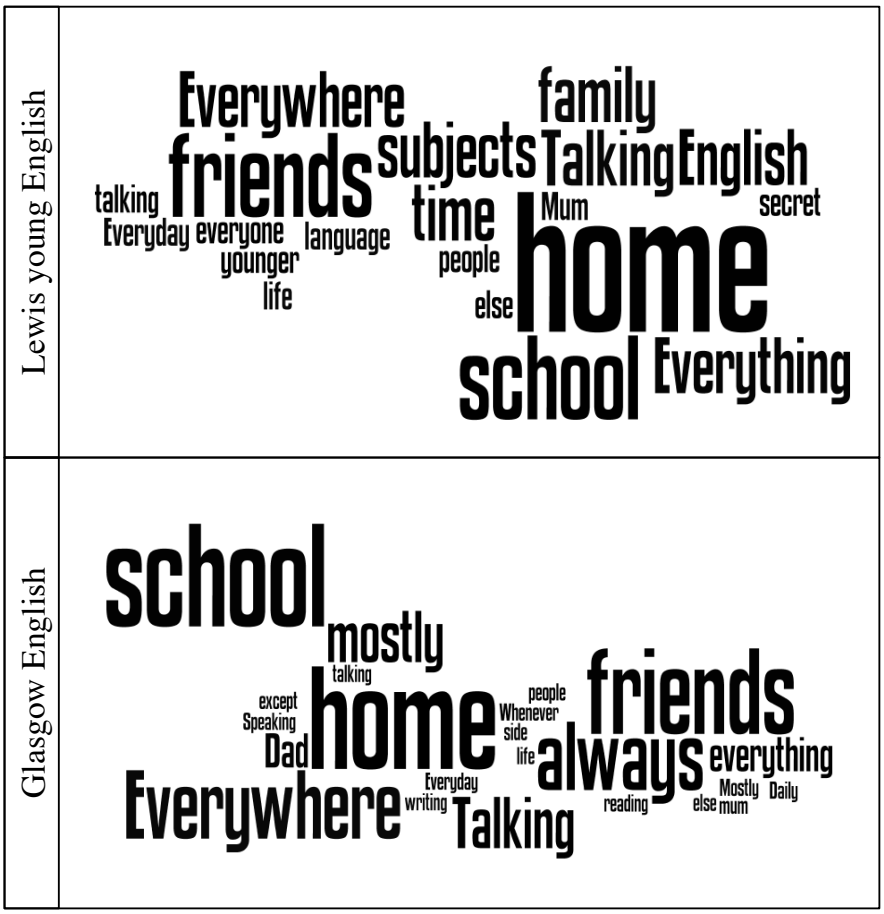

Figure 5.8: Word cloud of contexts young people associate with English. Top panel Lewis young people; bottom panel Glasgow.

5.4 Discussion

This chapter aimed to gain a better understanding of the everyday experiences of the participants and their language use, and obtain a sense of what it meant to them to be Gaelic speakers.

Although all of the people discussed in the chapter are Gaelic speakers, the role Gaelic plays in forming the pattern of everyday existence is very different. For older speakers, Gaelic is a default background way of talking to one another associated with the way they grew up. For younger speakers on the other hand, Gaelic is a much more marked code primarily associated with school and authority structures. For younger speakers, especially in Glasgow, Gaelic tends to be something which just happens at school. Older speakers remember a time when their villages were full of people and the community was entirely Gaelic-speaking. For

these people the language is an integral part of where they came from and their memories of family and childhood. It is something automatically associated with home, family, and local acquaintances. Younger people have to make more of a conscious decision to use the language, and as my observations showed, in Glasgow and in Lewis most young people did not take the decision to use Gaelic in informal contexts. These observations are backed up by the self-reported language use patterns in Figure 5.5, and the contexts young people said they associated with use of Gaelic or English in Figures 5.7 and 5.8. For them the language is associated with formal education and is not appropriate for peer interaction. Even among young people with a Gaelic-speaking parent growing up in the formerly Gaelic-speaking area of Lewis, Gaelic was not a natural tool of communication when talking to one another. These observations indicate that Gaelic plays a very different role in the lives of the different participants.

To relate this to the discussion of language and identity in Chapter 2, for older generations Gaelic is very much part of the habitus (Bourdieu 1977), something they use without thinking and have done so all their lives. Among younger speakers on the other hand, using Gaelic or even knowing the language at all is a matter of conscious decision. Social rules, defined by Gaelic's place as a minority language lacking resources and associated with rural communities suffering depopulation, downgrade the language to one not suitable for peer interaction. Young people in Glasgow even seemed to be embarrassed about their unusual ability to speak Gaelic and mentioned that they hid their skills from friends. These young people then have to make a reflexive decision about using Gaelic, indicating Gaelic is a part of their identity which can be turned on and off, incorporated or not. This is much more reminiscent of more flexible conceptions of the role language plays in identity construction such as those expressed by Giddens (1991) and Sweetman (2003). The distinction between Gaelic as ingrained and Gaelic as a reflexive choice is not necessarily a clear-cut one, particularly among some young people in Lewis, however these tendencies were clear and noticeable overall characteristics of the two generations represented in the dataset.

The ethnographic analysis revealed local social categories of relevance to the young people which would not have been apparent through a different method of data collection. The Lewis school pupils had friendship networks which extended outside the Gaelic-medium classes and outside the scope of this study, but the ethnographic research carried out among these students allowed the observation of specific individuals in the class whose interaction with other pupils and with Gaelic was noteworthy. Another relevant structure is the distinction made in Lewis between 'town' dwellers and people in the 'country'. In the Glasgow school, pupils divided themselves into distinct communities of practice, around which behaviour inside and outside the classroom was structured.

These results both set the scene for the linguistic analysis which follows, and will inform the discussion about why particular linguistic features vary and change the way they do in the particular social contexts identified here.

Chapter 6

Three Scottish Gaelic laterals

6.1 Introduction

Gaelic is reported as having three phonemic laterals: a velarised dental lateral /l̪/, a palatalised dental lateral /l̪ʲ/, and an alveolar /l/ (Borgstrøm 1940; Oftedal 1956; Dorian 1978; Ladefoged, Ladefoged, Turk et al. 1998; Ternes 2006; Hamp 2010). These laterals were chosen for investigation in my dataset as the triple-lateral system of Gaelic is typologically unusual, and as such may be subject to the kinds of change reported in language obsolescence and revitalisation contexts described in Chapter 2. This system is also extremely different to that reported for the varieties of English local to the communities under study here: Highlands and Islands English and Glaswegian English, which only have one lateral. This may inform the direction of a change via indirect contact-induced change towards a system with fewer laterals, which was also reported in Maguire (1991) for revitalised Irish in Belfast. It was therefore hypothesised that the Gaelic laterals may be susceptible to fluctuation, or change. This section presents a primarily acoustic analysis of word-initial and word-medial laterals only. In this chapter I investigate the following research questions:

1. Is there phonetic evidence for three distinct laterals in Scottish Gaelic?
2. Is there any evidence of change in this system? An if so, why might this be?
3. Are there differences between young speakers in Lewis and in Glasgow?

In the following sections of the introduction I review phonetic studies of the articulation and acoustics of lateral sounds, before discussing studies which investigated laterals in Gaelic and varieties of English in contact with Gaelic. Section 6.2 discusses the methods used here for static and dynamic analyses of Gaelic laterals. Section 6.3 gives the results of the analyses, which suggest that three phonemic laterals are maintained in Gaelic, but in particular the palatalised lateral is subject to much variability among younger speakers with some participants producing no palatalised laterals at all. Fewer palatalised laterals are produced in Glasgow than in Lewis. There are also phonetic differences between the groups of speakers, in particular the young Glasgow speakers produce alveolar laterals with a low F2-F1 compared

to the other groups of speakers and the young Lewis speakers produce velarised laterals with a high F2-F1 compared to the other groups of speakers.Sections 6.4 and 6.5 discuss these results and draw some interim conclusions.

6.1.1 Articulation of lateral sounds

Laterals are complex sounds involving different tongue movements, lip movement and modification of vocal fold vibration. This section reviews the main articulatory features of laterals, and the following section outlines the acoustic consequences of these different articulations.

Laterals are sounds produced when the tongue forms a closure somewhere along the mid-sagittal line of the vocal tract, but a gap is left along the side, or sides, of the tongue around which the air flows (Laver 1994, 306). Ladefoged & Maddieson (1996, 182) modify this classical definition slightly to allow for some central airflow. Laterals are mostly produced with tongue tip or blade contact in the dental or alveolar region (Ladefoged & Maddieson 1996, 183), although some languages also exhibit post-alveolar, palatal and velar laterals. Articulatory studies considering the three-dimensional nature of the tongue (such as Narayanan & Alwan (1997); Oliveira, Martins, Teixeira et al. (2011)) note that in a lateral articulation, the tongue is compressed inwards creating a convex tongue body shape.

Many studies of (mainly English) laterals refer to 'clear/light' and 'dark' /l/, (e.g. Sproat & Fujimura (1993); Narayanan & Alwan (1997); Recasens (2004); Recasens & Espinosa (2005); Gick, Campbell, Oh et al. (2006); Carter & Local (2007); Recasens (2012)). 'Dark' /l/ typically refers to an /l/ produced with dental/alveolar contact, but also with tongue body raising in the velar region, or tongue root retraction and bunching in the pharyngeal region (Sproat & Fujimura 1993; Narayanan & Alwan 1997; Gick, Campbell, Oh et al. 2006). Additionally, Recasens & Espinosa (2005) state that 'dark' /l/ is typically more likely to be produced with a dental contact, and 'clear' /l/ with an alveolar contact. 'Dark' /l/ is also often accompanied by lip rounding and/or protrusion. This is reported to be especially prevalent in Nova Scotia Gaelic, to such an extent that the velarised lateral is usually produced as [w] (Nilsen 1996), which Ó Maolalaigh (2003b) suggests is a feature transported to Canada from Scottish Gaelic in Lochaber (western Highlands). In some syllable coda instances, 'dark' /l/ is produced without any tongue tip/blade contact and retains just the tongue body raising/retraction. This has been observed in articulatory studies (Hardcastle & William 1989; Narayanan & Alwan 1997; Gick, Campbell, Oh et al. 2006; Scobbie & Pouplier 2010), and also widely studied as a sociophonetic phenomenon known as l-vocalisation (Wright 1989; Tollfree 1999; Stuart-Smith, Timmins & Tweedie 2006; Lambert, Alam & Stuart-Smith 2007; Stuart-Smith, Timmins & Tweedie 2007; Braber & Butterfint 2008).

'Clear /l/' typically refers to an /l/ sound produced in the canonical fashion described above with contact in the dental/alveolar region, with little or no tongue body raising or retraction, although Gick, Campbell, Oh et al. (2006) show that post-vocalic /l/ is always produced with

some degree of posterior tongue gesture even in languages where /l/ is considered 'clear' in all syllable positions. In some cases the term 'clear' is used to refer to a range of lateral articulations, for example, palatalised /l/ (Wells 1982, 446). The data in Gick, Campbell, Oh et al. (2006) indicate that the distinction between 'clear' and 'dark' laterals is not at all clear-cut. In support of this argument, Recasens (2004) and Recasens & Espinosa (2005) use electropalatographic (EPG) analysis to demonstrate that the distinction between 'clear' and 'dark' /l/ is indeed a phonetic continuum, with different dialects of Catalan displaying different degrees of tongue body raising or 'darkness'. The timing of the different articulatory gestures involved in lateral production appears to be language specific. Gick, Campbell, Oh et al. (2006) suggest that in languages with laterals considered 'clear' posterior and anterior tongue gestures occur simultaneously in prevocalic position, whereas the gestures are offset in languages with laterals considered 'dark'. In postvocalic position, there is no clear pattern but for the majority of languages in this study which had a postvocalic posterior tongue gesture, the posterior gesture precedes the anterior gesture (i.e. the tongue body moves before the tongue tip if the tongue body moves at all).

Gaelic is reported to contrast three phonemic laterals: a velarised dental lateral /l̴̪/, a palatalised dental lateral /l̪ʲ/, and an alveolar /l/ (Borgstrøm 1940; Oftedal 1956; Dorian 1978; Ladefoged, Ladefoged, Turk et al. 1998; Ternes 2006). The velarised dental lateral refers to a lateral sound produced with dental tongue contact and tongue dorsum raising/retraction in the velar to pharyngeal region (referred to as 'dark /l/' in the literature above). The alveolar lateral is produced with alveolar contact (referred to as 'clear /l/' in the literature), and little or no posterior tongue gesture. The palatalised dental lateral refers to a dental lateral that is produced with tongue body raising further forward in the palatal region. In this study, I will refer to these three Gaelic laterals as velarised, alveolar, and palatalised.

6.1.2 Acoustic correlates of lateral articulations

The acoustic effects of lateral articulations have been described as 'long-domain' phenomena, influencing sounds preceding and following the lateral itself to an extent greater than some other kinds of articulation (Kelly & Local 1989; Carter & Local 2007). In order to understand the acoustics of lateral articulations, the lateral sound is usually conceptualised as a series of resonating cavities: the back cavity behind the lateral constriction, the lateral channel(s), and the front cavity nearest the lips preceding the lateral constriction (Stevens 1998, 532). The frequencies of the formants depend on the length of each of these resonating cavities. Articulatory evidence such as Narayanan & Alwan (1997) indicates that when the tongue body is raised or retracted in the production of a lateral sound, this leads to an increase in the length of the back cavity. This increase in back cavity length leads to a decrease in F2 and an increase in F1. Applying this to concrete examples: Lehiste (1964) and Espy-Wilson (1992) found that for English 'dark' /l/ F2 is low and F1 is high, and for English 'clear' /l/ F2 is higher and F1 lower.

The frequency of F3 in lateral production is thought to be correlated with the length of the front cavity, with a shorter length leading to higher values (Stevens 1998, 543). Recasens & Espinosa (2005) report that velarised [ɬ] in Catalan is more likely to be produced with a dental articulation compared to 'clear' [l], which is typically produced with constriction in the alveolar region. These authors accordingly report higher F3 values in 'dark' /l/ than in 'clear' /l/. If 'dark' /l/ is accompanied by lip rounding and/or protrusion then this also has the effect of raising F3 (Recasens & Espinosa 2005).

Air flowing through the side channel(s) of a lateral constriction results in extra aerodynamic resistance and acoustic losses. These acoustic losses result in a large bandwidth for the lower formants in lateral productions. This large bandwidth of the lower formants broadens the low frequency spectral peaks and results in a lower amplitude of F1 (Stevens 1998, 534).

A lateral constriction may also cause modification in the glottal source amplitude. Specifically, fluctuations in supra-glottal air pressure caused by the constriction mean that the glottis has to stay open longer in the vibration cycle, and amplitude of vibration is reduced (Bickley & Stevens 1986). This reduction in amplitude of the glottal source results in a reduction in amplitude of all formants.

The fact that in lateral production air is funnelled around a side channel leads to an extra pole and zero (anti-resonance) in the spectrum. The zero has the effect of further lowering the amplitude of the higher formants, and the extra pole can add an extra formant in the higher frequency regions (Stevens 1998, 546).

Laterals also differ dynamically according to different tongue configurations. Typically, clearer /l/s have faster transitions into and out of the lateral and a longer duration in the lateral phase. Darker /l/s have slower transitions into and out of the lateral and a shorter lateral phase (Carter 2003).

These results from the previous acoustic studies suggest that for the Gaelic velarised lateral F2 will be low and close to F1, for palatalised /l̪ʲ/, F2 will be very high and F1 very low, and the formant values of the alveolar lateral will lie somewhere between these extremes. Example spectrograms from the data showing some of these acoustic characteristics are presented in Figure 6.1. The figure shows three contrasting lateral-initial words from the dataset: [1] *latha* 'day', /ɬ̪a.ə/; [2] *liosta* 'list' /lɪstʰə/; and [3] *leabhar* 'book' /l̪ʲɔ.ər/. In the interests of space and comparability, only the first part of *liosta* is shown, hence the underlining. All of the words show that the amplitude of all formants during the lateral is lowered when compared to the following vowel. The velarised lateral has a very low F1 and F2, and the palatalised a low F1 and high F2. The alveolar lateral has an F2 not as high as the palatalised but not as low as the velarised lateral.

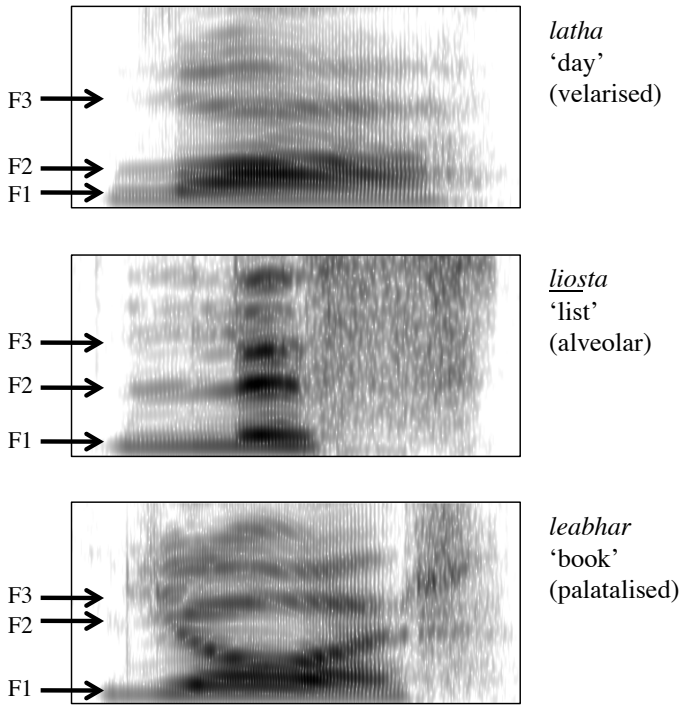

Figure 6.1: Example lateral-initial words from the dataset produced by a female teacher from the Glasgow school showing the acoustic characteristics of laterals described above.

6.1.3 Previous studies of Irish and Scottish Gaelic laterals

Several previous phonetic studies have investigated laterals in the Gaelic languages. Ní Chasaide (1979) is an acoustic study of lateral production in Gaoth Dobhair Irish. Shuken (1980) considers acoustic and also articulatory aspects of Scottish Gaelic laterals. Ladefoged, Ladefoged, Turk et al. (1998) conducted a small acoustic study of Scottish Gaelic laterals, and these authors also present palatographic data from a Gaelic speaker from South Uist, which give an indication of how these sounds are articulated in South Uist Gaelic.

Ní Chasaide (1979) examined Irish word-list data from nine participants from Gaoth Dobhair (Donegal). This study compares Modern Irish to the system of Old Irish. Old Irish contrasted four phonemic laterals: /l̪ˠ, l̠ˠ, l̪ʲ, lʲ/. Ní Chasaide's (1979) study investigates data on formant frequencies, voicing and duration. She found that there was no phonetic evidence for four distinct laterals. Instead, three laterals are phonetically distinct, and the two Old Irish velarised phonemes have merged. This is qualified in Ní Chasaide (1999) where it is explained that the two Old Irish velarised phonemes have merged, and the Old Irish /lʲ/ has lost its palatalisation giving the same lateral systems in modern Irish and Scottish Gaelic. This trajectory is represented in Figure 6.2.

Shuken (1980) examines acoustic data as well as static palatographic and kymographic data from two speakers of Harris Gaelic and two speakers of Lewis Gaelic (only one male Lewis speaker's acoustic data are analysed). The static palatographic data give a good indication of tongue tip/blade articulations, though were not able to capture tongue body articulations. Shuken (1980) found the Gaelic velarised laterals were consistently produced

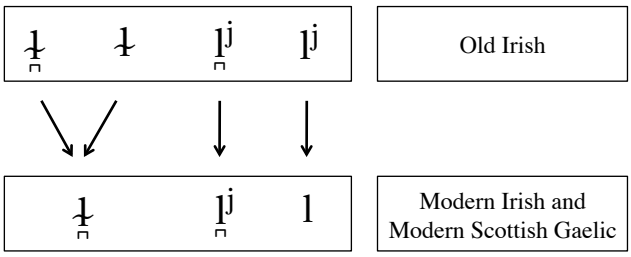

Figure 6.2: Changes in lateral systems from Old Irish to Modern Irish and Scottish Gaelic from Ní Chasaide (1979, 1999).

with a dental tongue tip/blade articulation, the alveolar laterals were generally produced with an alveolar place of articulation, and the palatalised laterals tended to have dental/alveolar articulations with also some palatal wipeoff (Shuken 1980, 275-277). It is suggested that this is evidence that the palatalised lateral is indeed palatalised, rather than having a primary palatal articulation (Shuken 1980, 279). The data from the analysis of one Lewis speaker's formants indicates highest F1 in the velarised laterals, and lowest F1 in the palatalised, with the alveolar laterals in between (Shuken 1980, 354). The velarised laterals had the lowest F2, the palatalised the highest F2, and the alveolar in between these two (Shuken 1980, 355).

A section in Ladefoged, Ladefoged, Turk et al. (1998) investigates the acoustics of laterals from Bernera, Isle of Lewis. This study collected examples of one word of each lateral in word-initial and word-medial position (six words), and provides a description of the formant values for each lateral. Ladefoged, Ladefoged, Turk et al. (1998) found that the laterals differed substantially in their F2 values. The velarised lateral had the lowest F2, the palatalised the highest F2 and the alveolar lateral had an intermediate F2.

The palatograms presented in in Ladefoged, Ladefoged, Turk et al. (1998) investigate the difference between Gaelic velarised /ɫ̪/ and alveolar /l/. According to Ladefoged, Ladefoged, Turk et al. (1998), the most striking difference between the two laterals is that the velarised words are produced with dental contact, and the alveolar words with alveolar contact. The palatograms show no evidence of tongue body raising for /ɫ̪/, although as discussed by Ladefoged, Ladefoged, Turk et al. (1998) this may be due to the tongue narrowing for the lateral articulation, and as commented in Shuken (1980, 275) it is difficult to obtain evidence of tongue body articulations through static palatography.

6.1.4 Laterals in Lewis English and Glasgow English

The revitalised and endangered status of Gaelic may lead to variability in the lateral system, as explored in Maguire (1991). Studies of language contact suggest that in a situation of language decline, the direction of changes may be influenced by the system of the community-dominant language (e.g. Campbell & Muntzel (1989)). The systems of English varieties in contact with Gaelic must therefore be considered. Two varieties of English are in direct contact with the Gaelic speakers in this study: Lewis English and Glaswegian English. This section reviews

studies of laterals in both of these varieties.

There is substantial variation in lateral production in varieties of English. In RP and southern British varieties, /l/ is described as having two allophones: /l/ is described as 'clear' [l] in syllable initial position, and 'dark' [ɫ] in syllable final position (Sproat & Fujimura 1993). This is not the case in all dialects. For example, in American English, /l/ is produced with tongue body raising or retraction in all syllable positions (Gick, Campbell, Oh et al. 2006), whereas in Irish English and Newcastle English /l/ is considered 'clear' in all syllable positions (Wells 1982; Carter & Local 2007).

Little is known about the English of the Isle of Lewis, or the Highlands and Islands more generally. Wells (1982, 413) comments that /l/ is 'clear' in all syllable positions in the Highlands and Islands, possibly due to the influence of Gaelic. Shuken (1984, 160) states that in Lewis /l/ is 'clear', though may be produced as retroflex after /r/ in words such as *pearl*. /l/ is described as also occasionally retroflex independent of /r/ in word-final position in words such as *call*.

Wells (1982, 411) describes Glasgow English /l/ as velarised or pharyngealised in all positions. Similarly, Macafee (1983, 33) and Stuart-Smith (1999) report velarised or pharyngealised /l/ in all syllable positions in Glasgow, although these authors comment that middle class speakers may use 'clear' /l/ in positions where Southern English English might use it, i.e. syllable onsets. This is shown empirically in an auditory study by Braber & Butterfint (2008). The general darkness of Glaswegian /l/ has been investigated acoustically by Stuart-Smith, Timmins & Alam (2011). Both of these studies compared Glaswegians of different ethnicities and found that the /l/ produced by Glasgow Asian speakers is typically clearer than the /l/ produced by Glasgow non-Asians, confirming an earlier auditory study by Lambert, Alam & Stuart-Smith (2007). Among Glasgow Asians however, /l/ can still be considered 'dark', and is comparable to other varieties of English which have laterals considered 'dark' such as Leeds (Carter & Local 2007). The difference between the ethnic groups in Glasgow is that Glasgow Asian /l/ is not *as* dark as among Glasgow non-Asians. Several studies have also considered l-vocalisation in Glasgow. l-vocalisation appears relatively widespread in syllable codas, both originating in Scots l-vocalisation, and l-vocalisation similar to that in Southern English English (Stuart-Smith, Timmins & Tweedie 2006, 2007; Braber & Butterfint 2008). The present study does not consider coda /l/ (as will be explained below) so cannot contribute data from Glasgow Gaelic to the debate on l-vocalisation.

6.2 Method

The data for this part of the thesis were taken from the word-list section of the interview. There were several reasons for this: firstly, this chapter is concerned with whether participants maintain traditional phonemic contrasts reported for Gaelic. An investigation of contrast requires looking at minimal pairs to see whether words are distinguished. It was therefore necessary to control the words uttered by participants in some way and ensure that all

participants used the same words. Secondly, laterals are known as having particularly long range coarticulatory effects (Kelly & Local 1989), and likewise being particularly susceptible to vowel coarticulation e.g. Recasens & Espinosa (2005); Carter & Local (2007). For this reason the study required some control over the vocalic context of each lateral.

The word-list contained two words for each lateral phoneme in word-initial and word-medial position (12 words). In designing the word-list I attempted to elicit minimal triplets where possible, although this was very difficult for several reasons: firstly, Gaelic has few minimal pairs (Shuken 1980; Ladefoged, Ladefoged, Turk et al. 1998). Secondly, the velarised laterals tend to be associated with back vowels, and the palatalised and alveolar laterals with front vowels. Thirdly, I felt it very important to provide words that the participants would know, rather than lesser known lexical items. This was prioritised over eliciting minimal, but obscure, triplets or pairs. In a previous word-list study of Gaelic (Nance & Stuart-Smith 2013), several lexical items had to be excluded because it was clear the participants were not familiar with the words involved. In order to maximise the chances of participants recognising the words on the word-list, each word was presented on a computer screen accompanied by a picture representing the word. The 12 words containing laterals were presented three times in random order alongside 34 distractors. This section presents analysis of 1392 lateral tokens. The word-list used is provided in Table 6.1.

Phonemic category	**Word-initial**			**Word-medial**		
	Gaelic	IPA	English	Gaelic	IPA	English
Velarised	latha	ɫ̪a.ə	*day*	salach	saɫ̪ɔx	*dirty*
	loch	ɫ̪ɔx	*lake*	balach	paɫ̪ɔx	*boy*
Alveolar	liosta	lɪstʰə	*list*	baile	palə	*town*
	leat	laʰt	*at you*	duilich	tulɪç	*sorry*
Palatalised	leabhar	l̪ʲɔ.ər	*book*	cailleach	kʰal̪ʲɔx	*old woman*
	leugh	l̪ʲeːv	*read*	duilleag	tul̪ʲak	*page*

Table 6.1: Word-list used in the analysis of Gaelic laterals

As these data were taken from the word-list section of the interview, the participants analysed were slightly different to those investigated in the other analyses. The three older male speakers from Lewis were unable to read Gaelic, so did not complete the word-list. One of the young female speakers from Lewis did not complete the word-list as the interview had to be cut short due to the classroom in which I was recording being required for other purposes. Some of the teachers from the Glasgow school were recorded for the word-list, so are included in this analysis. These teachers were all Gaelic speakers who grew up on the Isle of Lewis. The participants used here and number of tokens analysed are summarised in Table 6.2.

	Participants			Token count		
Speaker group	female	male	**Total**	female	male	**Total**
Lewis old	3	0	3	105	0	105
Glasgow teachers	3	1	4	107	36	143
Lewis young	5	6	11	176	212	388
Glasgow young	12	9	21	433	323	756
Total	23	16	39	821	571	1392

Table 6.2: Participants investigated in the analysis of Gaelic laterals and number of tokens analysed.

6.2.1 Coding

Word-initial and word-medial laterals from the Gaelic word-list data were coded in ELAN (Sloetjes & Wittenburg 2008). Each word was coded for what word it was, whether the lateral was in word-initial or word-medial position, the phonemic category of the lateral (velarised, palatalised, or alveolar), the speaker producing the lateral, and the code for that token. The resulting data were converted to a Praat TextGrid for each speaker (Boersma & Weenik 2012), and then cut into individual files for each lateral token using a Praat script. After this initial coding and separation of the sound files, both auditory and acoustic analyses were carried out. Section 6.2.2 describes the methodology used for the auditory analysis, and Section 6.2.3 describes the methods used in the acoustic analysis.

6.2.2 Auditory analysis

It was clear from listening to the data that the palatalised laterals were produced with a large amount of variability. Some were produced with no audible laterality at all. For this reason an auditory analysis of all the lateral data was carried out. Data were coded in Praat as one of four variants:

1. palatalised lateral
2. velarised/alveolar lateral followed by palatal glide
3. palatal glide (no audible laterality)
4. velarised/alveolar lateral

Spectrograms of these variants are shown in Figure 6.3. All of the spectrograms are of the same word with an initial palatalised lateral: *leabhar* /l̪ʲɔ.ər/ ‘book’. All of these laterals were produced by young male Glaswegian speakers. The first spectrogram (a palatalised lateral) shows the damped amplitude of lateral formants and the high F2 associated with palatalisation. In spectrogram 2 (a lateral followed by a palatal glide), a lateral phase with dampened amplitude is followed by a clear transition into a palatal vocoid. The F2 of the lateral phase is lower than the following glide and vowel indicating that the lateral is not

articulated at the palate. Spectrogram 3 shows a palatal glide with no audible laterality. The acoustic characteristics of a glide are similar to a liquid, but this spectrogram shows no clear transition into a vowel, which might be expected in the production of a lateral. The transition is instead much more gradual. Spectrogram 4 shows a lateral with very low F2 indicating velarisation or pharyngealisation rather than palatalisation. The upper formant amplitudes are very damped, another indication of laterality. At the transition between the lateral and the vowel there is a transient spike visible on the spectrogram. This transient sometimes accompanies lateral sounds (Lawson, Stuart-Smith, Scobbie et al. 2011, 81).

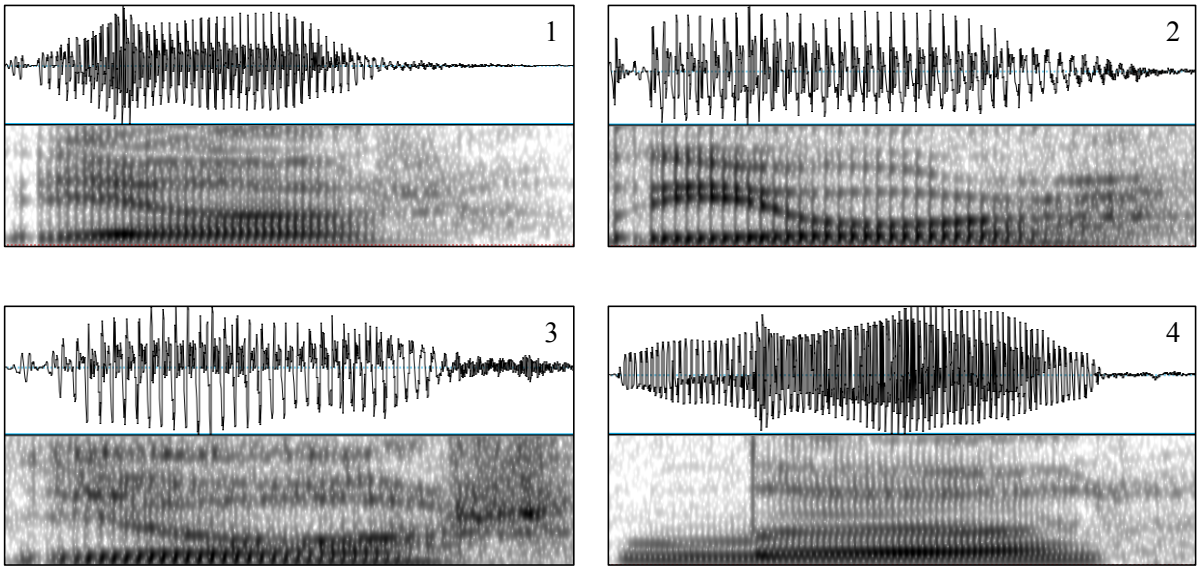

Figure 6.3: Palatalised lateral variants in the word *leabhar* 'book' /l̪ʲɔ.ər/ spoken by young male Glaswegians. Panel 1 shows a palatalised lateral; Panel 2 shows a non-palatalised lateral followed by a palatal glide; Panel 3 shows a palatal glide only with no audible laterality; Panel 4 shows a lateral with no palatalisation.

Statistical analysis of auditory data

Statistics were conducted on the results of the auditory analysis for the phonemically palatalised laterals. A binary dependent variable was created comparing laterals produced as palatalised laterals to other productions (lateral+palatal glide; palatal glide; non-palatalised lateral). This dependent variable was subjected to mixed effects logistic regression analysis comparing the fixed effects of speaker group (Lewis older speakers, Lewis younger speakers, Glasgow young people, and teachers in Glasgow). Gender was not included in the model due to the large bias towards females in the data. Speaker and word were included as random effects. Statistical analysis and data manipulation was carried out in R (R development core team 2008).

6.2.3 Acoustic analysis

The lateral data were analysed acoustically at a static time-point, and also dynamically to observe formant trajectories. Prior to acoustic analysis, the steady-state phase of the lateral was labelled in Praat. Steady-state was defined as where F2 was visually stable on the spectrogram and not in transition (Carter & Local 2007). This study labelled laterals into four distinct phases:

1. Transition into the lateral
2. Lateral steady state
3. Transition out of the lateral
4. Vowel following the lateral

To exemplify the labelling, a word-medial lateral in the word *duilich* 'sorry' /tulıç/ is shown in Figure 6.4. The phases of the lateral identified by Carter & Local (2007) are indicated, as well as segmental divisions for comparison. My static analysis concentrates on phase 2, the lateral steady state. The dynamic analysis examines the vowel preceding the lateral and phases 1-4.

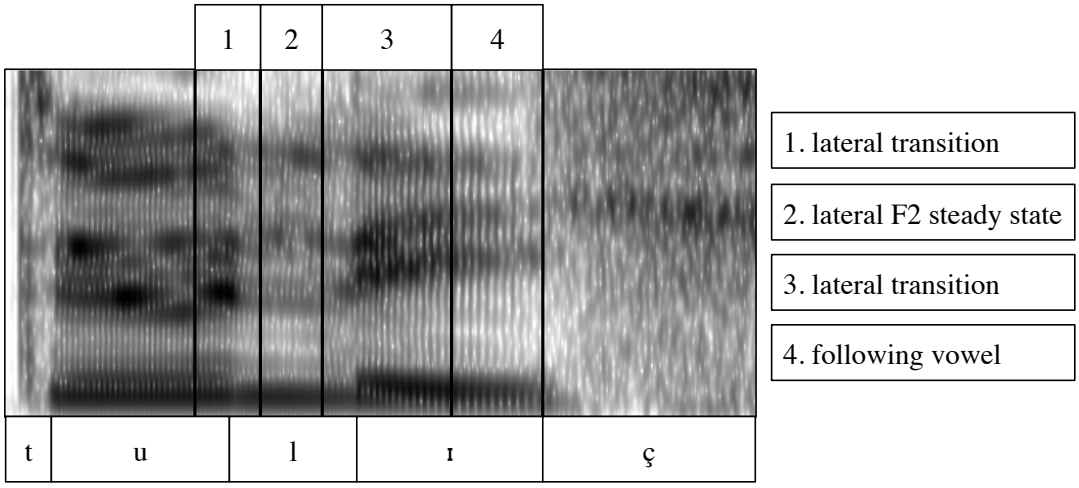

Figure 6.4: Lateral phases in the word *duilich* as identified in Carter & Local (2007). Segmental divisions are shown below for comparison.

Tokens containing no laterality at all (category 3 in the auditory analysis) were removed prior to acoustic analysis, as it was impossible to measure the formants of a lateral sound if there was no lateral present. This affected a large number of tokens (84 out of a possible 480 palatalised lateral tokens). These tokens were, however, included in the auditory analysis (described above in Section 6.2.2).

In anticipation of the acoustic analysis, the data were low-pass filtered to 11025Hz and downsampled to 22050Hz in Praat. The Praat TextGrids were then converted to Emu files for formant analysis (Harrington 2010). The first three formants were generated using Linear Predictive Coding with settings specific to each speaker. Time was taken in ensuring the formant settings were correctly adjusted to most accurately capture each speaker's lateral

acoustics. Due to the articulatory characteristics of laterals and their acoustic consequences (Sections 6.1.1 and 6.1.2), the amplitudes of lateral formants are often reduced and difficult to measure. Speaker-specific formant settings ensured optimal capturing of the acoustic data and minimal hand correction. The most commonly used settings were an LPC order of 20 for females and 16 for males, with a 45ms Blackman window. All formant traces were manually checked for formant tracking errors and hand correction carried out in Emu.

Static acoustic analysis

The remaining data manipulation and analysis was carried out in R (R development core team 2008). Formant values were extracted from the temporal mid-point of the lateral steady-state. Formant values in Hertz were converted to Bark (Traunmüller 1990). This transformation converts Hertz values into a scale that reflects how the auditory system responds to sounds. Specifically, the auditory system is more sensitive to lower frequencies than higher frequencies, and the Bark scale increases the distance between lower frequency values accordingly. The Bark transformation was implemented using the Emu package in R.

The acoustic measure chosen to compare lateral productions was the difference between F2 and F1 (F2-F1). This measure was considered optimal for inferring place of articulation differences between laterals. Some studies such as Ní Chasaide (1979); Recasens (2004); Carter & Local (2007); Stuart-Smith, Timmins & Alam (2011) use F2 as a correlate of anterior or posterior place of articulation. However, as discussed in the section on acoustics of laterals (Section 6.1.2), F1 also varies as a function of back cavity length. For this reason F2-F1 was used a measure of lateral place of articulation similar to Sproat & Fujimura (1993); Simonet (2010); Oliveira, Martins, Teixeira et al. (2011). These studies would predict that in Gaelic the velarised lateral would have the lowest F2-F1 values, the palatalised lateral the highest F2-F1, and the alveolar lateral somewhere between these two extremes. From examining the spectrograms impressionistically, for example, the data presented above in Figure 6.1, this appeared to be true, but the acoustic analysis was designed to investigate this impression.

Many sociolinguistic studies of resonant sounds (mainly vowels) recommend normalisation for speaker-inherent vocal tract length differences (Watt, Fabricius & Kendall 2011). Specifically, male speakers typically have larger vocal tracts so are likely to produce formants with lower frequencies, and female speakers typically have smaller vocal tracts so are likely to produce formants of higher frequency. These data were not normalised in this way as the measure used is F2-F1. This measure will in some way normalise for speaker-inherent differences, as if a particular speaker has a higher value for F1, their F2 is also likely to be high. F2-F1 in Bark is in fact already one dimension of a sociolinguistic vowel normalisation measure, the Bark Difference Metric, though in addition this method normalises F2-F1 values in relation to F3 (Syrdal & Gopal 1986).

Statistical analysis of static acoustic data

The acoustic measure of F2-F1 was not normally distributed, and was therefore unsuitable for parametric statistical analysis. Instead, the Kruskal-Wallis test (the non-parametric equivalent of the ANOVA) was used to test for acoustic differences between lateral phonemes, followed by Mann-Whitney post-hoc tests. The threshold for significance was set at $p<.05$. The post-hoc tests require a correction of the p values to avoid family-wise errors. This was done automatically in R using the `kruskalmc` function in the `pgirmess` package.

The dependent variable for the Kruskal-Wallis test was F2-F1 in Bark. The independent variable was lateral phonemic category. The small number of tokens per group of speakers (for example, from the three older Lewis speakers) meant that tests could not be carried out within each individual group of speakers. Instead, I provide graphical representations of F2-F1 split by group and lateral category, and discuss these.

Dynamic acoustic analysis

Many previous studies of laterals have observed that laterality is a long-range phonetic phenomenon substantially affecting sounds surrounding the lateral itself (Kelly & Local 1989; Carter & Local 2007). A static analysis of F2-F1 at lateral midpoints captures some aspects of the lateral production, but little of the lateral in its context within a word. A dynamic analysis was therefore conducted on the lateral in its vocalic context. One study of the dynamic aspects of lateral production is Carter & Local (2007). This study labelled the lateral into four distinct phases, shown in Figure 6.4. After labelling, Carter & Local (2007) measured formant frequencies at ten time-normalised time points within each discrete phase. One disadvantage to this method is that it still requires labelling the lateral and surrounding sounds as having discrete boundaries. Also, as shown in Carter (2003), different laterals have different time courses with 'dark /l/' in English typically displaying longer transitions that English 'clear /l/', and time-normalisation using the method in Carter & Local (2007) loses this information. An alternative method for dynamic analysis of lateral is to conduct a dynamic analysis of the whole vowel and lateral trajectory. This alternative route is followed in Simonet, Rohena-Madrazo & Paz (2008). Here, these authors examine word final laterals and rhotics in Puerto Rican Spanish. Analysis is conducted on word final vowel+lateral or vowel+rhotic sequences. The data were measured at seven time-normalised points in each sequence, and then analysed using smoothing spline ANOVAs and Bayesian confidence intervals.

A smoothing spline ANOVA (SS ANOVA) is a method of statistically analysing curves. The smoothing spline is a non-parametric regression technique which fits a spline (curve) to a series of data points. The idea behind non-parametric regression is that the model is informed by the data rather than assuming characteristics about the data and modelling based on these assumptions (for example, that the data are in a linear relationship, and are normally distributed) (Gu 2002, 2). The smoothing spline works by finding the best possible balance

between fitting the data points and producing a smooth curve (Van der Linde 2000, 22). This optimal fit is found through a method known as cross validation (Craven & Wahba 1979). Once smoothing splines are fitted to the data, different curves can be compared using the ANOVA component of the SS ANOVA. The ANOVA tests whether curves are different or not, but unless two curves are exactly identical across the entirety of the curve's trajectory, the ANOVA is likely to return a significant result. One way of seeing where and how curves differ is to plot them using Bayesian confidence intervals. Unlike frequentist confidence intervals, Bayesian confidence intervals indicate that there is a 95% chance the true value of the mean lies within the interval. If there is no overlap in the Bayesian confidence intervals fitted to an SS ANOVA, this indicates the curves are significantly different at the point in time where there is no overlap (Davidson 2006).

SS ANOVAs have had several applications in linguistics. For example, Davidson (2006) uses them to compare tongue splines from an ultrasound tongue imaging study. SS ANOVAs and Bayesian confidence intervals have also been applied to the sociophonetic study of vowel trajectories, for example Baker (2006); Nycz & De Decker (2006); Baker, Mielke & Archangeli (2008); Koops (2010). Another study to use this method is the previously mentioned Simonet, Rohena-Madrazo & Paz (2008) who compared lateral and rhotic formant trajectories.

Using the SS ANOVA method with Bayesian confidence intervals, I conducted a dynamic analysis of the laterals in their vocalic context. In word-initial laterals, I modelled the lateral+vowel sequences, and in word-medial laterals I modelled the vowel+lateral+vowel sequence. For example, in the word *duilich* 'sorry', segmented in Figure 6.4, I analysed the lateral and surrounding vowels: *duilich*. In each case formant measures were taken at 11 time-normalised points in the sequence. Initial analyses indicated very great differences between words due to the different vowels involved, so groups are compared using the three words that are the closest possible to minimal triplets:

- word-initial *latha* 'day' /l̪̊a.ə/
  leabhar 'book' /l̪̊ʲɔ.ər/
  leat 'at you' /laʰt/
- word-medial *balach* 'boy' /pal̪̊ɔx/
  cailleach 'old woman' /kʰal̪̊ʲɔx/
  baile 'town' /palə/

6.3 Results

The results in this Section are structured according to the three analyses outlined above: auditory analysis (Section 6.3.1), static acoustic analysis (Section 6.3.2), and dynamic acoustic analysis (Section 6.3.3).

6.3.1 Auditory analysis

When I first listened to the data, it was clear there was a large amount of variability present, especially in the production of palatalised laterals. For this reason all the laterals were auditorily coded as being one of four variants (see Figure 6.3):

1. palatalised lateral
2. velarised/alveolar lateral followed by palatal glide
3. palatal glide (no audible laterality)
4. velarised/alveolar lateral

All of the phonemically velarised or alveolar laterals were produced with audible laterality. Among the phonemically palatalised laterals on the other hand, 84/480 tokens were produced with no audible laterality at all. These tokens were excluded from the acoustic analysis of laterals (below), but are included here. The remainder of this Section explores the substantial variation in the production of the palatalised laterals.

The auditory coding of the palatalised laterals by speaker group is in Figure 6.5. Word-initial laterals are in the top panel and word-medial laterals in the bottom panel. The clearest result from these data is that older Lewis speakers categorically produced palatalised laterals. The other speaker groups are more mixed: Glasgow teachers produced three quarters to two thirds of their laterals as palatalised, compared to around a quarter palatalised laterals for the Glasgow young people. Only the younger students produced some tokens as palatal glides with no laterality.

When the data are analysed at the level of the individual speaker, it is apparent that there is substantial variation present in the production of palatalised laterals across individuals. The data from individual speakers is presented fully in Figures 6.7 and 6.6. A speaker code beginning with ‘g’ indicates Glasgow, and beginning with ‘l’ indicates Lewis. ‘t’ refers to a teacher from the Glasgow school. ‘f’ refers to female speakers and ‘m’ male, so speaker gf01 is a female from Glasgow, for example. All the Lewis older speakers produced everything as a palatalised lateral. The teachers in the Glasgow school mainly produce palatalised laterals as palatalised laterals, though the one male teacher in the sample produced everything as non-palatalised [ɬ] or [l]. Among the Lewis young people only one speaker is completely consistent, producing all her palatalised laterals as [j]. Among the Glaswegian young people only one speaker categorically produces all palatalised laterals in the same way: speaker gf10 produces them all as non-palatalised [ɬ] or [l].

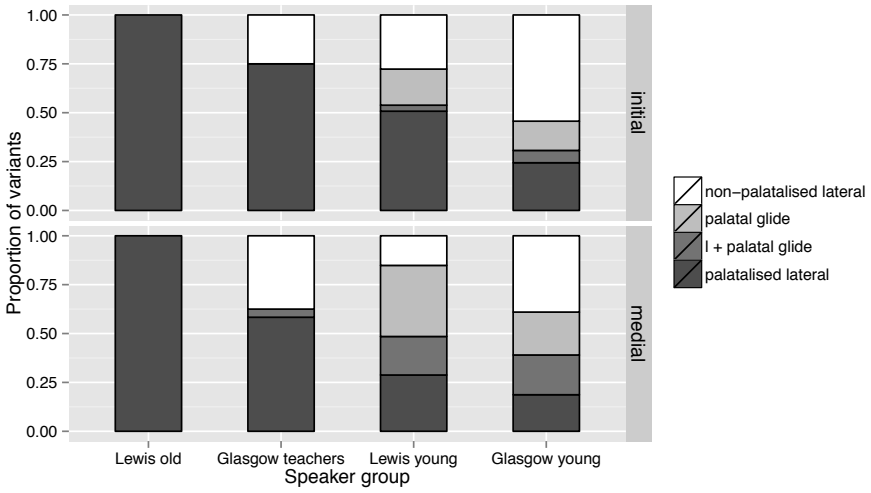

Figure 6.5: Proportion of palatalised lateral variants produced by each speaker group. Top panel shows word-initial laterals n = 234; and bottom panel shows word-medial laterals n = 231.

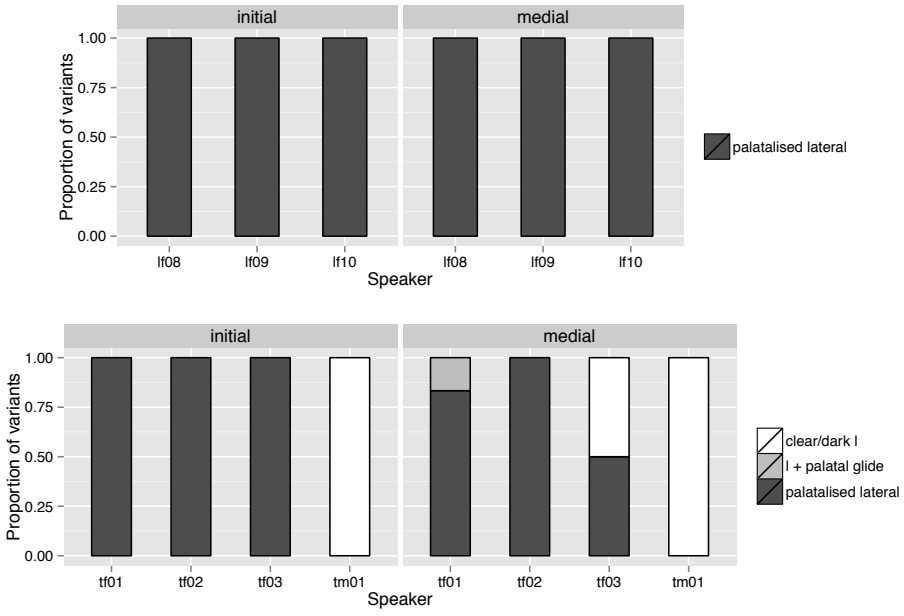

Figure 6.6: Individual productions of palatalised laterals from the Lewis older speakers and the teachers in the Glasgow school. Older Lewis speakers are at the top split into word-initial and word-medial laterals n = 36; Glasgow teachers are in the bottom panel n = 48.

Statistical analysis was used to compare the number of palatalised lateral productions to other ways of producing a phonemically palatalised lateral in the different groups of speakers. Older Lewis speakers could not be included in this analysis, as they produced 100% palatalised laterals, so statistical analysis was not appropriate. A logistic regression was therefore run with the dependent variable of palatalised lateral/other production and independent variable of speaker group. Speaker and word were random effects. The baseline was set as the teachers at the Glasgow school, and the young groups of speakers were compared to this baseline using treatment contrasts. The results of this model are presented in Table 6.3. The dependent

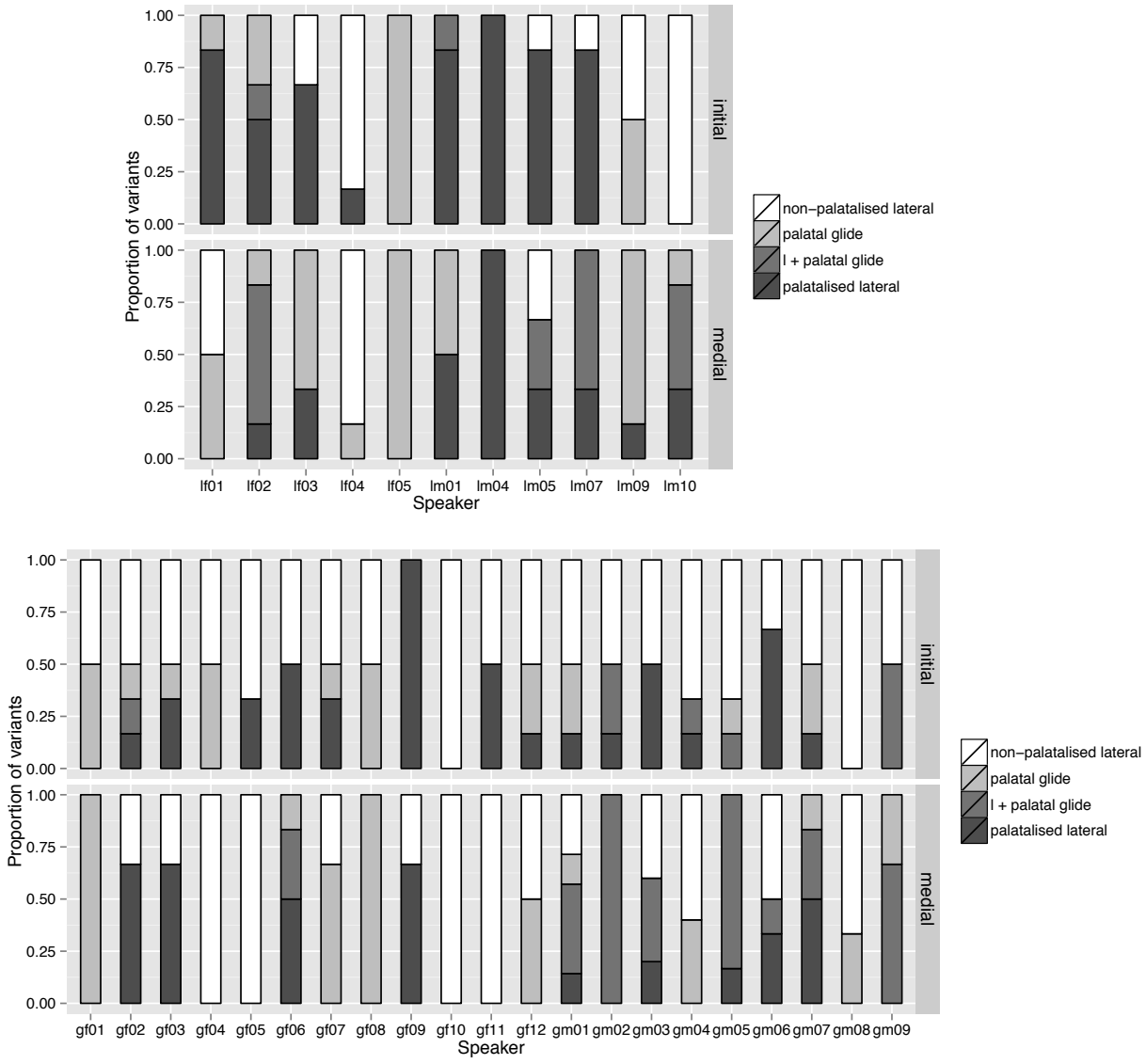

Figure 6.7: Individual productions of palatalised laterals from the young speakers. Young people from Lewis are in the bottom panel split into word-initial and word-medial laterals n = 131; and Glaswegian speakers are at the bottom n= 250.

variable was coded so that positive coefficients in the model indicate more use of palatalised laterals, and negative coefficients indicate less use of palatalised laterals.

The model shows that there are no significant differences between Lewis young people and the teachers at the school in Glasgow (although the Lewis young people produced fewer palatalised laterals). The Glasgow young people, however, produced significantly fewer palatalised laterals than their teachers. The coefficients of the model also indicate that there were differences between the Lewis and Glasgow young people, with the Lewis young people producing more palatalised laterals than the Glasgow young people.

Examining the random effects from the speakers in this model allows observation of which individuals were behaving differently from their group mean. The speaker random effects are plotted in Figure 6.8. A random effect value of 0 indicates the speaker is behaving exactly like their group mean. A dotted line is plotted at 0 on the graph to highlight this. The

	β	SE β	z	p
intercept	1.19	1.24	0.95	0.34
Lewis young	-1.84	1.33	-1.39	0.16
Glasgow young	-3.37	1.26	-2.69	0.007

Table 6.3: Regression model comparing speaker groups in the production of palatalised laterals compared to other productions. n = 429.

plot shows three visually outlying individuals: tm01, lm04, and gf09. Tm01, a male teacher in his twenties at the Glasgow school, has a random effect value of -4 indicating he produced substantially fewer palatalised laterals than the group mean. Indeed, as observed in Figure 6.6, he produced no palatalised laterals at all. Speaker lm04, Jonathan, came from a very remote village in South Lochs (see Chapter 5). He reported speaking Gaelic with his grandparents who lived in the same village. Additionally, his sister, who I became acquainted with during the course of the ethnography, reported speaking Gaelic to their mother. Johnathan was also the only young speaker to produce consistently palatalised laterals.

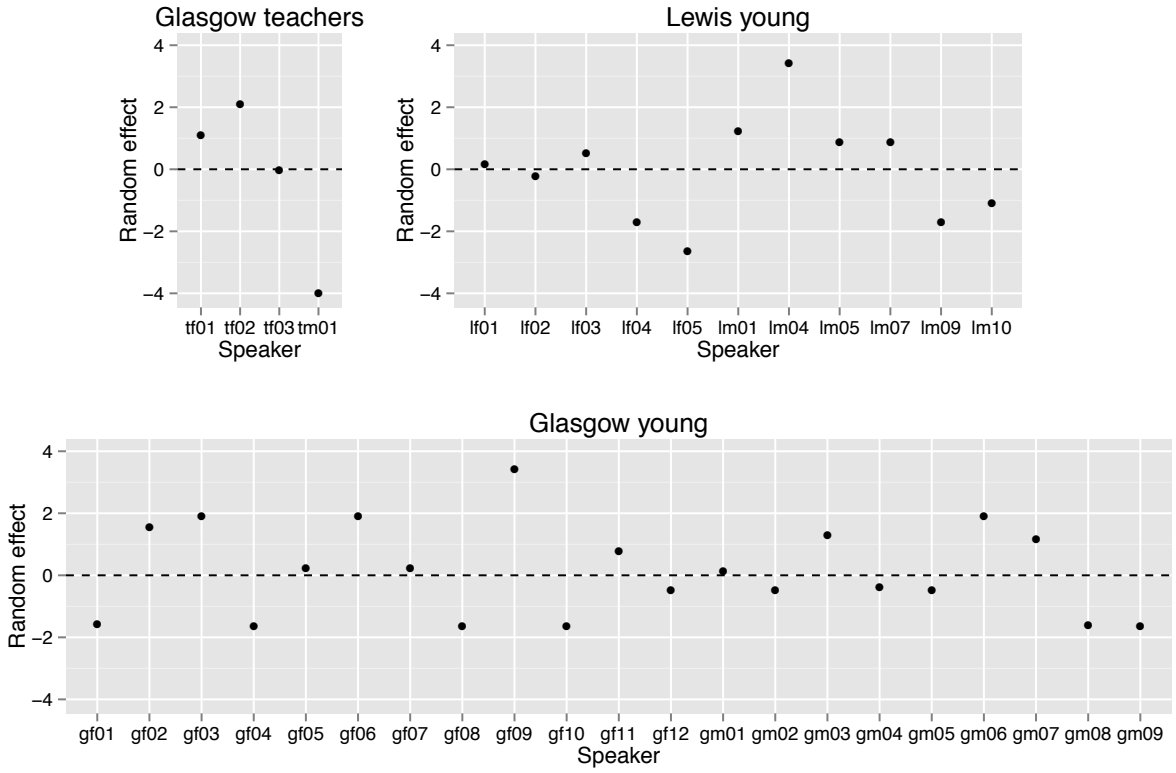

Figure 6.8: Random speaker effects from the regression model in Table 6.3. n = 36.

The random effects for individual words do not exhibit nearly as much variation (Figure 6.9), but indicate that the word *leabhar* is more likely to be produced as a palatalised lateral, and *duilleag* less likely. The differences between *leugh* and *leabhar* may have arisen if some people produced the past tense form of *leugh* which is traditionally produced with an alveolar lateral. It may also be the case that some speakers do not make the traditional distinction between present/imperative and past tense forms of this word, and opted for the non-palatalised form in all tenses as it was closer to their English laterals.

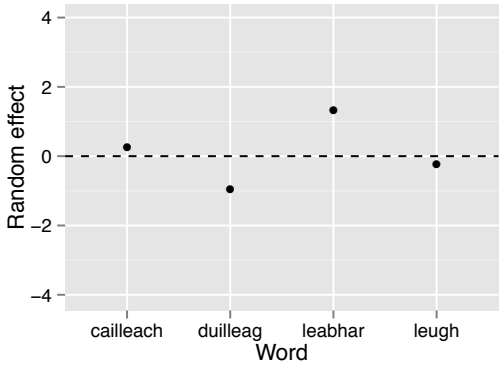

Figure 6.9: Random word effects from the regression model in Table 6.3. n = 4.

6.3.2 Static acoustic analysis

This Section reports the results of the F2-F1 static acoustic measure taken at lateral steady state midpoint (excluding the tokens found to have no laterality at all - see above). Overall, the data suggest formant differences for each of the phonemic categories reported in the previous literature. Figure 6.10 shows the F2-F1 values for the three laterals in word-initial (left panel) and word-medial (right panel) position. The exact values of the first three formants in Hertz are tabulated in Table 6.4 for ease of comparison with other languages.

	Word-initial			**Word-medial**		
	palatalised	alveolar	velarised	palatalised	alveolar	velarised
F1	333	384	369	380	393	451
	(77)	(103)	(111)	(115)	(124)	(123)
F2	1825	1429	1023	1771	1513	1056
	(615)	(399)	(263)	(447)	(442)	(165)
F3	3199	3174	3162	3097	3138	3172
	(358)	(322)	(308)	(299)	(301)	(311)

Table 6.4: Mean Hertz values for the first three formants of Gaelic laterals. Standard deviation in brackets. Values rounded to the nearest Hertz.

The boxplots show that the greatest values of F2-F1 are in the palatalised laterals, followed by the alveolar laterals, and the lowest values for F2-F1 are in the velarised laterals. This was

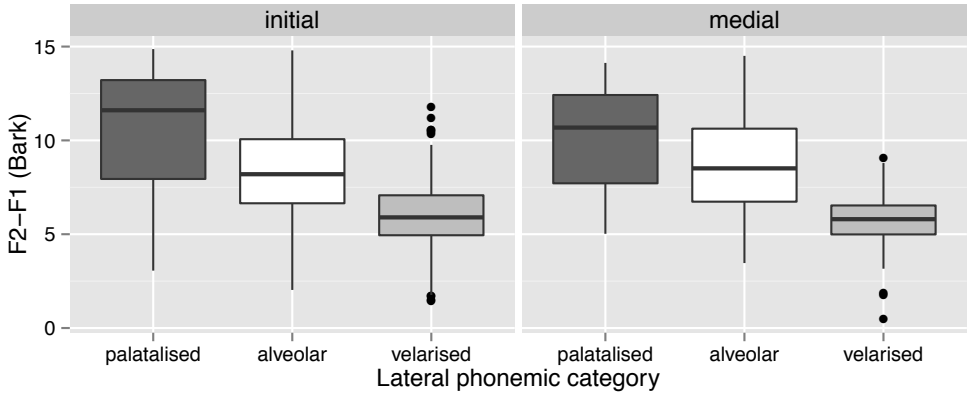

Figure 6.10: F2-F1 values for the three different phonemic laterals in Scottish Gaelic, with data from all the speakers. Left panel shows word-initial laterals n = 668, right panel shows word-medial n = 640.

predicted above considering the described articulations for Gaelic laterals and compared to previous acoustic studies of laterals (Lehiste 1964; Espy-Wilson 1992; Stevens 1998; Carter & Local 2007). Statistical testing was employed to see whether these apparent differences were statistically significant. One of the assumptions of parametric regression and ANOVA is that the data are normally distributed within groups (Field, Miles & Field 2012, 169). From looking at the distributions of these data it was clear that the palatalised lateral data were not normally distributed. Distributions of these laterals are displayed in Figure 6.11 as density plots (smoothed histograms). The figure is split by speaker group and word position: word-initial palatalised laterals are on the left, and word-medial palatalised laterals are on the right. The bimodal distributions in the data from the Glasgow teachers, Lewis young people and Glasgow young people may be indicative two different production strategies with some speakers producing palatalised laterals and some speakers producing non-palatalised laterals.

The Shapiro-Wilk test for normal distribution was carried out on the palatalised lateral data. A significant result from this test indicates that the data are non-normally distributed. Each group of speakers (Lewis old, Lewis young, Glasgow teachers, Glasgow young) in word-initial and word-medial place was tested, and only the results from the Lewis older speakers were non-significant (normally distributed). The exact results are shown in Table 6.5.

Speaker group	**Word-initial**		**Word-medial**	
	W	p	W	p
Lewis old	0.94	.31	0.94	.26
Glasgow teachers	0.81	$<.001$	0.80	$<.001$
Lewis young	0.95	.03	0.93	.02
Glasgow young	0.95	$<.001$	0.95	.001

Table 6.5: Results from the Shapiro-Wilk test for normal distributions on the word-initial and word-medial palatalised laterals. W is the test statistic from this statistical test.

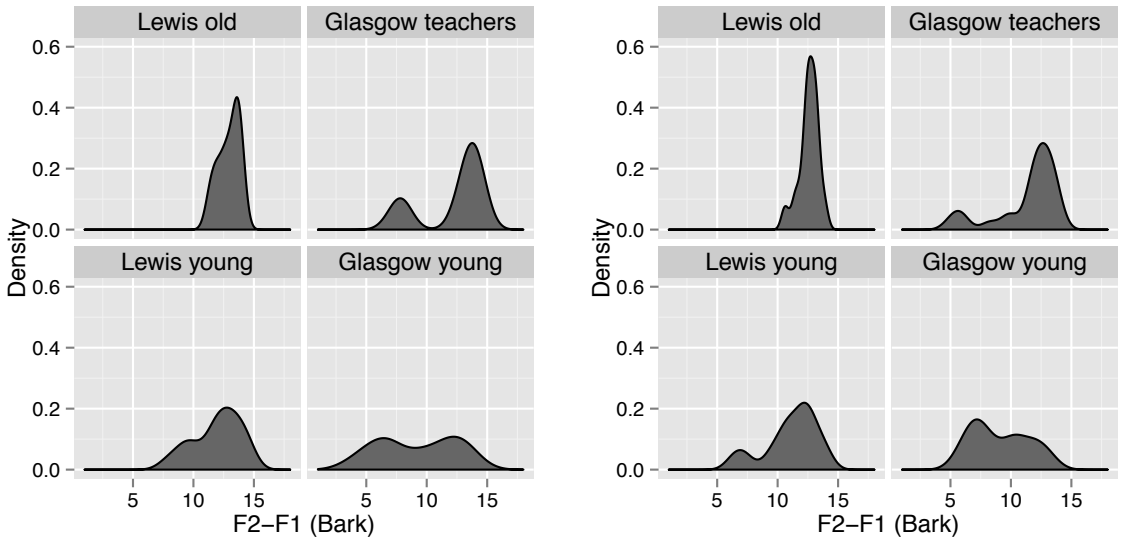

Figure 6.11: Density plots showing the non-normal distribution of the palatalised lateral F2-F1 values. Left panel shows word-initial laterals n = 203; and right panel shows word-medial laterals n = 180.

Due to these non-normal distributions, the non-parametric Kruskal-Wallis test was used to test for differences between lateral categories. This test can only test one independent variable at once, and cannot test for interactions. Two models were therefore run, the first on the word-initial laterals and the second on word-medial laterals. In each case the dependent variable was F2-F1 in Bark and the independent variable was lateral phonemic category. The Kruskal-Wallis test results indicate whether the data are significantly different according to lateral category or not, but the test does not indicate which categories are different from each other. Post hoc Mann-Whitney tests were used to answer this question. As explained in Section 6.2.3 the Mann-Whitney, the p values of the Mann-Whitney test were corrected to avoid family-wise errors. The threshold for significant is set at the equivalent of $p < .05$ with the correction applied. I therefore adopt the recommendations for reporting in Field, Miles & Field (2012, 686) and do not report the exact p values, as they would be misleading. The *difference* reported is the mean difference between mean ranks of the two sets of data being compared. The larger the value, the more different the two sets of data.

In word-initial position the Kruskal-Wallis test showed significant differences according to lateral phonemic category: $H(2) = 220.71$, $p < .001$. Focused comparisons using the Mann-Whitney test indicated that palatalised and alveolar laterals were different (*difference* = 116.10), palatalised and velar laterals were different (*difference* = 272.73), and alveolar and velarised laterals were different (*difference* = 156.63).

In word-medial position there were also significant differences in the data according to lateral phonemic category: $H(2) = 260.69$, $p < .001$. Comparisons indicated that palatalised laterals are different to alveolar laterals (*difference* = 68.97). Palatalised laterals are also different to velarised laterals (*difference* = 279.53), and alveolar laterals are different to velarised laterals (*difference* = 210.55).

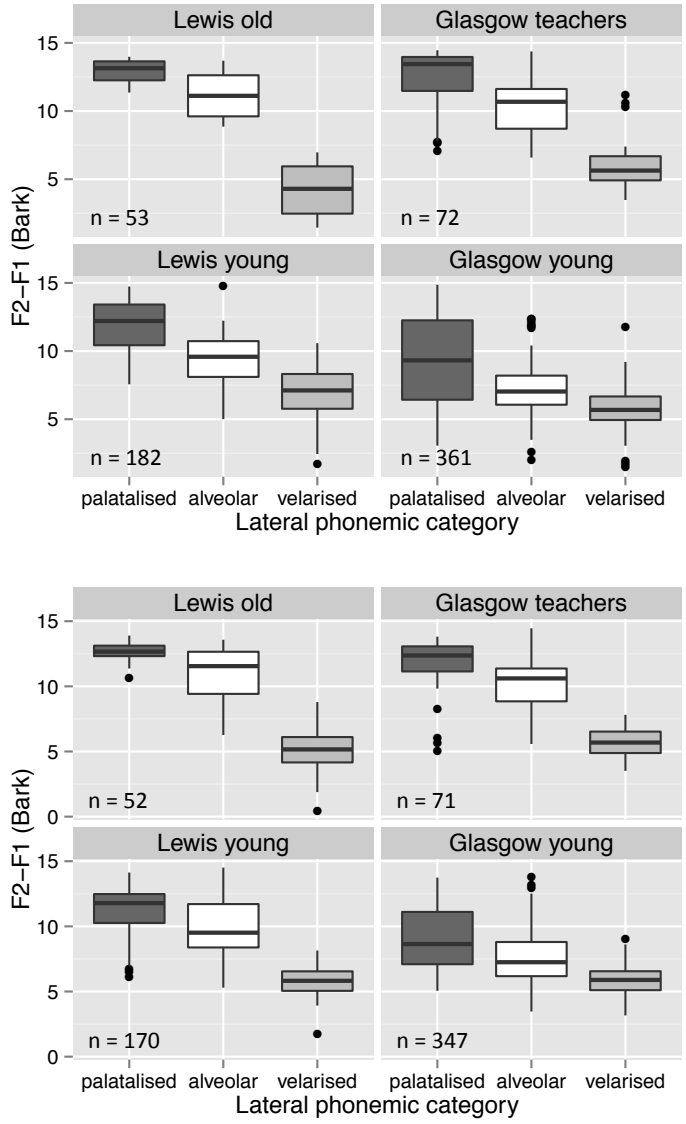

Figure 6.12: F2-F1 (Bark) values split according to speaker group. Top panel shows word-initial laterals; and bottom panel shows word-medial laterals.

The results of the Kruskal-Wallis test indicate that across the whole dataset, the three phonemic laterals are phonetically distinct. The test does not, however, look at whether distinctions are made within the four groups of speakers: older Lewis speakers, younger Lewis speakers, teachers from the Glasgow school, and young Glasgow speakers. Due to the small number of tokens in some groups, reliable statistical testing could not be carried out on each group. Instead I present box plots of the F2-F1 data for each group in Figure 6.12. Word-initial laterals are in the top panel, and word-medial laterals in the bottom panel.

The laterals appear mostly phonetically distinct within the different groups. In word-initial position however, there is a lot of overlap between palatalised and alveolar laterals for the Glasgow school teachers and the Glasgow young people. The same is true in word-medial position for the Glasgow young speakers and the Lewis young speakers. This provides acoustic evidence in support of the auditory analysis concentrating on palatalised laterals, which found a high degree of variability in the data (see above Section 6.3.1).

When comparing the acoustics of lateral productions within each lateral category, there are clear acoustic differences across the different groups of speakers. Again, low token counts made statistical comparison inappropriate, but the results are displayed graphically in Figure 6.13. Overall, the older Lewis speakers have the most distinct lateral phonemes, producing the highest F2-F1 in palatalised laterals, and the lowest F2-F1 in the velarised laterals. This is also clear from looking at the formant values for individual speakers, which are in Figure 6.14. This Figure shows a clear separation of values among the older speakers, especially for the velarised laterals compared to the alveolar and palatalised laterals.

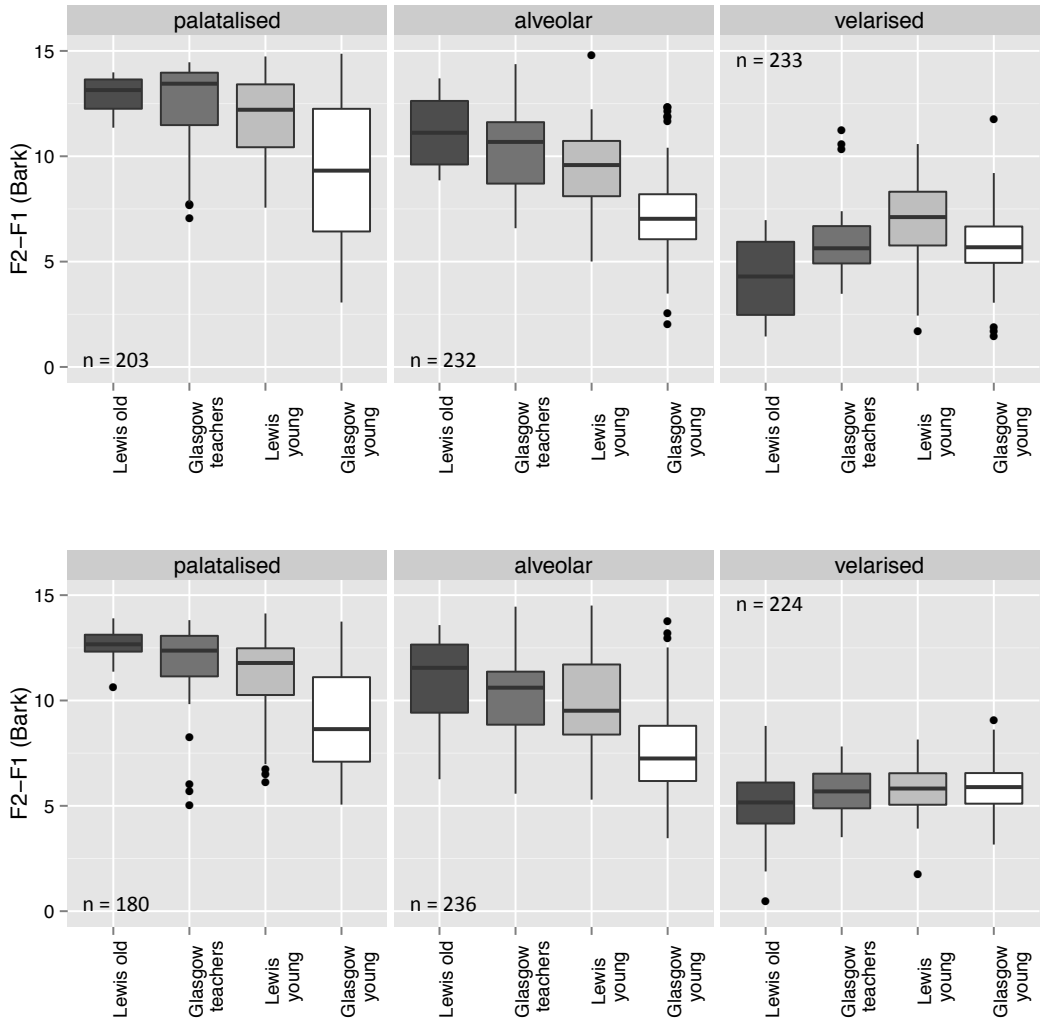

Figure 6.13: Static F2-F1 measures per group for each lateral phonemic category. Top panel shows word-initial lateral; bottom panel word-medial laterals.

The young people, especially in Glasgow, display lower F2-F1 for palatalised and higher F2-F1 for the velarised laterals indicating less acoustically distinct phonemic categories. Among the palatalised laterals in particular, Figure 6.13 again highlights the high degree of variability in the production of palatalised laterals, especially in Glasgow (see Section 6.3.1). Among the alveolar laterals, the distribution of tokens among the Glasgow young people is clearly different from the other speaker groups, with the Glasgow speakers having a lower F2-F1 (equating to a lateral produced with more tongue backing/retraction). In word-initial position, there appear to be differences between the groups in the production of the velarised laterals: the older Lewis speakers produce laterals with the lowest F2-F1 (most tongue backing/retraction), and the Lewis younger speakers produce laterals with the highest F2-F1 (least tongue backing/retraction).

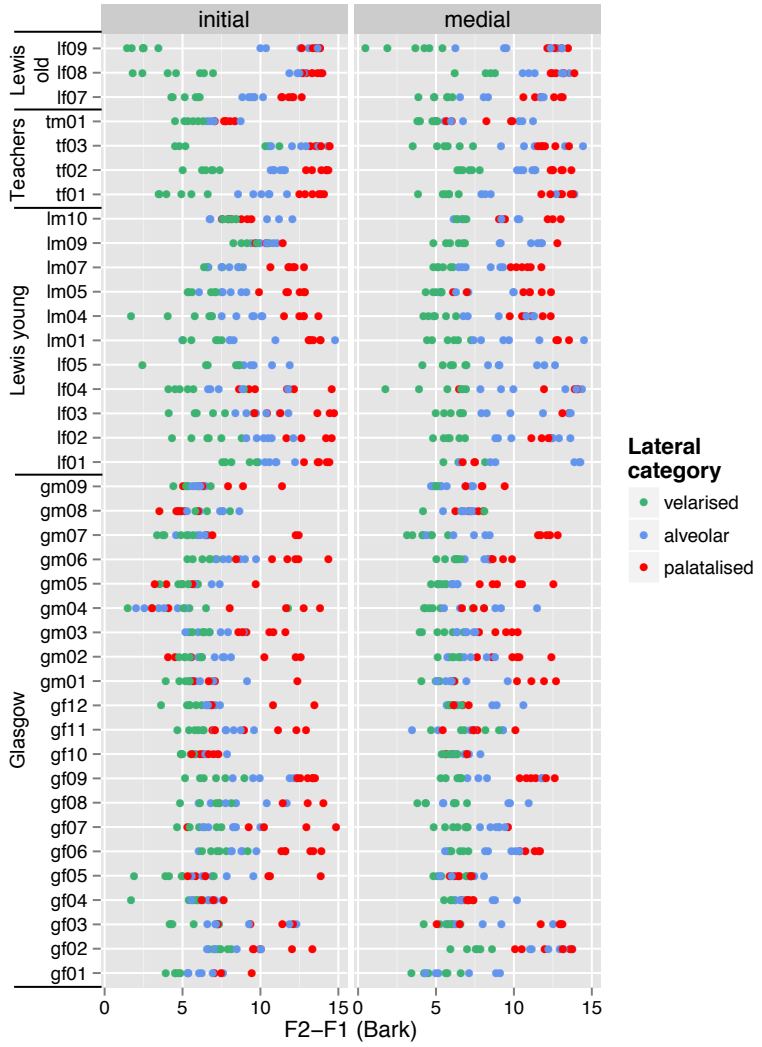

Figure 6.14: F2-F1 measures for individual speakers. Left panel word-initial laterals; right panel word-medial laterals.

6.3.3 Dynamic acoustic analysis

This section describes the results of the smoothing spline ANOVA (SS ANOVA) analysis conducted on the first two formants of the word-initial lateral+vowel sequence, and the word-medial vowel+lateral+vowel sequence. Three words as close as possible to a minimal triplet were examined in each word position. The top panel of Figure 6.15 shows the word-initial analysis across all speakers, and the bottom panel shows the word-medial analysis across all speakers. The token counts in the figures in this Section relate to the number of words analysed overall, rather than the number of data points used in the SS ANOVA analysis.

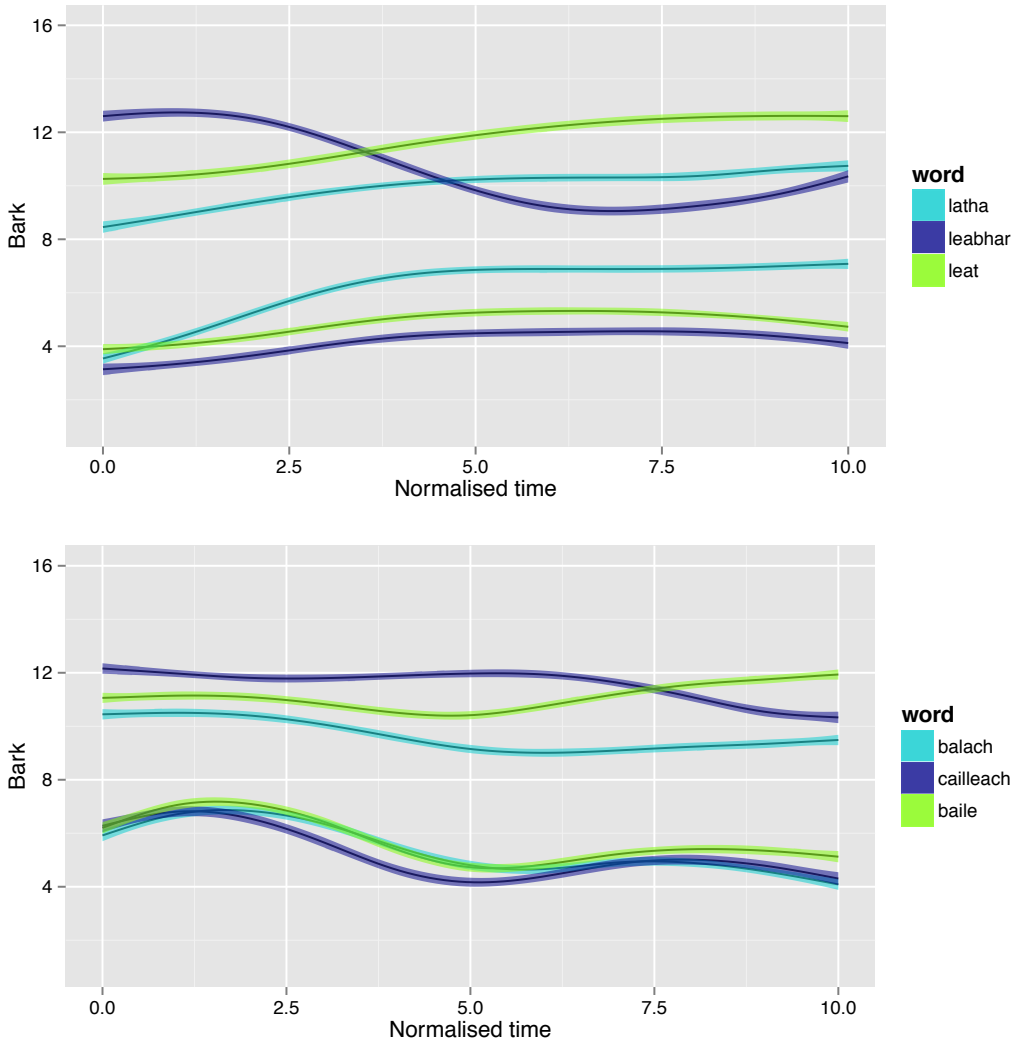

Figure 6.15: SS ANOVA of the vowel and lateral formant trajectories in three words with 95% Bayesian confidence intervals shown as a ribbon around the spline. Top panel shows word-initial lateral+vowel, n = 324; bottom panel shows word-medial vowel+lateral+vowel, n = 324.

These figures indicate significant differences between the vowel and lateral sequences in all of these words: crucially there is no overlap in the confidence intervals during the initial part of the lateral+vowel word-initially, and no overlap in the F2 confidence intervals in the middle of the vowel+lateral+vowel sequence word-medially. The differences are especially

notable in the second formant values, the words containing the palatalised lateral, *leabhar* and *cailleach*, having the highest F2 values, and velarised *latha* and *balach* the lowest.

Do all the groups of speakers make these distinctions? SS ANOVAs with confidence intervals for each of the groups of speakers are shown in Figures 6.16 and 6.17. These figures show that there are significantly different curves for each lateral word in each group.

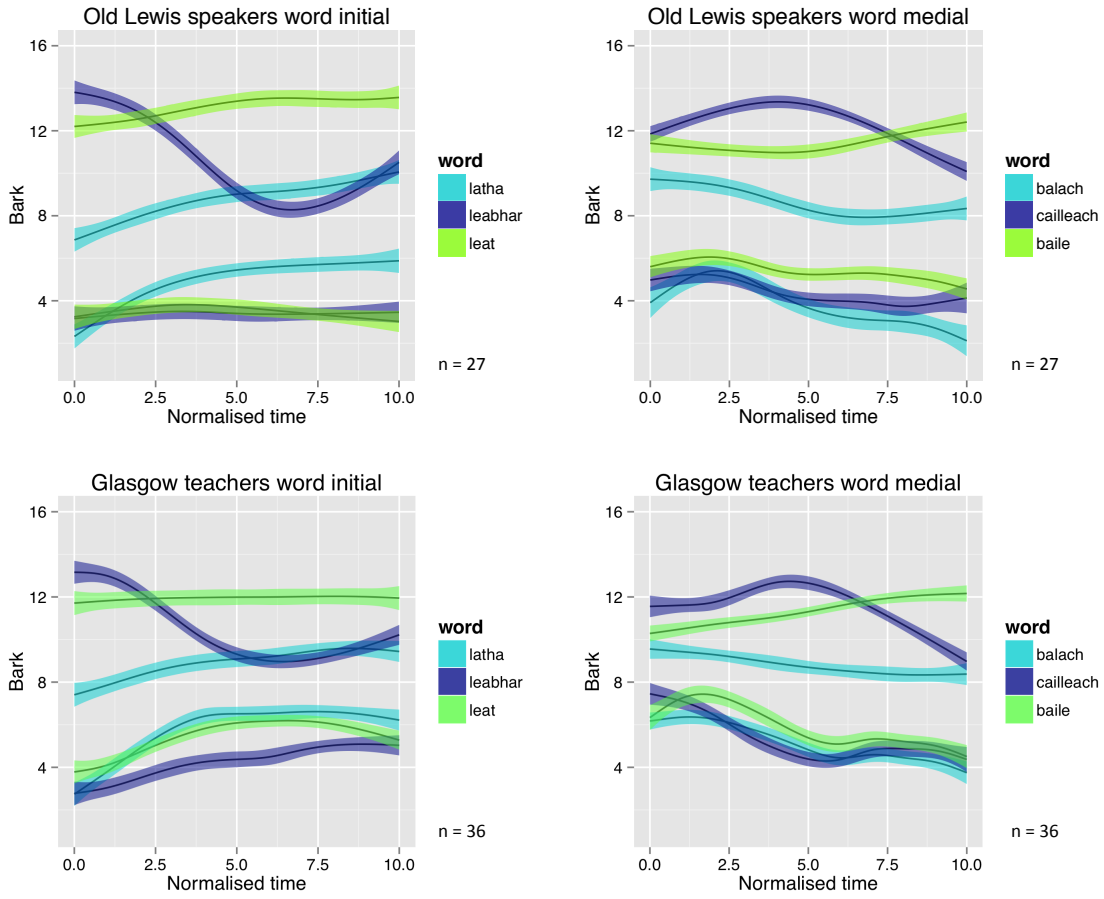

Figure 6.16: SS ANOVA analyses for word-initial and word-medial laterals in older Lewis speakers and Gaelic-medium teachers in Glasgow.

Although the SS ANOVA analysis above showed separate splines for all the laterals in all groups of speakers, there were several different curves on display. These are shown in Figure 6.18, which compares the different groups of speakers across individual words. One of the most noticeable differences between the groups is in the trajectory of the word-medial palatalised lateral in *cailleach*. For the two groups of older speakers, there is a peak in F2 frequency around the middle of the vowel+lateral+vowel sequence, as might be expected from a palatalised sound. The curves of the younger speakers on the other hand show no such peak, and have a flatter trajectory. Another noticeable result from Figure 6.18 is the low F2 frequency in the young Glaswegians' alveolar laterals.

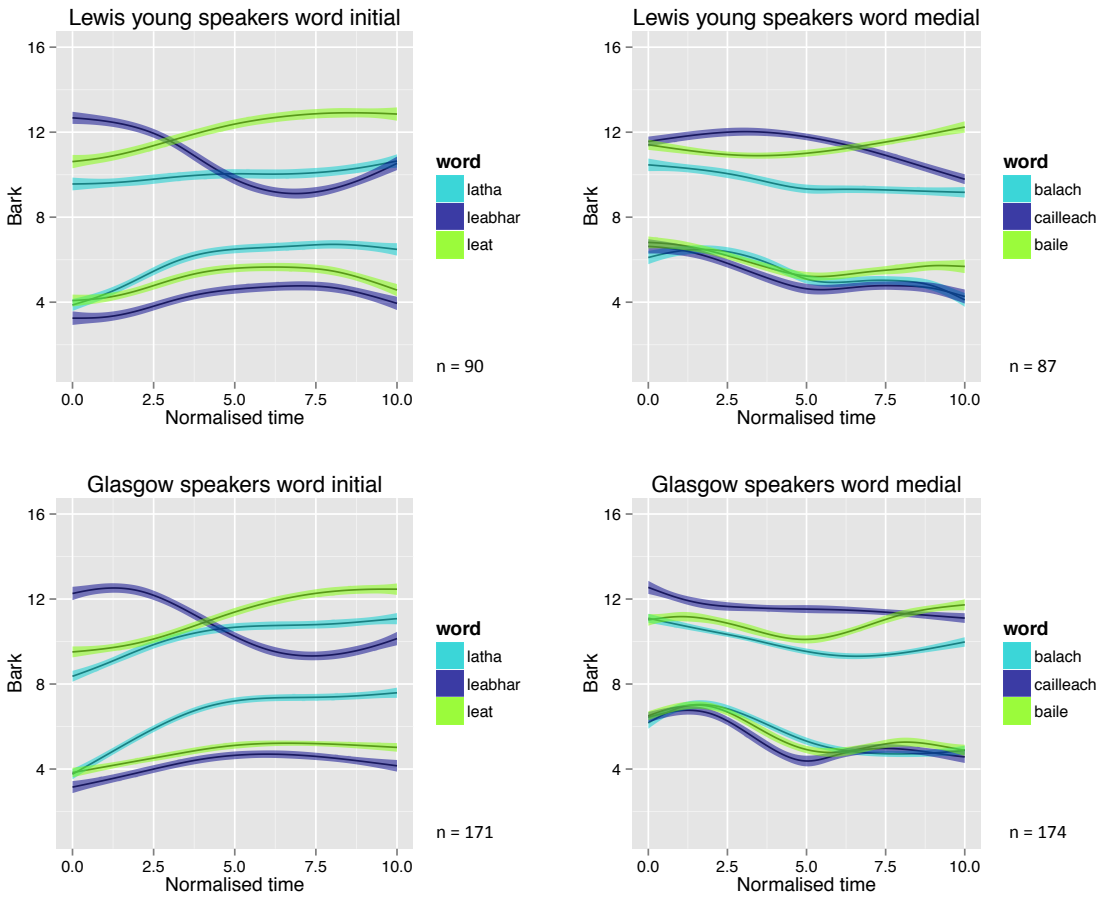

Figure 6.17: SS ANOVA analyses for word-initial and word-medial laterals in younger Lewis speakers and Glasgow young people.

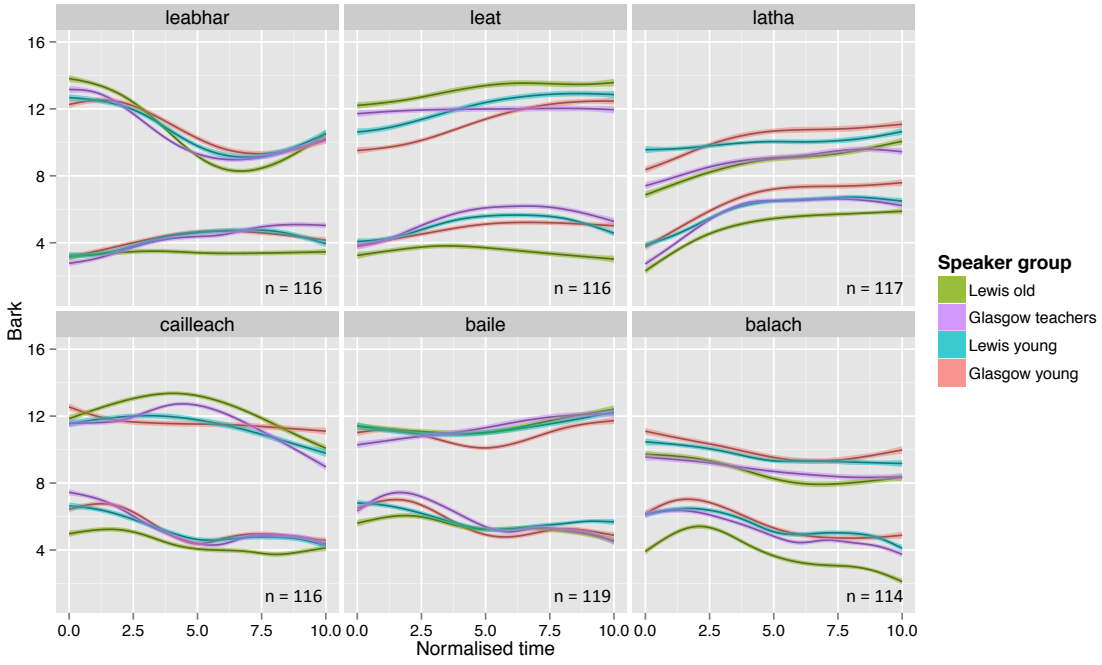

Figure 6.18: SS ANOVA analyses comparing speaker groups across different lateral phonemes. Top panels show word-initial laterals; bottom panels show word-medial. Panels on the left show palatalised laterals; centre show alveolar; right show velarised.

6.3.4 Summary of results

The auditory analysis allowed in depth exploration of my initial impression that there was a large amount of variation present in the production of palatalised laterals in particular. The older Lewis speakers all produced 100% palatalised laterals. This was not the case among the other speakers, some of whom produced laterals with no audible palatality, or palatal glides with no audible laterality. The Glasgow young speakers produced significantly fewer palatalised laterals than their teachers, and fewer palatalised laterals than young people in Lewis.

The static acoustic analysis of F2-F1 values indicated that overall there were significant differences between lateral phonemic categories. This was confirmed in the dynamic analyses. The greatest F2-F1 value occurs in palatalised laterals, the lowest in velarised laterals and the value for alveolar lateral lies in between. Again there was lots of variation in the production of palatalised laterals, with all speaker groups except the older Lewis speakers showing bimodal distributions indicative of palatalised and non-palatalised productions (Figure 6.11). Overall, the different groups of speakers maintain phonetically distinct lateral phonemic categories (Figures 6.12, 6.16, 6.17). There are, however, some differences in production strategy: the Lewis older speakers produced palatalised laterals with the highest F2-F1, and velarised with the lowest F2-F1 indicating they maintain the phonemic categories most distinct. The laterals produced by the young Glasgow speakers showed the least distinct categories. The Glasgow speakers had especially low F2-F2 in the alveolar laterals. These results are in Figure 6.13, and are confirmed by the dynamic analysis in Figure 6.18.

6.4 Discussion

6.4.1 Phonetic evidence for three phonemic laterals in Scottish Gaelic

Across the whole dataset, there is phonetic evidence for three distinct laterals in Scottish Gaelic. Using the static acoustic measure of F2-F1 at lateral midpoint, I have demonstrated that the phonemic laterals reported for Gaelic are phonetically different both in word-initial and word-medial position. When considered dynamically, the three laterals also show significantly different formant trajectories. This was most noticeable in the trajectory of F2, though F1 showed some differences as well. The static and dynamic analyses were conducted on near minimal triplets. The fact that these minimal triplets are acoustically distinct suggests separate laterals in the sound system of Gaelic, confirming earlier dialect descriptions such as Borgstrøm (1940); Oftedal (1956); Ternes (2006). The acoustic nature of the three laterals is consistent with descriptions of their articulation: the palatalised lateral has the highest F2-F1 value, the velarised lateral has the lowest F2-F1, and the alveolar in between these two. Previous descriptions and analysis of palatograms in Ladefoged, Ladefoged, Turk et al. (1998) indicates that the velarised and palatalised laterals are produced with a dental articulation,

while the alveolar lateral is alveolar. This acoustic study cannot confirm or challenge these results as due to the complex nature of lateral articulations it is difficult to pinpoint a difference between alveolar and dental places of articulation. This question could form the basis of future articulatory research.

6.4.2 Change in the lateral system

The results above refer to the dataset as a whole. When the distributions of the results were considered in detail, it was clear that different speakers were employing radically different production strategies especially in the production of the phonemically palatalised laterals. Although the older speakers from Lewis produced categorically palatalised laterals, this was not the case in any other speaker group. The teachers from Glasgow (who all grew up in a Gaelic-speaking environment on the Isle of Lewis) produced mainly palatalised laterals, although the data from individual speakers indicates that the one male teacher in the sample categorically produced laterals with no palatalisation at all. Among the young people, Jonathan from Lewis produced categorically palatalised laterals. Jonathan lived in a very rural part of the island around one hour's journey from Stornoway. He spoke Gaelic with both sets of grandparents as well as attending Gaelic church services once a week. It is possible this amount of exposure, and interaction with Gaelic in rural parts of Lewis explains their high rates of palatalised lateral production compared to the other young people. This result supports data from previous studies of minority language revitalisation contexts, which found those speakers with more contacts in the minority language-speaking community were more likely to reproduce the language's traditional systems (Mougeon, Rehner & Nadasdi 2004; Gathercole & Thomas 2009; Morris 2013).

There is a very clear pattern across the different speaker groups: the Lewis older speakers produced 100% palatalised laterals, the Glasgow teachers slightly fewer, the Lewis young people fewer again, and the least palatalised laterals were found in Glasgow. It is likely this represents an ongoing tendency in Gaelic towards fewer distinctions in the lateral system, although this change is far from complete and much variability exists. Only two speakers produced laterals with no aspect of palatalisation at all: the young male Glasgow teacher and speaker gf10, Nicola. All other speakers variably produced some aspect of palatality whether this was a palatalised lateral, a palatal glide, or a non-palatalised lateral followed by a palatal glide.

Why is the palatalised lateral liable to substantial variability? Change from a palatal or palatalised lateral to a palatal glide (the production strategy used by some speakers in this study) is well-attested in the literature, for example, Vulgar Latin laterals were produced as palatal laterals in Old French, which then became palatal glides in Early Modern French (Price 1998, 54). It is therefore possible that the reduction in usage of the palatalised laterals among young Gaelic speakers could be a language-internal development.

This change could also represent a case of indirect language contact-induced change

(Thomason 2001, 62). Gaelic is not directly adopting the lateral system of local varieties of English, but there is potential erosion of a phonemic category which English lacks. Examples are cited in the literature concerning language attrition contexts which are similar to this situation. For example, Campbell & Muntzel (1989, 186) explain that Pilpil, a language of El Salvador, has lost contrastive vowel length as this feature does not exist in community-dominant Spanish. It seems possible that the Gaelic palatalised lateral is liable to variation and change as this phonemic lateral does not exist in English. While English does not have a phonemic distinction between velarised and alveolar laterals, all speakers will be familiar with these sounds in English. It is possible, however, that some Glaswegian speakers never produce non-velarised laterals in English, and some Lewis young people never produce velarised laterals in English. Even if they do not produce alveolar or velarised laterals in English themselves, the young people will be familiar with these sounds from other English dialects they are exposed to, whereas a palatalised lateral is a much more unusual lateral production. In other words this change could be accelerated by Gaelic's situation of endangerment and revitalisation, but the direction it takes and particular feature susceptible to change is informed by the nature of the community-dominant language. For this reason, the Gaelic palatalised lateral is the one most liable to variation and change, especially in the speech of young people with less intense interaction with rural varieties of Gaelic.

A previous study of language revitalisation in the Gaelic languages, Maguire (1991, 197), also notes fewer phonemic laterals in the speech of young people compared to traditional contrasts made in the language. Similarly, Ó Curnáin (2007, 414) notes that a young speaker of Galway Irish merges palatalised and alveolar laterals. Very few speakers produced no palatalised laterals at all (eight out of 39). These data do not therefore indicate that palatalised laterals have completely disappeared, merely that they are lower in frequency among younger speakers. If indirectly this is due to the influence of English as discussed above, then this change represents an example of 'covert transfer' in the terminology of Jones (2005). Although not specifically the object of study here, a related phenomenon is noted in Tiree Gaelic, where palatalised /rʲ/ has undergone change, and is now typically realised as [j] (Ó Maolalaigh 2008a).

Another clear generational difference in the data was the spread of values across the different lateral phonemes: older Lewis speakers produced palatalised laterals with the highest F2-F1, and velarised laterals with the lowest F2-F1 (Figure 6.13). This suggests the Lewis older speakers maintain very distinct phonemic categories. The younger speakers in both Lewis and Glasgow maintain less distinct phonemic categories. A similar result was found in Nance & Stuart-Smith (2013), who found that older Lewis speakers distinguished Gaelic aspirated and non-aspirated stop series to a greater extent that Lewis younger speakers, and argued that this greying of phonemic categories may be indicative of language change. It appears a similar process may also be ongoing in the lateral system, where phonemic laterals are becoming less distinct among younger generations.

6.4.3 Differences between Lewis and Glasgow young people

In support of the above suggestion that fewer palatalised laterals may be the result of less interaction with rural varieties of Island Gaelic, young people in Glasgow produced significantly fewer palatalised laterals than young people in Lewis. This also suggests that Glasgow Gaelic is linguistically distinct from Lewis Gaelic in the production of this phoneme, and is evidence in support of the view that a distinct variety of Gaelic is developing in Glasgow (research question 2 of this thesis). Another result in support of this hypothesis is the very low F2-F1 in the Glasgow young people's alveolar laterals (Figure 6.13). This value was much lower than the other groups of speakers and is potentially low due to the influence of Glasgow English /l/, which is reportedly produced with substantial tongue backing/retraction resulting in low F2-F1 (Stuart-Smith 1999; Stuart-Smith, Timmins & Alam 2011).

There may also be some evidence of language contact in the data from the young Lewis speakers. Figure 6.13 shows that the young Lewis speakers produced Gaelic velarised laterals with a high F2-F1 compared to the other speaker groups. This may be because Lewis English /l/ is reportedly 'clear' in all positions (Shuken 1984), resulting in higher F2-F1. It may be that Lewis young speakers had a tendency to produce a lateral similar to their English laterals, instead to the Gaelic velarised laterals which is traditionally produced with substantial tongue body retraction. The young Glaswegians typically produce an English lateral in this way already, so their Gaelic velarised laterals are more similar to the Lewis older speakers and Glasgow teachers.

6.5 Interim conclusions

These data indicate that overall there are three phonetically distinct laterals in Scottish Gaelic, and the acoustic data support previous descriptions that these laterals are velarised, palatalised, and alveolar. In general this system is used by speakers of different generations in different locations. However, there are large inter-speaker differences in the production of phonemically palatalised laterals, with some speakers producing laterals with no palatality, or palatal glides with no laterality. Palatalised laterals are produced less often by younger speakers and least often by young people in Glasgow. Two speakers with substantial exposure to varieties of Gaelic spoken in rural Lewis produced very high rates of palatalised lateral production. The spread of data suggests that the lateral categories overall may be becoming less distinct over time, with the older speakers maintaining very distinct categories, and younger speakers less so.

These results indicate that although the triple-lateral system of Gaelic is present across younger populations as a whole, this may not be the case in the future. The palatalised lateral in particular may be in the process of eventually losing the palatal and/or the lateral aspects of its production, though currently some speakers display a wide range of productions from laterals with no palatality to palatal glides with no laterality. I have suggested this change

is due to indirect influence from contact with English, potentially coupled with the fact that, as evidence from Romance suggests, palatalised/palatal laterals appear liable to change. In English a variety of lateral sounds are produced, which are often very similar to the Gaelic alveolar and velarised laterals. There is no English equivalent for the Gaelic palatalised lateral however, and this may be the reason this Gaelic sound is liable to variation and change. There is also some evidence to suggest influence from English at the phonetic level as well: the young Lewis speakers produced velarised laterals with a higher F2-F1 than the other speakers, and this is similar to values expected from the reportedly 'clear' /l/ in Lewis English. Similarly, the young Glasgow speakers produced alveolar laterals with very low F2-F1, which may be similar to the reportedly 'dark' /l/ in Glasgow English.

Chapter 7

Vocalic variation, change, and identity

7.1 Introduction

The aim of this thesis is to examine the sociophonetic outcome of language revitalisation measures. This chapter takes a gradient phonetic approach to analysing variation in the Gaelic vowel [ʉ] and Scottish English vowel [ʉ]. The motivation for this analysis was provided in a previous study, Nance (2011), which found differences between middle-aged and young adult speakers of Lewis Gaelic in the vowel [ʉ]. The study suggested this was evidence of change across subsequent generations. I felt variation in this vowel therefore merited further investigation across the larger dataset in this thesis. While this analysis concentrates primarily on variation in Gaelic, some analysis was also conducted on the participants' English to assess the contact influence of this language.

The research questions and hypotheses addressed in this chapter are:

1. QUESTION Are there intergenerational differences between speakers in Lewis?
   HYPOTHESIS In a previous study, Nance (2011), I found generational differences in word-list data between older and younger speakers in Lewis. Older speakers produced backer [ʉ] and younger speakers produced fronter [ʉ]. This will be confirmed in the data from interviews here.

2. QUESTION Is there evidence of a distinct variety of Glasgow Gaelic which is different from traditional Lewis Gaelic?
   HYPOTHESIS Glasgow Gaelic and Lewis Gaelic will be different, due to different community structures and contact with different local Englishes.

3. QUESTION Does vocalic variation pattern with local identity affiliations?
   HYPOTHESIS The ethnographic research conducted in the Glasgow school revealed community of practice distinctions of relevance to the students. Previous research into communities of practice in majority language contexts has found linguistic variation and community of practice affiliation pattern together. This may also be the case in Glasgow Gaelic. Ethnographic research conducted on the Isle of Lewis revealed the

salient local distinction between people from Stornoway and people from elsewhere on the island. This distinction may also be reflected in vowel productions.

4. QUESTION What are the reasons for any differences between speaker groups in these data?
   HYPOTHESIS Differences between the Glasgow and Lewis speakers may be the result of contact with different local Englishes. Any differences found among the Glasgow students might be due to a range of contact influences: contact with different teachers at different primary schools, or contact with different Englishes in Glasgow suburbs. Also, the home background of the students (Gaelic-speaking or not) might affect pronunciation. Alternatively, linguistic variation might have other social indexical value such as community of practice affiliation, or origin from the 'town' or 'country' among Lewis young people.

Section 7.2 discusses previous work on this vowel in Gaelic, and work of relevance conducted on English. Section 7.3 describes the phonetic methodology used for investigating this vowel. Section 7.4 describes the results of the analyses. Sections 7.5 and 7.6 discuss the results and conclusions from this analysis.

Results suggest intergenerational differences in Lewis vowel productions, as well as differences between Lewis and Glasgow young people. Among the Glasgow speakers there are differences between the female communities in [ʉ̟] production, but not among the male groups. These results are discussed with reference to the previous literature on change in the vowel /u/, notions of local identity within the community of practice framework, and the social context of Gaelic as an endangered and revitalised language in contact with English.

7.2 Background

7.2.1 Previous studies of /u/ allophones in Gaelic

The two dialects under investigation in this thesis are the Gaelic of the Isle of Lewis, and Gaelic spoken in Glasgow. As no previous linguistic studies have considered Gaelic in Glasgow, I have drawn on descriptions of Lewis Gaelic when researching the background to this feature. The two main dialect descriptions for Lewis are both in agreement that /u/ is divided into two distinct allophones. The principle allophone is transcribed by Oftedal (1956, 75) as [ụ], and this vowel is described as a 'high central vowel, much higher and more fronted than most varieties of English. On the other hand, it is more retracted than French /y/ in *nu*.' Similarly Borgstrøm (1940, 32) describes the 'normal' allophone of /u/ as a mid vowel, with rounded lips, transcribed (not using IPA) as [ụ]. The other allophone of /u/ was transcribed by these authors (not using IPA) as [U]. Both Borgstrøm (1940) and Oftedal (1956) describe this second allophone as a high back rounded vowel, and claim it occurs preceding and following velarised sonorants.

Two previous acoustic studies have considered /u/ in Scottish Gaelic: Ladefoged, Ladefoged, Turk et al. (1998) and Nance (2011). Both of these studies drew on the dialectal descriptions above and analysed the two allophones of /u/ separately, finding completely separate acoustic distributions. Nance (2011) compared word-list productions from two generations of Lewis Gaelic speakers. There were some differences in [ʉ] productions between the generations. Most noticeable was the difference in F2 for central [ʉ]. Younger speakers displayed much more front productions of [ʉ] and Nance (2011) suggests that this vowel may be undergoing change in apparent-time in Lewis Gaelic. Evidence of this can be seen in Figure 7.1 where [ʉ] clearly has a higher F2, and is also front in the auditory vowels space of younger speakers.

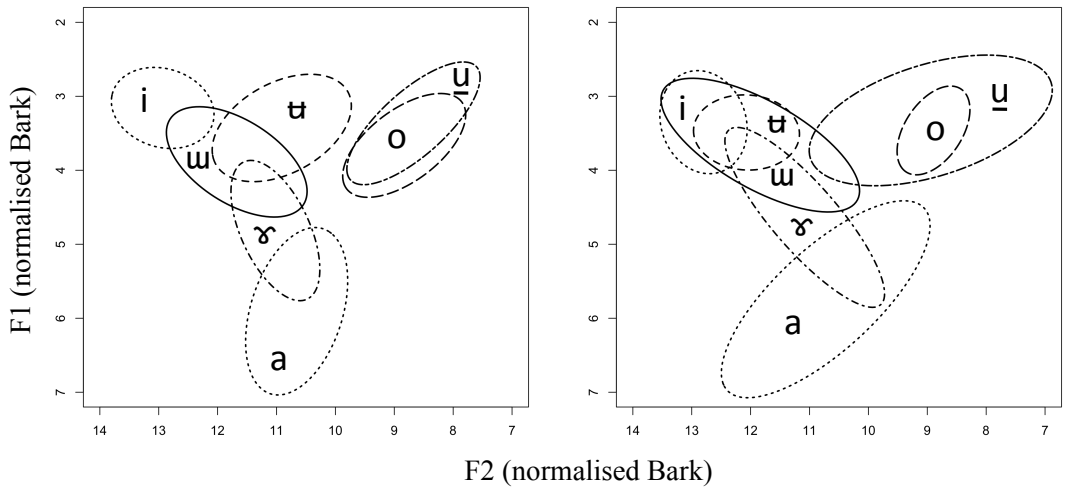

Figure 7.1: F1-F2 plots from Nance (2011) comparing older speakers on the left and younger speakers on the right. Circles show 95% confidence intervals. (This study did not consider the Gaelic vowels /ɔ, e, ɛ/).

7.2.2 Previous studies of /u/ variation in English

Many recent sociolinguistic and phonetic studies have looked at the vowel /u/ in English. For the greater part, these studies are acoustic and describe 'u-fronting'. This generally refers to when younger generations produce /u/ with a higher F2 than older generations. Acoustic studies then infer that /u/ may be articulated with the tongue body further forward, and this is an ongoing change. Change in /u/ production is also investigated in real-time by Harrington (2007) using speech from the Queen's Christmas broadcasts. Harrington's study shows that change is present in both real- and apparent-time. Change in /u/ production has been observed in many dialects of English for example: RP (Hawkins & Midgley 2005), Southern British English (Cheshire, Kerswill, Fox et al. 2011), American English (Labov, Ash & Boberg 2006), New Zealand English (Watson, Maclagan & Harrington 2000; Gordon, Campbell, Hay et al. 2004; Maclagan, Watson, Harlow et al. 2009), Australian English (Cox 1999). Other

acoustic studies have correlated the degree of 'u-fronting' with various social groups such as different ethnicities (Fridland & Bartlett 2006; Hall-Lew 2009; Boberg 2004; Mesthrie 2010). While these studies all refer to 'u-fronting', Harrington, Kleber & Reubold (2011) note that a higher F2 could be due to the vowel being produced with more spread lips by younger speakers. Their study conducted acoustic and EMA analysis of articulation and concluded that in Southern British English at least, the tongue is indeed responsible for a higher F2 and not lip spreading.

/u/ in Scottish English

While it appears that /u/ may be produced with an increasingly high F2 in many varieties of English, this vowel has been central or front for some time in Scottish English (Johnston 1997, 77). A pronunciation textbook written for prospective school teachers in Aberdeen in the early twentieth century describes /u/ as produced with the back of the tongue 'advanced' (Grant 1913, 56). Interestingly, this author also notes that the tongue advancing (fronted /u/) is particularly notable in Glasgow and in Gaelic-speaking areas (though does not specify which Gaelic-speaking areas), and prospective teachers should correct this if they hear any of their students pronouncing the vowel in this way. This suggests that Lewis English /u/ is likely to be very front.

Previous acoustic studies of central Scottish English /u/ have found that it is a central to front vowel (Scobbie, Turk & Hewlett 1999). This study also found that /u/ was lowering in apparent time and suggested that when /u/ is so far front that it risks overlap with /i/, lowering can occur. Scobbie, Stuart-Smith & Lawson (2012) examine ultrasound and acoustic data from adolescent speakers in the east of Scotland. They conclude that in Scottish English /u/ is both acoustically and articulatory a front vowel, and that /u/ is lower than /i/ to an equal level with /e/, or lower. Recent research into this vowel in Glaswegian English has shown that while it is a front vowel, it is now backing and lowering in real- and apparent-time (Rathcke, Stuart-Smith, Timmins et al. 2012). In Glasgow English, variation in /u/ production is associated with class stratification. Previous studies such as Macaulay (1977, 39) and Stuart-Smith (1999, 208) have found that working class speakers are more likely to produce very front /u/, and middle class speakers a backer /u/.

7.2.3 Defining Gaelic and English /u/ in the present study

As Nance (2011) found most interesting intergenerational differences in central [ʉ] I chose to concentrate solely on this allophone. Some analysis was also conducted on the participants' English vowels in order to assess the possibility of contact-induced change. In order to provide some comparability, English /u/ tokens were selected in similar phonetic environments to the Gaelic [ʉ] vowel. These contexts (detailed below) specifically exclude contexts where /u/ is backer, such as in the vicinity of English /l w r/. I therefore refer to the English vowel studied as the more front [ʉ].

7.3 Methods

7.3.1 Tokens included

This Chapter considers data from the interview participants summarised on the left of Table 4.2. I aimed to include all lexically stressed tokens of [ʉ] in this analysis. As the vast majority of Gaelic words are stressed on the first syllable it was relatively easy to identify tokens potentially of interest. Usually prepositions and pronouns are unstressed so these were generally avoided. The Glaswegian students in particular had a tendency to place stress on the preposition *gu* 'to'; where this happened I included it in the analysis. I did not include [ʉ] tokens which occurred in English loan words such as *Is toil leam computing* 'I like computing'.

Many previous sociolinguistic studies of /u/ have chosen to exclude /u/ preceding or following /l/ and /r/ due to extensive coarticulatory influences (Woods 1997; Watson, Maclagan & Harrington 2000; Hall-Lew 2009; Mesthrie 2010). Specifically both /l/ and /r/ can lower F2 (Carter & Local 2007). By choosing to focus solely on [ʉ] this means I had already excluded tokens preceding and following velarised sonorants, thus removing the lowering effect on F2. Traditionally Gaelic has an alveolar /l r/ and palatalised sonorants as well as the velarised phonemes (see Chapter 6), so it might have been possible to look at [ʉ] in the environment of these segments. I was not sure to what extent young people maintained all of these traditional sonorant distinctions (supported by the analysis in Chapter 6), so made the decision to exclude all tokens of [ʉ] in the environment of any kind of /l/ or /r/. I also excluded those preceding or following /w/, which also has a lowering effect on F2 (Watson, Maclagan & Harrington 2000). Having made this decision, I realised that one of the most common words containing the vowel of interest produced by the Glaswegian young people was the word *rud* 'thing'. Some speakers produced *agus rudan mar sin* 'and stuff like that' at the end of almost every intonation phrase. I therefore chose to include this word in the analysis and coded for preceding /ɤ/ in the regression models. Gaelic traditionally has phonemically long and short vowels (Gillies 2010, 236). As short vowels were by far the more commonly occurring, I included only these in the analysis. Most methods of vowel normalisation require vowels with extremely low and high F1 and F2 values as reference points for each speaker. To this end, I also coded ten tokens each of /i/ and /a/ for each speaker.

Having defined the criteria for selecting tokens of Gaelic [ʉ], I used the same criteria for selecting English tokens in order to provide some comparability. The length of the English section of the interview was much shorter, reflecting this thesis' focus on Gaelic, and this resulted in much lower token counts for the English vowels. I also coded ten tokens of /i/ and /a/ per speaker where possible for normalisation of the English data. I did not collect English data from the older Lewis speakers as discussed in Chapter 4. This resulted in a total of 2231 Gaelic vowel tokens and 747 English tokens. The participants used in this analysis and the number of tokens obtained from each group are in Tables 7.1, 7.2, and 7.3.

Speaker group	female	male	**Total**
Lewis old	3	3	6
Lewis young	6	6	12
Glasgow young	12	9	21
Total	21	18	39

Table 7.1: Participants investigated in the vowel analysis.

	female			**male**			**Total**
Speaker group	[ʉ]	/i/	/a/	[ʉ]	/i/	/a/	
Lewis old	105	28	29	122	28	30	342
Lewis young	231	59	54	219	60	60	683
Glasgow young	495	141	112	282	87	89	1206
Total	831	228	195	623	175	179	2231

Table 7.2: Number of tokens in the analysis of Gaelic [ʉ].

	female			**male**			**Total**
Speaker group	[ʉ]	/i/	/a/	[ʉ]	/i/	/a/	
Lewis young	76	45	46	63	31	42	303
Glasgow young	122	46	67	96	46	67	404
Total	198	91	113	159	77	109	747

Table 7.3: Number of tokens in the analysis of English [ʉ].

7.3.2 Coding

I selected the tokens for analysis by listening to each interview and coding tokens in ELAN (Sloetjes & Wittenburg 2008). For each speaker I created separate files for [ʉ], /i/, and /a/ and separate files for English [ʉ], /i/, and /a/. The following linguistic environment factors were coded in ELAN: preceding phonetic environment, following phonetic environment, word class, word position, intonational phrase (IP) position, nuclear accented or not. I coded the preceding and following phonetic environment with a broad segmental transcription of what was actually produced, rather than a notion of 'underlying' phonemes. For example if a word-initial vowel was preceded by a glottal stop, I coded a glottal stop as preceding environment. In every case, I delimited the intonation phrase containing the vowel of interest and coded within that interval.

7.3.3 Labelling

After coding all the tokens, the ELAN files were converted to Praat TextGrids (Boersma & Weenik 2012). As I used separate ELAN files for each vowel in both languages and for each

speaker, this resulted in six TextGrids per speaker. Using a Praat script, I extracted individual sound files and TextGrids of the intonational phrase containing the vowel of interest from the larger TextGrids. The result was multiple individual sound files and TextGrids per speaker. I then labelled vowel onset and vowel offset in the TextGrid of each sound file. Vowel onset and offset were labelled using visual cues from the waveform to the nearest zero crossing. All the files were then low-pass filtered at 11.025kHz and downsampled to 22.5kHz in Praat.

7.3.4 Formant extraction

The files were then converted to Emu (Harrington 2010) for formant analysis. To extract the formants, I used an LPC order of 20 for measures of /i/ and [ʉ], and an LPC order of 16 for measures on /a/. I used a 35ms Blackman window with 5ms window shift and extracted the first three formants. All the files were manually checked for formant tracking errors and 28% were hand-corrected in Emu. All further analysis was conducted in R (R development core team 2008).

Typically sociolinguistic studies extract vowel formant measures at the temporal midpoint of the vowel. The reasoning behind this is that the temporal midpoint will be as far removed as possible from the coarticulatory influences of neighbouring segments, and at this point the formants will be as close as possible to the 'true' or 'target' values for that vowel (Lindblom 1963). Harrington (2010, 180) takes the slightly different view that if vowels have ideal targets, these are defined as when the vowel reaches its maximally peripheral point in acoustic space. This seems logical as vowels will be most contrastive when they are most acoustically different and therefore most peripheral. The time at which a vowel reaches its maximally peripheral point differs in different phonetic contexts (Cox & Palethorpe 2007). Harrington (2010, 182) argues that a vowel target should be defined differently according to whether the vowel is high front, high back, or low. For low vowels he advocates taking peak F1 as a target value, for high front vowels peak F2, and for high back vowels minimum F2. I decided to use this approach and as the focus of my study was the vowel [ʉ], a central or front vowel in Gaelic (and Glaswegian English). I therefore extracted formant values at the point of peak F2. In order to avoid the maximum of coartiulatory influence from neighbouring segments, I took formants at peak F2 within the middle half of the vowel: the vowel duration was time normalised and measurements taken within the temporal 25%-75% of the duration of the vowel.

7.3.5 Auditory scaling and normalisation

The term 'vowel normalisation' is used in the sociolinguistic literature to refer to transforming vowel formant data for two different purposes: [1] to reflect how the inner ear responds to sound and thus reflect what a listener actually hears, and [2] normalising for speaker-specific, gender-specific, age-specific, and other differences in vocal apparatus. In sociolinguistic studies it is very common to transform the data for this second purpose, but not for the first.

Conversely in phonetic studies, most authors choose to transform for the first and not the second reason (Hall-Lew 2009, 138). As speech is something that is both produced and heard, it seems logical that both aims are equally important. This is the reason I chose to do both, similar to Hall-Lew (2009, 138). In this section I explain in further detail both types of normalisation, and the methods I chose to employ.

The first transformation I applied to my vowel formant data was a conversion from Hertz values to Bark (Traunmüller 1990). This transformation converts raw values to a scale that reflects how the ear responds to sounds. Specifically, the inner ear is more sensitive to lower frequencies than higher frequencies and responds in a non-linear fashion. Bark transformation reflects this and increases the distance between lower Hertz values accordingly. I converted to Bark using the built-in function in the Emu package for R. I chose to do the Bark transform first because Bark scaling was specifically designed to be performed on Hertz values and Traunmüller's equation reflects this.

The second transformation I applied to the vowel data aims to reflect the fact that not all human beings have the same vocal apparatus. It is important to normalise for differences such as this, while retaining any sociolinguistic differences of interest to the investigation. Many methods have been developed to perform this kind of normalisation. The most commonly used methods normalise each speaker's vowels individually (speaker intrinsic), comparing each vowel to vowels at the extremes of the vowel space (vowel extrinsic). The rationale for vowel extrinsic methods, as pointed out by (Harrington 2010, 186), comes from an early suggestion by Joos (1948) that listeners internally normalise on hearing all of a speaker's vowels. Reviews of a number of methods such as Adank, Smits & Van Hout (2004) and Fabricius, Watt & Johnson (2009) conclude that the method developed in Lobanov (1971) is the most successful way of normalising data, i.e. it most effectively reduces the difference between speakers according to physiological differences, whilst retaining a maximum of sociolinguistic information. Lobanov (1971) is also one of the simplest methods of normalisation and involves transforming all formant values to z-scores. For these reasons I chose to use Lobanov normalisation, which I carried out using the following function written in R:

```
lobnorm = function(x)
{lob = function(x)
{(x - mean(x))/sd(x)}
apply(x, 2, lob)}
```

7.3.6 Quantitative measures of vowel differences

Many previous papers which consider variation in the vowel /u/ are interested in extent to which the vowel is fronted, which, as discussed previously, is usually equated with high F2. When discussing whether a vowel is front or not, it does not make sense to talk about vowel formants in isolation. A vowel must be front or back in relation to something. A number of different methods have been developed to quantify /u/-fronting in relation to other vowels.

In this section I review these methods and discuss how I have adapted them for my own purposes.

The method used in Flynn (2011) involves quantifying fronting as a percentage between two F2 extremes of the vowel space: /i/ as an F2 maximum, and /u/ before /l/ as an F2 minimum. A mean is taken of each speaker's /i/ F2 and /u/ before /l/ F2 and the speaker's F2 range is calculated as /i/ F2 minus /u/ before /l/ F2. The token's percentage of fronting is the distance from /u/ before /l/ divided by the speaker's F2 range multiplied by 100. This ratio gives a value which is easily comparable between speakers. Similarly, Scobbie, Stuart-Smith & Lawson (2012) calculated fronting relative to each speaker's /i/ and /o/ tokens. A development of this type of method is employed in Harrington, Kleber & Reubold (2008). Instead of measuring vowel formants at a static point in time, this study uses a discrete cosine transform to quantify vowel acoustics throughout the entire vowel. The method used to quantify fronting is, however, similar to that used in Flynn (2011) and Scobbie, Stuart-Smith & Lawson (2012). Harrington, Kleber & Reubold (2008) construct a ratio comparing the Euclidean distance of /u/ tokens to front vowel /i/ and back vowel /ɑ/.

Hall-Lew (2009) and Nance (2011) instead use Pillai scores to quantify fronting. Pillai scores are one of the output statistics from a MANOVA. In order to calculate a Pillai score, the speaker's /i/ and /u/ formants values are put in to a MANOVA model and the Pillai score gives an indication of how close /i/ and /u/ are in multidimensional space. These two studies used F1 and F2 values, so the output refers to two dimensions, but more formant values could be added in to the model. This method has the advantage of taking into account measures of multiple formants, but the flip-side of this is that it is impossible to know which dimension is responsible for the proximity of /i/ and /u/ since the model only outputs one value.

The method used in this study combines elements of the first set of measures of vowel variation. I used /i/ as an anchor vowel and calculated the distance of each [ʉ] token relative to /i/. For each speaker the mean F1, F2 and F3 of /i/ were calculated and measures of the difference between each token of [ʉ] and these mean values were derived. The F1 distance gives a measure of whether [ʉ] is lower in the vowel space than /i/. The F2 distance gives a measure of whether [ʉ] is front in the vowel space in relation to /i/, and the F3 distance indicates how different /i/ and [ʉ] are along the F3 dimension. A schematic representation of F1 distance and F2 distance measures within an idealised vowel space is in Figure 7.2.

It may be the case that the F3 distance can give an indication of whether [ʉ] is produced with rounded or spread lips, but as discussed in Lindblom & Sundberg (1971), a change in F3 can be the result of multiple and interacting articulatory factors and it is naive to equate F3 solely with degree of lip rounding. The aim of these three different measures was to look at multiple aspects of vowel variation and not concentrate on F2 alone. Initially, I came across a problem when I simply subtracted values from the mean of /i/. As I used Lobanov normalisation, the resulting formant values were both negative and positive numbers. This led to some misleading values when subtracted from the mean of /i/. To combat this issue I found the minimum formant value, which happened to be -4.808. To make all the formant

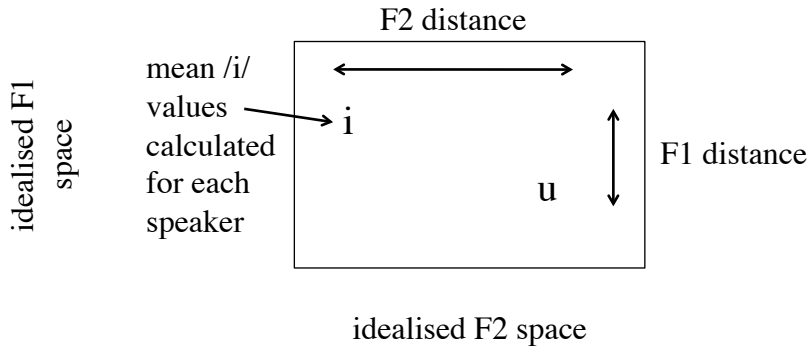

Figure 7.2: Diagram showing F1 distance and F2 distance within an idealised vowel space.

values positive numbers I added 4.808 to every single value. This transformation of the data removed the issue described above.

In order to give a measure of the overall distance between /i/ and [ʉ] I used Euclidean distances, which have recently been employed in a number of sociolinguistic and phonetic studies (Harrington, Kleber & Reubold 2008; Drager 2011; Harrington, Kleber & Reubold 2011; Kendall & Fridland 2012). A Euclidean distance is the distance between two points in multidimensional space. In this case I was using three formants, so three dimensions. A speaker's Euclidean distances were calculated using the distance between each token of [ʉ] and the mean value of /i/ for that speaker. The formula for a three-dimensional Euclidean distance is:

$$Euclidean\ distance = \sqrt{(i_1 - u_1)^2 + (i_2 - u_2)^2 + (i_3 - u_3)^2}$$

where i_1 refers to /i/ mean F1; u_1 refers to each token of [ʉ] F1; i_2 refers to mean /i/ F2; u_2 each token [ʉ] F2; and so on. When conducting statistics on this measure, I found the data were non-normal, with skew due to a small number of [ʉ] tokens which were very different from /i/. For this reason I log-transformed the Euclidean distance values before conducting regression analysis on them.

7.3.7 Statistical analysis

To investigate patterns in these vowel data I used mixed effects regression with each of the vowel distance measures as dependent variables. In each model, the random effects were individual speaker, and the word the vowel was produced in. The fixed effects are described below in the relevant sections for each analysis.

Social factors

I created independent variables for the following social factors: [1] location (Lewis or Glasgow), [2] age (old/young), [3] gender (male/female), [4] Gaelic spoken at home (yes/no). Among the young Glaswegian speakers only I coded for [5] community of practice, [6]

primary school attended, [7] distance of their home from school, and [8] class at school. For the young Lewis speakers I coded for [9] the Lewis-salient distinction of whether they lived in the 'town' (Stornoway), or 'country' (everywhere else). The specific interactions for each model are described in the corresponding section below.

Linguistic factors

The linguistic factors were coded as dummy independent variables. For word position, word-medial was chosen as the baseline and two dummy variables, word-initial and word-final, were created, similar for intonational phrase position. Word type included six levels. Noun was coded as the baseline and dummies created for verb, pronoun, adverb, adjective, conjunction and preposition. When I coded the data for preceding and following phonetic environment, I coded maximally conservatively i.e. I coded the actual segment without any collapsing of categories. When conducting regression analysis I collapsed some of the categories to create fewer variables. As palatalised and non-palatalised consonants form an important part of Gaelic and Irish phonology (Ní Chasaide 1999), I included palatal sounds as one of my phonetic environment categories. This included /j i dʒ tʃ ʃ/. The other categories for preceding environment were coronal sounds (as this has been shown to favour higher F2 in /u/ e.g. Mesthrie (2010)), /ɤ/, preceding pause, preceding nasal, other preceding environment. The categories for the environment following the vowel were collapsed into palatal sounds, coronal sounds, pause, nasal, vowel, other following environment. The 'other' categories was designated baselines and the remaining preceding and following environments coded as dummy variables. I also calculated vowel duration as this was readily available from the labelled TextGrids and included it in the regression models as vowels with shorter duration may have more central productions (Lindblom 1963).

7.4 Results

The results of this analysis are divided into three sections relating to the main research questions detailed above: Section 7.4.1 explains the differences between generations in Lewis, Section 7.4.2 considers differences between Lewis and Glasgow young people, and Section 7.4.3 considers differences according to local identity distinctions.

7.4.1 Intergenerational differences in Lewis

This section compares older and younger speakers in Lewis in order to see whether Gaelic in Lewis may be changing over generations. Models were constructed for each of the vowel measures and run on the data from Lewis speakers only. A summary of all the variables initially included is in Table 7.4. For the 'gender' variable, males are the baseline so the model shows how different female speakers are. For the 'age' variable, older speakers are the baseline so the model shows how different young speakers are. The results are displayed visually as an F1-F2 vowel plot in Figure 7.3, and the full regression model results are in Tables 7.5 and 7.6.

Fixed effects		**Random effects**
Social factors	**Linguistic factors**	
gender	word position	speaker
age	IP position	word
gender*age	word type	
age*preceding /ɾ/	preceding environment	
age*preceding palatal	following environment	
age*following palatal		

Table 7.4: Regression variables comparing young and old speakers in Lewis.

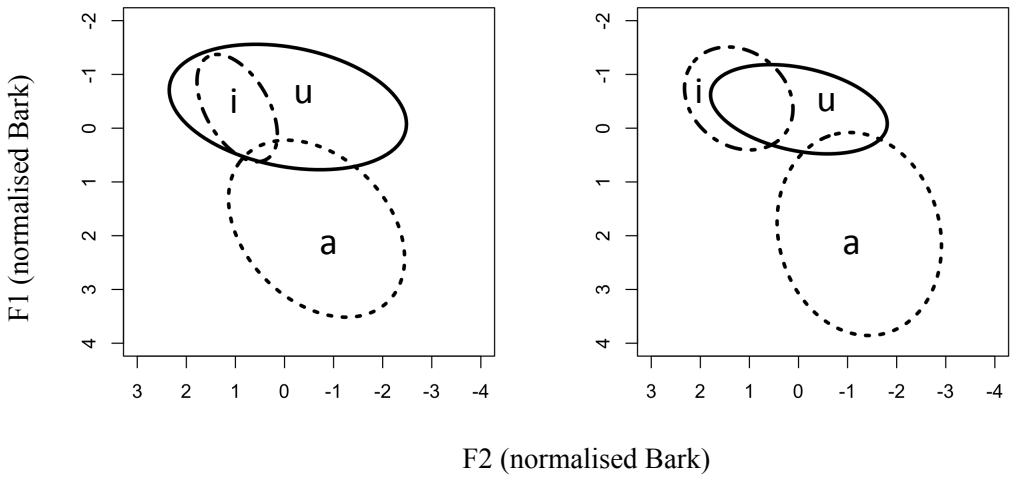

Figure 7.3: F1-F2 plots comparing older Lewis speakers on the left and younger Lewis speakers on the right. Circles show 95% confidence intervals. n = 1025.

	F1 distance				F2 distance			
	β	SE β	t	p	β	SE β	t	p
intercept	0.91	0.33	2.77	.006	-0.59	0.27	-2.22	.03
age	-1.24	0.4	-3.06	.002	1.47	0.33	4.5	<.001
gender					1.46	0.37	3.94	<.001
age*gender	1.34	0.57	2.35	.02	-1.85	0.45	-4.08	<.001
age*preceding /ɹ/					-0.62	0.2	-3.06	.002
pronoun	0.34	0.15	2.24	.03				
preceding /ɹ/					1.24	0.22	5.63	<.001

Table 7.5: Final regression results comparing [ʉ] productions among old and young speakers in Lewis for the measures of F1 distance and F2 distance. n = 677.

	F3 distance				Euclidean distance			
	β	SE β	t	p	β	SE β	t	p
intercept	-0.41	0.31	-1.32	.19	4.45	0.02	199.45	<.001
age	1.41	0.37	3.78	<.001				
gender	1.31	0.42	3.09	<.002				
age*gender	-1.65	0.52	-3.19	.002				
age*preceding /ɹ/					-0.16	0.05	-3.44	<.001
age*preceding palatal	-0.86	0.26	-3.38	<.001				
preceding /ɹ/					0.23	0.05	4.69	<.001
duration	0.001	0.0005	2.04	.04				

Table 7.6: Final regression results comparing [ʉ] productions among old and young speakers in Lewis for the measures of F3 distance and Euclidean Distance. n = 677.

There were large differences between older and younger speakers in Lewis. For younger speakers F1 distance is lower, which as above, indicates that actually the younger speakers have lower vowels in acoustic space, F2 distance is greater (backer [ʉ]), and the F3 distance is greater. Male speakers had a greater F2 and F3 distance, though there is a significant interaction with age for F1 distance, F2 distance and F3 distance. The results for this interaction are displayed in Figure 7.4. For each measure, the two generations of male speakers are similar, the younger female speakers are a little different from the younger males, but the older females are very different from everyone else. This explains the complicated results of this interaction. There were significant interactions between the social and linguistic variables: older speakers increase F2 distance (backer vowels) and overall Euclidean distance with a preceding /ɹ/. Older speakers also increase F3 distance with a preceding palatal sound. In other words, older speakers' vowels are more prone to coarticulatory effects. A pronoun increases F1 distance, preceding /ɹ/ increased F2 distance (backer [ʉ]), and durationally longer vowels had a greater F3 distance.

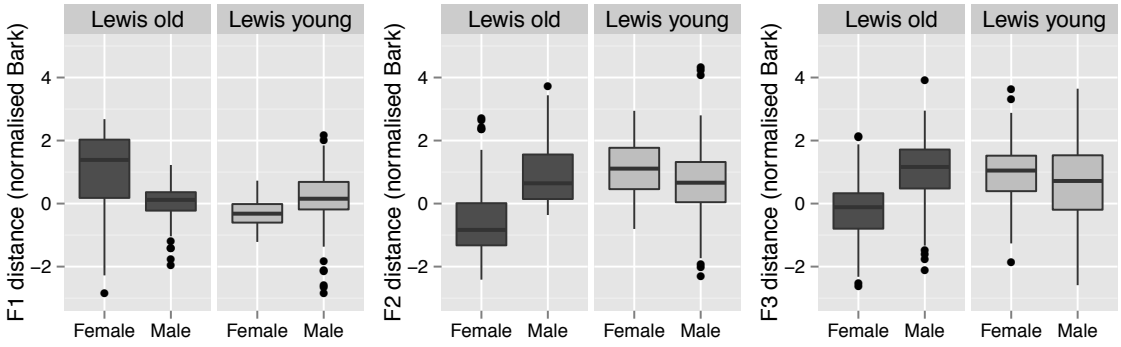

Figure 7.4: Boxplots comparing F1 distance, F2 distance and F3 distance of the [ʉ] vowels for the speakers in Lewis. In each case the plots display from left to right: older males, older females, younger males, younger females. In each case, the old females are different from the other groups. n = 677.

7.4.2 Differences between Lewis and Glasgow

This section compares young speakers in Lewis to speakers in Glasgow. Regression models were run on the formant distance measures, and on the overall Euclidean distance. The dependent variables were always the vowel measure in question, and the fixed and random factors in the models are listed in Table 7.7. The full results are in Tables 7.8 and 7.9. For the 'location' variable, Glasgow was the baseline, so the model shows how different Lewis vowels are compared to Glasgow. For 'gender', the baseline was female. The results are displayed visually in the form of an F1-F2 vowel plot in Figure 7.5.

Fixed effects		**Random effects**
Social factors	**Linguistic factors**	
gender	word position	speaker
location	IP position	word
gender*location	word type	
location*preceding /ɾ/	preceding environment	
location*preceding palatal	following environment	
location*following palatal		

Table 7.7: Regression variables comparing young speakers in Lewis and Glasgow.

To summarise the results: Lewis vowels have a lower F2 distance (more front [ʉ]), a lower F3 distance, and a lower overall Euclidean distance (less spread out vowels). Male students in Lewis have a greater F1 distance (lower vowels in the acoustic space) than the other groups of speakers. The models also returned the following linguistic results: a palatal sound preceding [ʉ] means [ʉ] is more front. Preceding /ɾ/ decreases the F3 distance, and a preceding coronal decreases the F3 distance and the overall Euclidean distance. A palatal sound following [ʉ] decreases the F2 and overall Euclidean distance, but a following vowel increases F2 distance ([ʉ] is more back). This last result is because many speakers inserted a /w/-like glide between

	F1 distance				F2 distance			
	β	SE β	t	p	β	SE β	t	p
intercept	-0.37	0.10	-3.72	<.001	1.57	0.11	14.69	<.001
location					-0.97	0.14	-6.72	<.001
location*gender	0.64	0.25	2.57	<.001				
location*preceding /ɤ/					0.37	0.09	4.27	<.001
location*following palatal					0.56	0.13	4.19	<.001
preceding palatal					-0.50	0.13	-3.73	<.001
following palatal					-0.23	0.11	-2.04	.01
following vowel					0.34	0.087	3.88	<.001
duration					0.0007	0.0002	2.88	.005

Table 7.8: Final regression results comparing [ʉ] productions among Lewis and Glasgow with the measures of F1 distance and F2 distance. n = 1227.

	F3 distance				Euclidean distance			
	β	SE β	t	p	β	SE β	t	p
intercept	1.41	0.11	12.88	<.001	4.40	0.01	301.74	<.001
location	-0.34	0.15	-2.24	.02	-0.04	0.02	-2.48	.01
location*preceding /ɤ/	0.29	0.11	2.73	.006	0.12	0.02	5.32	<.001
location*preceding palatal	-0.75	0.20	-3.75	<.001				
location*following palatal					0.14	0.03	3.98	<.001
preceding /ɤ/	-0.57	0.14	-3.99	<.001				
preceding coronal	-0.49	-0.48	-0.71	<.001	-0.08	0.02	-3.15	<.001
following palatal					-0.10	0.02	-4.04	<.001
following nasal	-0.23	-0.26	-0.42	.003	-0.05	0.02	-3.07	.001

Table 7.9: Final regression results comparing [ʉ] productions among Lewis and Glasgow with the measures of F3 distance and Euclidean distance. n = 1227.

[ʉ] and a following non-palatal vowel, which would lower F2. For durationally longer vowels, [ʉ] is more back. A following nasal sound decreases the F3 and Euclidean distances.

Interestingly, the interaction between location and preceding /ɤ/ was significant for F2 distance, F3 distance and overall. In all cases with preceding /ɤ/ Lewis speakers maintain more separate /i/ and [ʉ] than Glaswegian speakers. Put another way, preceding /ɤ/ affects vowel formants in Lewis but not in Glasgow. Also, in Lewis a preceding palatal sound decreases F2 distance, and a following palatal sound significantly increases F2 distance and Euclidean distance. These results overall suggest much more coarticulatory influence of surrounding segments in Lewis than in Glasgow.

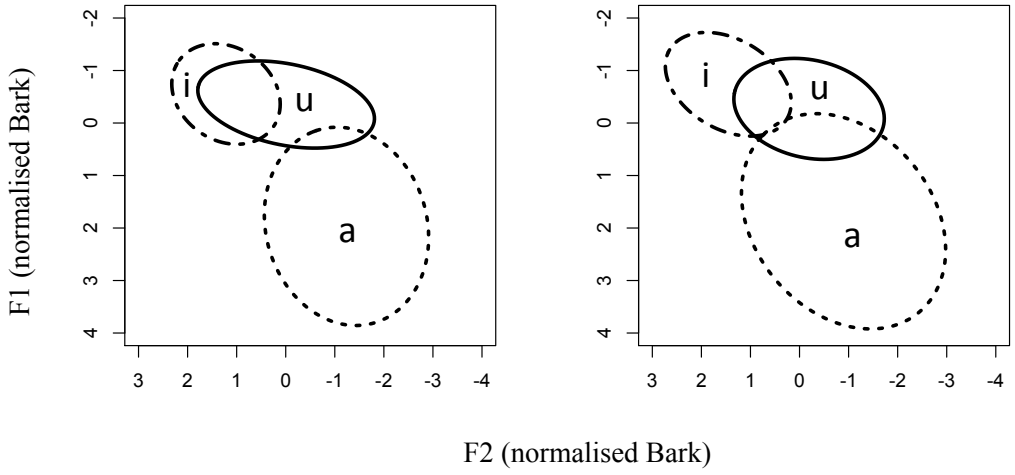

Figure 7.5: F1-F2 plots comparing Lewis young speakers on the left and Glasgow speakers on the right (Gaelic). Circles show 95% confidence intervals. n = 1889.

7.4.3 Local identities and vocalic variation

This section examines local patterns of variation among the younger speakers, firstly in Lewis and secondly in Glasgow.

Local identities in Lewis

The ethnography conducted among young Gaelic speakers at the Lewis school revealed a locally-salient distinction between people who lived in the 'town' and those who lived in the 'country'. In order to test whether this distinction was also made in linguistic productions, I constructed the regression model in Table 7.10. Both the Gaelic and the English data from the young people in Lewis were modelled, but returned no significant social factors, or significant social interactions. The linguistic results were similar to previous models, so are not repeated here.

Fixed effects		**Random effects**
Social factors	**Linguistic factors**	
town/country	word position	speaker
Gaelic spoken at home	IP position	word
gender	word type	
gender*Gaelic	preceding environment	
town/country*Gaelic	following environment	
gender*town/country		

Table 7.10: Regression variables comparing young speakers in Lewis.

Local identities in Glasgow

In Glasgow, separate models were run on male and female students as there was no crossover between the male and female communities of practice, and constructing one model including the variables of gender and community of practice would lead to multicollinearity. I chose to include community of practice over gender, as the community of practice distinctions among the students incorporated differing social practices between genders, but the reverse was not true. A summary of the variables included in the regression models is in Table 7.11. The baseline for the female 'community of practice' variable was Beth's group, so the model shows how different Vicky's group were, and the baseline for the male 'community of practice' variable was the football boys, so the model shows how different the music boys were. The baseline for 'Gaelic at home' was no Gaelic spoken in the home, so the models show how different the vowels were of pupils with one Gaelic-speaking parent. The school classes were labelled 1 and 2, with 1 as the baseline. The primary school pupils attended was coded as a dummy variable with the Glasgow school primary as baseline.

Fixed effects		**Random effects**
Social factors	**Linguistic factors**	
community of practice	word position	speaker
Gaelic spoken at home	IP position	word
community of practice*Gaelic	word type	
distance pupil lived from school	preceding environment	
school class	following environment	
primary school attended		

Table 7.11: Regression variables comparing social groups in Glasgow

The full results for the female students are in Tables 7.12 and 7.13, and the male students in Tables 7.14 and 7.15. Most interestingly, there are significant differences between the female communities of practice, but not for the males. Among the female students, Vicky's group have more front [ʉ], and overall less separate /i/ and [ʉ]. A vowel plot comparing the communities of practice is in Figure 7.6. No other social factors were significant in any of the models. The linguistic results are similar to the previous analyses so will not be repeated here.

	F1 distance				F2 distance			
	β	SE β	t	p	β	SE β	t	p
intercept	-0.4	0.07	-5.43	<.001	2.01	0.12	16.6	<.001
community of practice					-0.25	0.13	-1.93	.05
pronoun					-0.42	0.18	-2.31	.02
conjunction					-0.37	0.18	-2.01	.04
preceding palatal					-0.7	0.18	-3.8	<.001
following palatal					-0.37	0.13	-2.87	.004

Table 7.12: Final regression results comparing [ʉ] productions among the female Glaswegians for F1 distance and F2 distance. n = 495.

	F3 distance				Euclidean distance			
	β	SE β	t	p	β	SE β	t	p
intercept	1.46	0.11	13.43	<.001	4.43	0.02	233.78	<.001
IP final					-0.04	0.02	-2.19	.03
pronoun	-0.44	0.2	-2.17	.03				
adjective					0.37	0.16	2.27	.02
preceding /ɤ/	-0.59	0.19	-3.19	.002				
preceding coronal	-0.73	0.19	-3.77	<.001	-0.09	0.04	-2.45	.01
following pause					0.09	0.03	3.19	.002
following vowel					0.09	0.03	2.99	.003
community of practice					-0.04	0.02	-2.15	.03

Table 7.13: Final regression results comparing [ʉ] productions among the female Glaswegians for F3 distance and Euclidean distance. n = 495.

	F1 distance				F2 distance			
	β	SE β	t	p	β	SE β	t	p
intercept	-0.81	0.13	-6.05	<.001	1.6	0.17	9.34	<.001
verb					0.46	0.22	2.12	.04
preceding palatal	0.43	0.15	2.93	.004	-0.58	0.23	-2.53	.01
preceding nasal	0.67	0.21	3.14	.002				
following coronal	0.17	0.09	1.95	.05				
following nasal	0.18	0.09	2.03	.04				
nuclear accent	0.13	0.06	2.09	.04				

Table 7.14: Final regression results comparing [ʉ] productions among the male Glaswegians for F1 distance and F2 distance. n = 282.

Investigation of variation in the Glasgow students' Gaelic revealed differences according to community of practice among the girls, and no significant differences according to whether Gaelic was spoken at home, primary school attended, area the pupils lived in, or school class. One potential explanation for the differences according to community of practice among the girls is that differences existing in English might be transferred into Gaelic. In order to investigate this possibility, I ran the same regression models as described in Table 7.11 on the

	F3 distance				Euclidean distance			
	β	SE β	t	p	β	SE β	t	p
intercept	1.16	0.13	9.01	<.001	4.44	0.02	279.74	<.001
preceding coronal					-0.1	0.04	-2.71	.007

Table 7.15: Final regression results comparing [ʉ] productions among the male Glaswegians for F3 distance and Euclidean distance. n = 282.

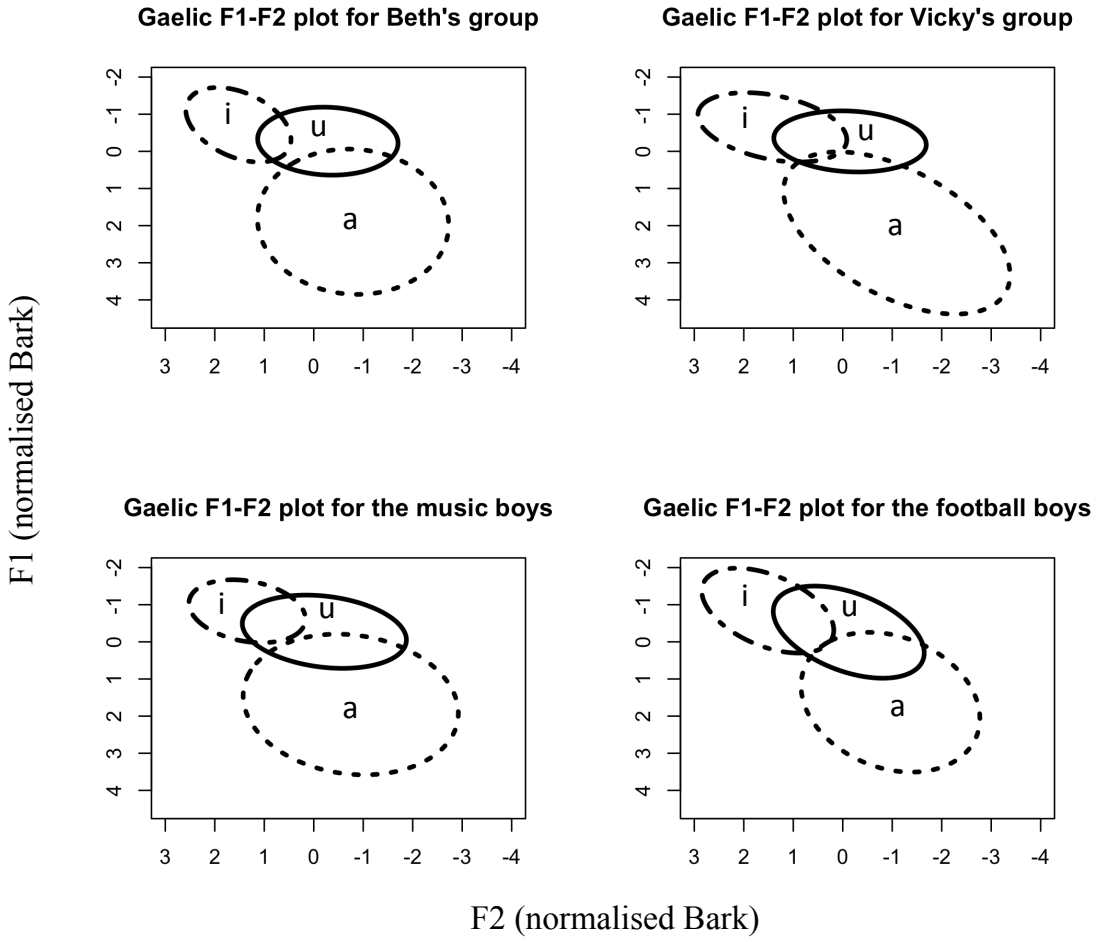

Figure 7.6: F1-F2 plots comparing the two female Glaswegian communities of practice and the two male communities of practice in Gaelic. Circles show 95% confidence intervals. n = 1208.

data from the pupils' English vowels. The results of these models are in Tables 7.16 and 7.17 for the girls, and Tables 7.18 and 7.19 for the boys.

	F1 distance				F2 distance			
	β	SE β	t	p	β	SE β	t	p
intercept	-0.52	0.07	-7.84	<.001	1.93	0.14	14.24	<.001
adjective					-0.27	0.14	-1.91	.06
preceding palatal	0.37	0.06	6.27	<.001	-0.92	0.19	-4.94	<.001

Table 7.16: Final regression results comparing [ʉ] productions among the female Glaswegians in English for F1 distance and F2 distance. n = 122.

	F3 distance				Euclidean distance			
	β	SE β	t	p	β	SE β	t	p
intercept	1.09	0.15	7.27	<.001	3.74	0.02	221.48	<.001
following nasal	-0.80	0.18	-4.33	<.001	-0.11	0.04	-2.75	.007

Table 7.17: Final regression results comparing [ʉ] productions among the female Glaswegians in English for F3 distance and Euclidean distance. n = 122.

	F1 distance				F2 distance			
	β	SE β	t	p	β	SE β	t	p
intercept	-0.40	0.10	-3.96	<.001	1.22	0.15	8.27	<.001
community of practice					0.39	0.13	2.97	.004
IP initial	-0.61	0.25	-2.40	.02				
pronoun	0.48	0.16	3.01	.003				
preceding coronal	0.33	0.15	2.14	.04				
following palatal					-1.05	0.29	-3.57	<.001
following coronal					-0.38	0.13	-3.04	.003
following pause	-0.42	0.14	-3.08	.003				
following nasal	-0.59	0.19	-3.12	.003				
following vowel	-0.98	0.23	-4.23	<.001				

Table 7.18: Final regression results comparing [ʉ] productions among the male Glaswegians in English for F1 distance and F2 distance. n = 96.

	F3 distance				Euclidean distance			
	β	SE β	t	p	β	SE β	t	p
intercept	0.48	0.25	1.95	.05	3.75	0.02	214.99	<.001
community of practice	0.88	0.3	2.93	.004				
verb	0.56	0.28	1.98	.05				
adjective	0.47	0.23	2.00	.05				
following nasal					-0.09	0.04	-2.44	.02

Table 7.19: Final regression results comparing [ʉ] productions among the male Glaswegians in English for F3 distance and Euclidean distance. n = 96.

There are no significant differences in English between the female communities of practice, but among the male speakers there are: the music boys have a backer [ʉ], and a greater F3 distance. As the differences concern F2 and F3, I have highlighted this by producing F2 and F3 plots in Figure 7.7. This situation is the reverse of what is happening in Gaelic: in Gaelic there were differences between the female communities of practice but not among the males, but in English there are differences among the boys but not among the girls.

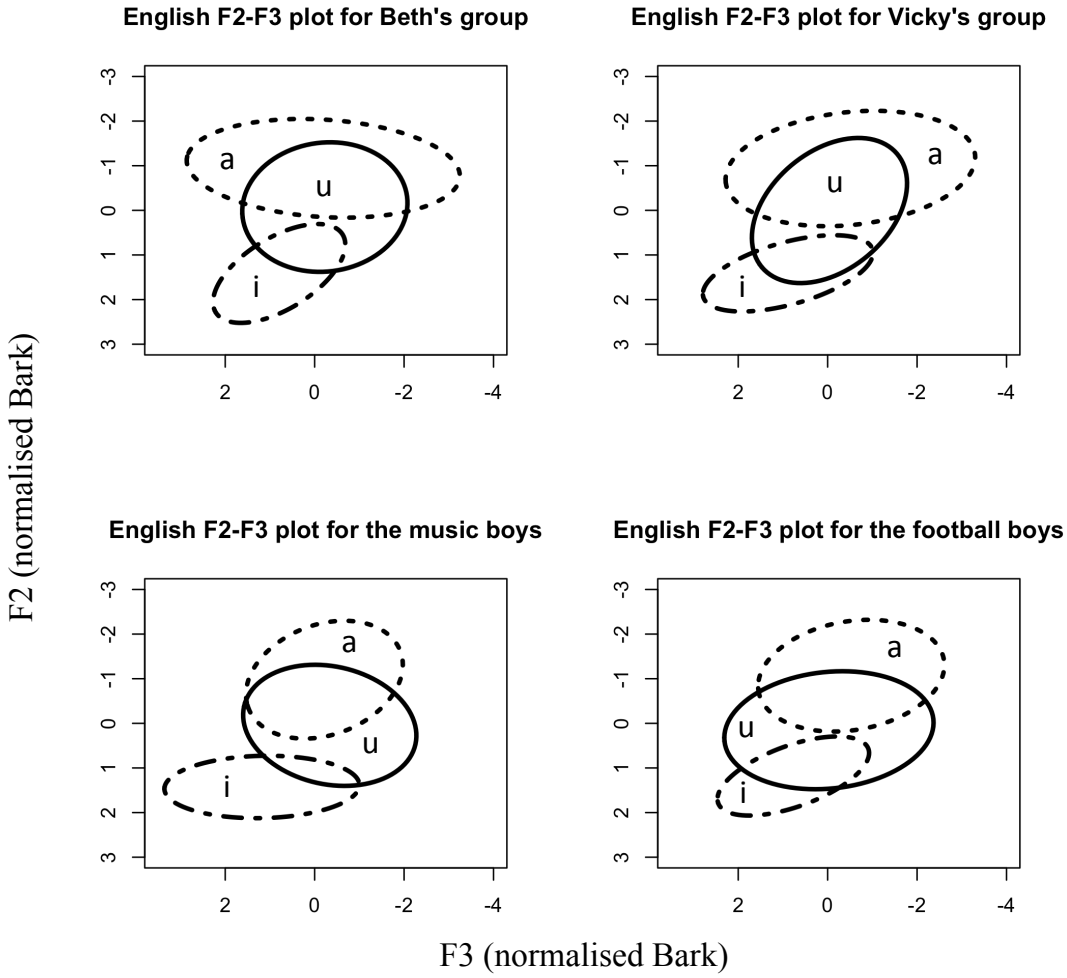

Figure 7.7: F2-F3 plots comparing the two female Glaswegian communities of practice and the two male communities of practice in English. Circles show 95% confidence intervals. n = 445.

7.4.4 Summary of results

In summary I have looked for intergenerational differences among the Lewis speakers, compared Lewis and Glasgow young speakers, and also looked for locally relevant variation among the groups of young people.

Between the two generations of speakers in Lewis there is evidence of some divergence. Younger speakers have a lower F1 distance, but greater F2 and F3 distance. Presumably the fact that one measure is greater and two are lesser cancels out the chance of a significant result for the overall Euclidean distance. Older speakers' vowels are backer with preceding /ɾ/, and more separate from /i/ with a preceding palatal sound. There was a very interesting age*gender interaction along all formant dimensions: there are little differences between the two generations of male speakers, but big differences between the generations of female speakers.

There were differences between Glaswegian Gaelic and Lewis Gaelic: Lewis [ʉ] is overall more front than Glasgow [ʉ]. Lewis vowels have a lower F2 distance (fronter vowels), lower F3 distance (less separate), and lower Euclidean distance (overall less separate) than Glasgow vowels. Preceding /ɾ/ means backer [ʉ], greater F3 distance, and greater Euclidean distance in Lewis, but not in Glasgow. Also, in Lewis a preceding palatal sound decreases F2 distance, and a following palatal sound significantly increases F2 distance and Euclidean distance

Among the Lewis young speakers, no social factors patterned significantly with vocalic variation. Among the Glaswegian speakers there were differences between the female communities of practice along two parameters: F2 distance and overall Euclidean distance. In each case it was Beth's group that had more separate [ʉ] and /i/. There were no differences between the male communities of practice. It is not the case that differences existing in the students' English are transferred over to their Gaelic vowels: among the female students there are no significant differences in [ʉ] production, but the male students have different F2 and F3. The music boys display more separate /i/ and [ʉ] than the football boys. The primary school pupils attended, or their class at school, were not a significant factors in the models indicating there is no significant influence of differing teacher input on the pupils' productions. Similarly, whether Gaelic was spoken in a pupil's home, and the area of Glasgow in which the students lived did not significantly affect the results.

A number of linguistic context factors affect the formants of [ʉ]. Most notably a preceding palatal sound means more fronted [ʉ], and a preceding /ɾ/ means more backed tokens of [ʉ]. This is in line with previous studies such as Mesthrie (2010). Following coronal or nasal sounds tended to decrease the distance between /i/ and [ʉ], as did a following vowel. This last result is because some speakers tended to insert a /w/-like glide between [ʉ] and another vowel, which would lower specifically F2.

7.5 Discussion

7.5.1 Intergenerational differences in Lewis

The results from Nance (2011) indicated that in traditional Lewis Gaelic the [ʉ] allophone, which is the subject of the current study, was fronting in apparent time. These results were based on word-list data. This result was, however, reversed in the current study. Although the ages of the participants were slightly different in the two studies, the discrepancy between results needs some explanation. As well as age differences in the two studies, the data were also collected using very different methods: word-list data in Nance (2011) and data from interviews in the current study. It is possible that these results indicate a difference in the speech of older speakers between word-list reading and interview speech. In the previous word-list study, older speakers used conservative back productions of [ʉ], whereas in the current study on data from interviews older speakers used more relaxed fronter productions. The younger speakers, who are less used to using Gaelic in multiple contexts, do not make this distinction. Data from the extent of coarticulation lend some support to this argument: older speakers' [ʉ] is affected by coarticulation from preceding /ɾ̪/, but for younger speakers this is not the case. The fact that older speakers' productions were more influenced by surrounding segments than younger speakers' productions, supports the argument that older speakers were speaking in an informal relaxed manner, whereas younger speakers may have only learned one context for speaking Gaelic: formal school instruction. They may therefore have learned more citation-like Gaelic, and display fewer connected speech processes. This hypothesis is impossible to test with the current dataset as older speakers were generally not able to read Gaelic so did not complete the word-list task, but it would make an interesting topic for further study with adapted materials.

An explanation of the exact nature of the younger speakers' vowels (lower and backer Gaelic [ʉ]) is that they might reflect current trends in Scottish English, which is moving toward a backer and lower production of /u/ (Rathcke, Stuart-Smith, Timmins et al. 2012). In other words, the specific pronunciation of this vowel in young speakers' Lewis Gaelic may be contact-induced influence from Scottish English. It is, however, difficult validate this suggestion without data from Lewis English from several generations of Lewis speakers. Previous descriptions such as Grant (1913) merely suggest that the equivalent vowel in English is very front.

Among the speakers from Lewis there are large differences between the male and the female speakers, specifically the older females produced vowels which were very different to the other groups. It is hardly surprising that there are large differences in gender in the older generation. These speakers grew up in Gaelic-speaking communities where gender roles were highly segregated (Hunter 2010), and different ways of speaking for men and women may form part of gender identities in such a society. In the younger generation, there are differences between the genders, but they are in the opposite direction to those found

in the older generation. Clearly, gender is still an important factor, but possibly a lack of intergenerational transmission has led to this change in the patterning of social and linguistic variation.

7.5.2 Differences between Lewis and Glasgow

It is clear from these data that Glaswegian Gaelic and Lewis Gaelic are different along a number of parameters: Lewis [ʉ] is fronter than Glasgow [ʉ], and overall vowels are less spread out in Lewis than in Glasgow. It is possible that this distinction is the result of contact with local English in Glasgow. While comments such as Grant (1913, 56) state that /u/ in Scottish English is particularly front in Glasgow and the 'Gaelic speaking districts', recent research into this vowel in Glaswegian English has shown it is in fact backing and lowering in real- and apparent-time (Rathcke, Stuart-Smith, Timmins et al. 2012). Taking this recent research into consideration it seems that the same pattern is reflected in these Gaelic data: Glasgow Gaelic [ʉ] is lower and backer than Lewis Gaelic [ʉ]. An alternative explanation is that the students at the Glasgow school were particularly middle class, and this vowel is backer in middle class Glaswegian than working class Glaswegian as shown in Macaulay (1977, 77) and Stuart-Smith (1999, 208). This is another possible origin of the more central productions among the Glasgow young people.

Glaswegian Gaelic also differs from Lewis Gaelic in the extent of coarticulation. In Lewis, preceding /ɤ/ effects vowel formants, as many previous studies of /u/ have noted (e.g. Woods (1997); Watson, Maclagan & Harrington (2000)), but in Glasgow it does not. Similarly preceding and following palatal sounds affect formants in Lewis but not in Glasgow. It appears that Glaswegian Gaelic speakers do not use the connected speech processes that are prevalent in traditional varieties of Gaelic. It may be the case that while immersion schooling allows students in Glasgow to become fluent Gaelic speakers, some aspects of fine phonetic detail are not easily acquired through this method.

7.5.3 Local identities and vocalic variation

Among the young people in Lewis, none of the social factors tested patterned with vocalic variation. This section therefore concentrates on the Glaswegian young people.

There was a large amount of variation among the Glaswegian students in Gaelic. This variation does not pattern significantly with the area of Glasgow they live in, the differing primary education they received, or whether they speak Gaelic at home. Among the girls, however, there were production differences according to community of practice distinctions. It does not seem likely that the Gaelic patterns are a direct transfer of differences existing in English productions, as these significant patterns of variation were not present in the students' English productions: instead the reverse was true and there were community of practice differences in the boys' vowels but not the girls' vowels. For the female students then, Gaelic vowel variation is used as one way of marking a locally salient social category:

that of community of practice membership. Why might this be? For the female students in the Glasgow school, their social groups were at least partly defined by attitudes towards school and Gaelic. Vicky's group were at best ambivalent towards Gaelic, and if anyone was sent out of class it was Vicky or her friends. Beth's group were more conscientious students and positive towards Gaelic saying they thought it would help them to find a better job. As this school is a Gaelic school, it is impossible to fully separate attitudes to Gaelic and orientation to school. This might be the reason that production differences have been mobilised in the Gaelic language to signal a socially-salient distinction around attitudes to school. In support of this argument is the fact that Gaelic vowel variation did not pattern significantly with community of practice membership for the boys. Among the boys, attitudes to school and Gaelic are not a practice which defines group membership, so variation does not pattern with these distinctions in Gaelic.

The fact that some kinds of linguistic variation are subject to more influence from the peer-group than from the students' home language background or teacher input is not surprising. For example, in their study of new dialect formation in Milton Keynes, Kerswill & Williams (2000) note that parental input was a significant factor in predicting linguistic productions until the age of around 4. After this, influence from the peer-group is much more important. Similar findings have been reported in minority language immersion environments as well. Poplack (2012) reports that students in French immersion classes in Canada do not reproduce the morphosyntax of their teachers but instead reflect the variation in the community around them. The variation described in the current study adds weight to this body of research suggesting that for adolescents influence from the peer-group is more important than that of parental or teacher models.

The differences between Beth and Vicky's groups in Gaelic are specifically that Vicky's group have fronter and overall less spread out vowels. Why are the differences in this particular direction? Previous research into variation in /u/ in Glaswegian English suggests that a front production of /u/ is associated with working class speech (Stuart-Smith 1999, 208). Glaswegian working class speech has been linked with the indexical values of 'hardness' and 'rebellion' (Lawson 2011). As discussed in Chapter 5, the background of these pupils is middle class, so it is not a clear-cut case of working class students producing Gaelic vowels one way, and middle class students another. However, it might be the case that Vicky's group, the more rebellious at school, selected the vocalic variation associated with rebellion and toughness as one of their group practices in the language they use at school. While this argument remains a hypothesis until in-depth perceptual testing can be carried out, the possibility of selecting indexical values of variation in one language (English), and transferring them to another language (Gaelic), remains a fascinating possibility.

7.6 Interim conclusions

In the case of Gaelic [ʉ] language revitalisation has led to some interesting outcomes. In Lewis, there are differences between older and younger speakers. Specifically, younger speakers have lower [ʉ] and backer [ʉ]. This first result could be reflecting the Scottish English trend toward lowering of /u/ identified in Rathcke, Stuart-Smith, Timmins et al. (2012). Also in Lewis, there are differences according to speaker gender for both generations, but in opposite directions. I have suggested this is due to a lack of intergenerational transmission and younger speakers are developing their own patterns for sociolinguistic variation independently of older speakers.

Another linguistic outcome of language revitalisation appears to be that some traditional connected speech processes are lost in revitalised varieties. There were fewer coarticulatory effects on vowel productions among Lewis younger speakers than older speakers, and fewer effects in Glasgow than in Lewis. This may be the result of a lack of intergenerational transmission of Gaelic, and a loss of contexts for speaking Gaelic, where complex patterns of coarticulation are no longer fully passed on to younger speakers. Alternatively, there may be substantial differences in consonantal productions among the different groups of speakers. This is likely considering the differences in lateral productions explored in Chapter 6.

There are clear differences between Lewis Gaelic and Glasgow Gaelic along several of the measures tested here, as well as coarticulatory influence. These results indicate the Glaswegian Gaelic may be developing linguistically distinct features, and support the suggestion that it may be a new Gaelic dialect (research question 2 in this thesis).

Finally, I demonstrated that social differences among the Glaswegian female students pattern with acoustic differences in their Gaelic vowels, and it is not the case that existing differences in the students' English are transferred to Gaelic. Nor are the differences due to differing teacher input or language background at home. I suggest this is instead due to the social makeup of the female groups, which centre around attitudes to school and Gaelic. In support of this there are no differences between the male groups, which do not have school attitude as their focal point. Many previous studies have shown that social identity factors pattern with vowel productions, but this study shows that this is the case in a revitalised minority language, which young people do not normally speak to one another. This has repercussions both for sociolinguistic theory and language revitalisation policy and practice.

Chapter 8

Tone and intonation

8.1 Introduction

This chapter investigates the intonation used by the participants in Gaelic. The analysis is grounded in Autosegmental Metrical (AM) phonology (Pierrehumbert 1980; Ladd 2008). Previous descriptions of Gaelic state that it is a word accent language prosodically similar to Swedish, i.e. most words carry a contrastive lexical tone (Borgstrøm 1940; Oftedal 1956; Dorian 1978; Ternes 2006). This system has been described in detail in the literature, and some acoustic studies have examined the Gaelic word accents on a small set of word list data (Bosch & De Jong 1997; Ladefoged, Ladefoged, Turk et al. 1998). There has been no previous study of Gaelic within the Autosegmental Metrical framework, and no quantitative study of whether Gaelic speakers use the system as described in the literature outside of word list contexts. The first purpose of this chapter is therefore descriptive: Gaelic intonation is described using an AM analysis, and the data are examined to see whether speakers reproduce the system described in the literature. The second element is sociolinguistic and compares the speech of older and younger speakers in Lewis, and speakers in Glasgow. A word accent prosodic system is typologically rare and subject to change to an intonation system over time (Salmons 1992). The participants' tone and intonation systems were therefore considered an interesting feature for the analysis of potential change, and also differences between Lewis and Glasgow Gaelic. The specific research questions addressed in this chapter are:

1. Do speakers use the intonation model described in the previous literature?
2. If speakers do not use the intonation model described in the literature, what do they use?
3. Are there differences between speakers in Lewis and speakers in Glasgow?
4. Are local identity affiliations reflected in tone and intonation productions?

The remainder of this section discusses the previous relevant literature: the definitions used here for 'tone' and 'intonation', and acoustic correlates of these features, previous descriptions

of Gaelic, intonation in language contact and bilingual contexts, and work on intonation in relevant varieties of English. Similarly, research questions 2-4 are dependent on the results of the previous research question. For these reasons the analysis of tone and intonation is split into two: Analysis 1 investigates whether speakers use the word accent system (Section 8.2). The results of Analysis 1 indicate that older speakers use the traditional Gaelic word accent system, but younger speakers do not. Analysis 2 investigates the intonation of the younger speakers, the differences between Glasgow and Lewis, and the variation among speakers in Glasgow and among speakers in Lewis (Section 8.3). In summary: Glasgow speakers overwhelming produce accentual rises in pre-nuclear and nuclear pitch accents. These rises are mostly traditional Glaswegian English rise-plateau and rise-plateau-slump contours, though many speakers also produce instances of nuclear High Rising Terminals. In Lewis, younger speakers produce a variety of rises and falls, and there are also a large number of High Rising Terminal contours in nuclear accents. The results from both Analyses are discussed as a whole in Section 8.4, and some conclusions are made in Section 8.5.

8.1.1 Tone and intonation

This section defines two aspects of prosody which are the key concepts of this chapter: tone and intonation, and how they can be analysed acoustically and phonologically.

Ladd (2008, 6) defines intonation as 'the use of *suprasegmental* phonetic features to convey 'postlexical' or *sentence-level* pragmatic meanings in a *linguistically structured* way' (emphasis original). This definition has three crucial points: intonation is considered as a feature that extends above and beyond the segmental level, which excludes any use of prosodic features applied to particular vowels or other segments. Secondly, intonation has sentence-level meaning, which excludes lexical pitch patterns or phonological tone. Thirdly, intonation is considered as linguistically structured, i.e. it can have linguistic meaning. An example of this third point is the alternation between statements and questions which can be made in some varieties of British English using intonation alone: *She's coming on Saturday* produced with a phrase-final fall is usually interpreted as a statement, but the same words produced with a final rise turn the statement into a question: *She's coming on Saturday?*

While all languages are generally considered to have intonation (Gussenhoven 2004, 12), 60-70% of the world's languages also make use of lexical tone (Yip 2002, 17). Lexical tone refers to a prosodic pattern which is part of the defining features of a specific word. In a tone language, words can be identical in vowels and consonants and differ only in their prosodic nature (Yip 2002, 1). A well-known example of a tone language is Mandarin Chinese. Intonation languages on the other hand, make no use of lexical tone.

A third subgroup of languages make limited use of lexical tone. This group includes languages such as Japanese, Swedish, Serbo-Croatian, and Luxembourgish. In these languages pitch is used to signal some lexical or morphological distinctions, but to a much lesser extent than prototypical tone languages such as Mandarin. Typically the tone system is relatively

simple, consisting of only one or two contrastive tones. Languages such as these are known as 'word accent', 'pitch accent', or 'accent' languages. Previous descriptions of Gaelic have suggested that Gaelic belongs to this subclass, making limited use of lexical tone for linguistic meaning in addition to intonation (Borgstrøm 1940; Oftedal 1956; Dorian 1978; Ternes 2006; Gillies 2010).

Definitions of intonation such as Ladd's (above) typically exclude lexical tone. However, as discussed in Ambrazaitis (2009, 8), intonational research conducted in the Swedish tradition typically does include Swedish lexical tones, for example, Gårding (1989). Following Ambrazaitis (2009), I will use the term 'intonation model' to refer to a complete system consisting of intonational tones, lexical tones and the interaction between them.

Acoustic correlates of tone and intonation

According to Cruttenden (1997, 2), variations in prosody such as those of tone and intonation are acoustically realised as variations in pitch, length, and loudness. Typically, prosodically accented elements of speech are longer and louder than unaccented elements, and are accompanied by modulations in pitch. While pitch, length, and loudness are all important in the acoustic realisation of tone and intonation, Cruttenden (1997, 3) and Ladd (2008, 7) state that pitch is the prosodic feature most centrally involved, so pitch will be of primary importance in this analysis. 'Pitch' refers to a perception of sound quality. The acoustic correlate of pitch is fundamental frequency (f0), the rate at which the vocal folds vibrate during a voiced sound. Measuring f0 as a correlate of intonational variation is not straightforward for several reasons: firstly, the relationship between pitch and f0 is not linear. Secondly, different speakers with different-sized vocal apparatus will have inherently different fundamental frequencies. Typically the f0 for men is around 100Hz lower than for women. Thirdly, f0 is susceptible to vary according to the nature of the speech sound produced: for example some vowels have intrinsically higher f0 than others, and over stretches of speech f0 tends to decline as a speaker reaches the end. Fourthly, f0 is the rate of vibration of the vocal folds. In voiceless sounds there is no vibration hence no f0, yet we are still able to perceive intonation and tone in voiceless sounds or whispered speech. While examination of f0 is helpful in an analysis of tone and intonation, it is clearly not a simple case of just measuring this parameter (Ladd 2008, 24).

Autosegmental Metrical (AM) phonology

One method of analysis which aims to overcome this issue is Autosegmental Metrical (AM) phonology (Pierrehumbert 1980; Ladd 2008), which is the theoretical framework used in this analysis. This section summarises the terminology employed and explains the justification for this theoretical approach.

The definition of intonation proposed by Ladd (2008, 6) states that intonation is linguistically structured. This implies that intonation can be divided into discrete units which, in

context, can be used individually or in combination to convey linguistic meaning. AM phonology is based upon this assumption. An AM analysis describes a continuous intonation contour as a series of prominent prosodic events, known as pitch accents. There is no one-to-one correspondence between lexical stress and the placement of pitch accents: not all lexically stressed syllables will be pitch accented, but pitch accents mostly occur on lexically stressed syllables. Pitch accents in AM analysis are represented as a series of high (H) and low (L) pitch targets. Taking inspiration from analysis of tone languages, the H and L pitch targets in AM are referred to as high and low tones. Rises and falls are seen as movements between these H and L tones. The definition of what is 'high' and 'low' is a perceptual one, not one based on actual measurement of f0. It is also relative taking into account relative 'high' and 'low' pitch for that particular speaker, and 'high' and 'low' based on previous pitch accents (Ladd 2008, 53). A pitch accented syllable is denoted by the * diacritic, e.g. L* or H*. These fundamental units in AM phonology, the H* and the L*, are therefore phonological units based on perceptions of pitch and prominence (Arvaniti, Ladd & Mennen 2000). As discussed above, there is not necessarily a one-to-one correspondence between perceptions of prosodic variation and measures of f0. For example, while some languages may have f0 maxima and minima that are timed closely co-occurring with the AM H* and L* targets, this is not the case in Greek where f0 minima occur some time after perception of a fall in pitch (Arvaniti, Ladd & Mennen 2000). The relationship between f0 and pitch accents is referred to as 'alignment' in AM studies.

All phonological treatments of intonation including AM phonology draw on the concept of the Intonation Phrase (IP) as a way of dividing up intonation contours into large prosodic units. Intonation Phrases have three defining characteristics: they are the largest phonological unit into which utterances are divided; they have intonational structure; and thirdly they are assumed to match up at some level with discourse and/or syntactic meaning (Ladd 1986). In the AM analysis framework, the final pitch accent in an IP is known as the nuclear accent. In other schools of intonation analysis, such as the British School, the nuclear accent is the most prominent pitch accent in the IP, and usually this occurs finally though its position can shift (Ladd 2008, 81). The boundaries of an Intonation Phrase are signalled by a variety of phonetic cues including special pitch movement known as a boundary tones in AM analysis.

In some AM schools of analysis, a distinction is made between an Intonation Phrase (IP) and an intermediate phrase (ip). The intermediate phrase is a concept proposed to describe a prosodic unit that is similar to an Intonation Phrase, but smaller and occuring within an Intonation Phrase (Beckman & Pierrehumbert 1986; Pierrehumbert & Beckman 1988). However, as pointed out by Grabe (1998, 9) the distinction between the two is not always clear, and does not add significantly to understanding German or British English. An alternative approach to AM analysis states that the Intonation Phrase is the only large unit of intonational structure (Gussenhoven 1984; Grabe 1998). The intermediate phrase is not seen as a useful concept. This approach simplifies analyses which can become extremely complex with the addition of phrase accents and intermediate phrases alongside Intonational Phrases,

and for these reasons I chose to follow the Gussenhoven and Grabe framework in this thesis.

8.1.2 An intonation model of Scottish Gaelic

Lexical tone in Gaelic

Several authors have suggested that Gaelic makes some use of lexical tone. Borgstrøm (1940, 53) states that all stressed syllables have rising tone, and all unstressed syllables have falling tone. This rising tone is easiest to hear on words with long stressed vowels or diphthongs; short stressed vowels do have rising tone, but it is not as easy to hear as there is not as much time for the tone to rise. Borgstrøm (1940, 54) likens this use of tone to his own native Norwegian, and suggests its use in Gaelic is the result of contact with Old Norse in early medieval times. For Borgstrøm then, lexical tone is linked to syllabicity: monosyllabic words have rising tones ↗, and polysyllabic words have a rising-falling tones ↗↘. Oftedal (1956, 28) also suggests that pitch and syllabicity are closely connected in Gaelic. Monosyllabic words have a rising or level tone, whereas polysyllabic words have a rise-fall or fall. Oftedal interprets these pitch distinctions as a syllabification strategy rather than the existence of lexical tone, but the result is the same: pitch distinctions based on the number of syllables in a word. Dorian (1978, 37) also comments on some use of lexical pitch differences similar to Swedish.

Ternes (2006) specifically refers to Scottish Gaelic as a 'pitch accent' language in his (revised) description of Applecross (north-west mainland) Gaelic. According to Ternes, Gaelic has two contrastive pitch accents and all stressed words have one of the two pitch accents. Ternes states that the pitch accent distinctions made in Gaelic are similar to those made in his own native dialect of German from Trier, a tonal situation described in Gussenhoven (2004). Similar to Borgstrøm (1940), Ternes (1980) and (2006, 141) claims that the pitch accent distinctions made in Gaelic are due to contact influence from Old Norse, although Iosad (fc. 2014) argues that the Gaelic pitch accents may have arisen independent from contact with Norse.

Realisation of lexical tone in Gaelic

Unlike Swedish, which has around 350 pairs of words distinguished by tone alone (Gårding 1989, 65), Gaelic has few minimal pairs separated by a tone distinction. However, some near minimal pairs have been the subject of phonetic studies by Bosch & De Jong (1997) and Ladefoged, Ladefoged, Turk et al. (1998). Near minimal pairs often arise from a class of words with an inserted epenthetic vowel, for example, *ainm* 'name' /ɛɲɛm/, and similar words containing a phonemic vowel e.g. *anam* 'soul' /anəm/. Bosch & De Jong (1997) investigate this pair of words and found a falling pitch in both (produced in isolation), but the fall was consistently produced later in *ainm*, the word with an epenthetic vowel. These results are, however, for Barra Gaelic, a southern Hebridean dialect. Ladefoged, Ladefoged, Turk

et al. (1998) conducted analyses on Lewis Gaelic and looked at three near minimal pairs:

1. *balg* 'belly' /palˠak/ - *ballag* 'skull' /palˠ.ak/
2. *duan* 'poem' /tũãn/ - *dubhan* 'fish hook' /tu.an/
3. *bò* 'cow' /poː/ - *bogha* 'underwater rock' /po.ə/

In each case these authors found that monosyllabic words (the first of the pair listed here) had a rising pitch, and disyllabic words had a falling pitch. Schematised f0 contours from the findings of this study are in Figure 8.1.

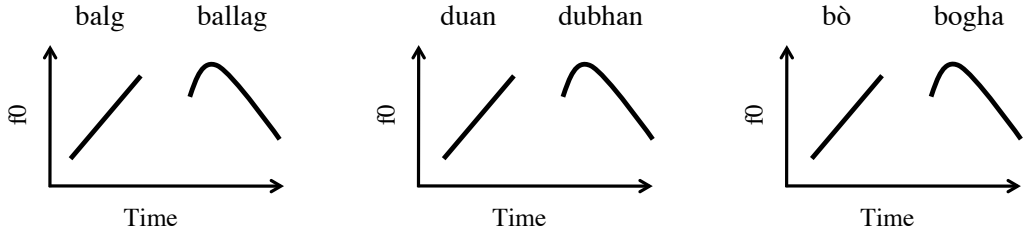

Figure 8.1: Schematised f0 contours from minimal tone pairs in Ladefoged, Ladefoged, Turk et al. (1998).

When a suffix is added to a monosyllabic word, this word behaves like a disyllabic word tonally (Ternes 2006, 137). These results appear consistent with the dialect descriptions of Borgstrøm (1940) and Oftedal (1956) that monosyllables have rising pitch and polysyllables have (rising-)falling pitch. The results are also consistent for what is reported in Old Norse. Haugen (1967) explains that in Old Norse, the type of pitch accent found on a word depended on whether a word was mono- or polysyllabic. Following the Swedish tradition, for example Bruce (1977), I refer to the monosyllabic Gaelic rise as Accent 1; and the more complex polysyllabic fall/rise-fall as Accent 2 (contra Ternes (2006)).

Syllabicity in Gaelic

From the examples listed here, it is clear that in Gaelic lexical tone and syllabicity are linked, but the criteria for defining syllabicity are not straightforward. For example the word *balg* 'belly' /palˠak/ is considered to be monosyllabic, while *ballag* 'skull' /palˠ.ak/ is considered disyllabic. Similarly, *duan* 'poem' /tũãn/ is considered as monosyllabic and containing a diphthong, while *dubhan* 'fish hook' /tu.an/ is considered as disyllabic. Two interesting classes of words are involved here: words with an epenthetic or 'svarabhakti' vowel which is pronounced but not represented in orthography such as *balg* /palˠ**a**k/, and 'hiatus' words containing consonants which were usually historically pronounced but are now only orthographically represented such as *du***bh***an* /tu.ən/ (Ternes 2006, 133).

The clearest account of the links between syllabicity and tone is put forward in Ternes (2006) with reference to the historical development of Gaelic. This author states that in Old

Irish the intervocalic consonants in, for example, *du**bh**an* were pronounced, and the word was more prototypically disyllabic with two clear vocalic intervals. Sound change resulted in the intervocalic consonant being lost. In words where the vowels either side of the lost intervocalic fricative consonant were the same, the word in modern Gaelic merely usually contains a long vowel. In words where the two vowels were different, the word usually remained disyllabic, and the syllabic boundary previously realised as a consonant became integrated into the tonal system. A second group of hiatus words were already produced with 'hiatus' in Old Irish, for example, modern Gaelic *fitheach* 'raven' /fi.əx/ < Old Irish *fiäch*. In Scottish Gaelic, hiatus in these inherited hiatus words was marked orthographically in the same way as hiatus words arising from sound change: by non-pronounced *-th, -dh* or *-gh*.

Similarly, words with a svarabhakti vowel in modern Gaelic were not produced with this vowel in Old Irish. When speakers began producing words such as *balg* /palˠ**a**k/ with an extra vowel, the monosyllabic nature of the word remained tonally (Ternes 2006, 132). The pronunciation of svarabhakti vowels is evidenced in the earliest distinctly 'Gaelic' text, *The Book of Deer* (Ó Maolalaigh 2008b, 198). Do Gaelic speakers perceive these suggested differences in syllabicity? Dialect descriptions such as Borgstrøm (1940) and Oftedal (1956) suggest this is the case. The syllabic makeup of svarabhakti words is nuanced in experimental work by Hammond, Davis, Warner et al. (under review). These authors suggest that speakers from Skye perceive words containing a svarabhakti vowel as consisting of slightly more than one syllable, but slightly less than two syllables. It is clear from their series of experiments that words containing a svarabhakti vowel are phonologically different to similar words containing a non-svarabhakti vowel. There is also some historical evidence that words containing a svarabhakti vowel were syllabically unusual: Greene (1952) argues for three syllable quantities in Old Irish [1] short, [2] long, and [3] half-long including words now produced with a svarabhakti word in modern Scottish Gaelic. His evidence is from verse texts where 'half-long' syllables appear in metrically different contexts to 'short' and 'long' syllables.

While Ternes' argument perhaps explains the historical development of tone in the svarabhakti and hiatus words, it is not clear whether in modern Gaelic, syllables are defined according to the pitch pattern of a word, or a word's pitch pattern stems from the number of syllables it contains. In a recent phonological analysis, Iosad (fc. 2014) claims that the syllable is the contrastive unit, and pitch patterns follow from this. Perhaps it is not even possible to make the distinction, as argued in Haugen (1949) cited in Oftedal (1956, 25), prosody and syllabicity are so inextricably entwined that it is very difficult to separate the two. Out of convenience in this analysis, whether a word is defined as Accent 1 or Accent 2 is defined according to how many syllables it would be awarded in the dialect descriptions of Borgstrøm (1940), Oftedal (1956), and Ternes (2006): words with a svarabhakti vowel are considered monosyllabic, and 'hiatus' words are considered polysyllabic.

The interaction of intonation and lexical tones

As all languages are generally considered to have intonation, it must be ascertained how intonation and lexical tones interact. Borgstrøm is the only author who specifically comments on this question in Gaelic. He notes that the sentence as a whole is usually falling. If the last syllable has a (lexical) rising tone, this is often very reduced (Borgstrøm 1940, 53). Although little research has been conducted on Gaelic tone and intonation, research on Swedish by Bruce (1977) examines just this issue. Bruce found that at the end of each Swedish intonational phrase there is typically a low boundary tone, and sometimes this is instead high tone indicating the speaker is going to continue speaking (Gussenhoven 2004, 211). Additionally, a high tone indicates the end of the focus constituent. If a sentence has broad focus, this high will occur after all lexical pitch accents and before the final low. If narrow focus on one particular element is intended, the high will occur after the focussed element's lexical accents. Ambrazaitis (2009) demonstrates that intonational tones in Swedish are more complex than previous accounts (Bruce 1977; Gussenhoven 2004) suggest. But even in different and complex intonational contexts, lexical tone differences are maintained.

Only one previous published study has specifically examined intonational tone in Scottish Gaelic, MacAulay (1979). This study is a descriptive account of some of the common phrase-final pitch contours in the author's native dialect of Bernera, Lewis. In agreement with Oftedal (1956, 36) and Dorian (1978, 37), MacAulay (1979) notes that the default final contour in any phrase is a fall. Rises are usually used to signal an interrogative which is not syntactically marked as such. For example, *Cheannaich e leabhar?* 'He bought a book?' has the exact syntactic form of declarative *Cheannaich e leabhar* 'He bought a book', but can be marked as interrogative by a final rise. This study does not mention lexical tones and does not consider their interaction with intonational tones. MacAulay's study is a descriptive account of intonation. As such he uses terms such as 'high', 'medium' and 'low' tones, which are similar to the H and L tones within Autosegmental Metrical phonology, although in MacAulay's analysis these are not meant as the phonological AM units. Although this previous description of Gaelic intonation refers to the existence of a 'medium' tone, I have conducted my analysis within the AM framework and do not use this label (Ladd 2008, 60).

While little is known about intonational tone in Gaelic, the intonation of closely related Irish is well documented (Dalton & Ní Chasaide 2003, 2005; Dalton 2007, 2008; O' Reilly, Dorn & Ní Chasaide 2010; Dorn, O' Reilly & Ní Chasaide 2011). These publications are the output of a major project based at Trinity College Dublin to document the intonation patterns of Irish dialects within the Autosegmental Metrical framework. Data are taken from a corpus of read sentences comparing several dialects of Donegal, Connaught and Kerry. Results suggest a north/south split, with Donegal (northern) patterning distinctly differently to Connaught and Kerry (southern) dialects. In Donegal the common intonation pattern in declaratives is a series of accentual rises including phrase-finally, whereas a series of accentual falls is typical in the southern dialects.

8.1.3 Tone, intonation, and language contact

As virtually no monolingual Gaelic speakers exist, it is impossible to consider the intonation model of Gaelic without making reference to possible cross-linguistic influences. Prosody appears particularly susceptible to cross-language influence (Matras 2009, 231). Several studies have quantitatively demonstrated a range of language contact influences in the intonation of bilinguals or near bilinguals. These studies generally demonstrate bidirectional influence: both languages of the bilingual are influenced by the other, and the bilingual's speech is phonetically different to comparable monolingual speakers (Queen 2001; Mennen 2004; Atterer & Lass 2004; Colantoni & Gurlekian 2004; Gut 2005; Simonet 2011; Sichel-Bazin, Buthke & Meisenburg 2012).

Elordieta & Calleja (2005) and O' Rourke (2012) describe minority language situations comparable to that of Gaelic, where almost no monolingual speakers of the minority language exist. Elordieta & Calleja (2005) compared the alignment of f0 and pitch accents in [1] the Spanish of Spanish-Basque bilinguals, [2] the same speakers' Basque, [3] Spanish monolinguals in the Basque region, and [4] Spanish monolinguals from Madrid. These authors found the bilinguals' Spanish was similar to their Basque (comparing contexts [1] and [2]). The monolinguals from the Basque region (group [3]), aligned their Spanish pitch accents in between those of the bilinguals (group [1]) and the Madrid monolinguals (group [4]). Similarly, O' Rourke (2012) compares [1] Spanish in Quechua dominant bilinguals, [2] Quechua-Spanish bilinguals and [3] Spanish monolinguals. O' Rourke finds that speakers with some knowledge of Quechua (groups [1] and [2]) behave differently to monolingual Spanish speakers (group [3]), and those with greater Quechua fluency display the most Quechua-like intonation (group [1]).

Several studies comment on or consider bidirectional influence between Irish and English. One study has compared the intonation of Irish-English bilinguals: O' Reilly, Dorn & Ní Chasaide (2010), who examine the realisation of narrow focus in Donegal Irish and Donegal English. Interestingly, they find there is little difference between Irish and English in the realisation of focus implying cross-language influence either from Irish to English, or English to Irish, or bidirectional influence. Other work considers whether phrase-final rises in Belfast, Glasgow (see below), and other northern cities could be related to Irish, and movement of Irish immigrants. For example, Cruttenden (1997, 133) discounts Irish influence because cities such as Newcastle where rises are common have little history of Irish immigration. Similarly Sullivan (2010) discounts northern Irish influence on rises in Glasgow as peaks in the two cities are differently aligned leading to systematic phonetic differences.

8.1.4 Intonation in Glaswegian English

Unlike Gaelic, no use of lexical tone is reported for English. Studies of Glaswegian English therefore report on intonation only. Glasgow is one of the cities which is included in the group termed 'Urban Northern British' by Cruttenden (1997). This group of cities are said to

typically have distinctive rising intonation patterns in declarative utterances. Included in the Urban Northern British group are Liverpool, Belfast, Glasgow, Newcastle and Birmingham (Ladd 2008, 126). The most studied of these English dialects is Belfast. All authors agree that the default intonational pattern in this dialect is a rise (Jarman & Cruttenden 1976; Lowry 1997; Grabe, Post, Nolan et al. 2000; Lowry 2002a,b; Grabe 2004; Sullivan 2010; Lowry 2011). Studies of Glaswegian English have similar findings (Mayo 1996; Mayo, Aylett & Ladd 1997; Sullivan 2010), although, interestingly, Cruttenden (2007) describes the social and phonetic reality of intonation in Glasgow as diglossic. In this study Cruttenden examines speech from a single participant in both a reading passage and interview speech. The speaker typically used falls on nuclear and non-nuclear pitch accents in the reading passage, but typically used rising pitch accents in free conversation. The implication of this study is that Glaswegian intonation is entirely different in read and spontaneous speech: in read speech it displays few of the Urban Northern British features and is much more like Standard Scottish English as described in Ladd, Schepman, White et al. (2009).

The exact nature of the phrase-final pitch accent in Glasgow has attracted most descriptive attention. Cruttenden (1997, 133) states there are three different final rise patterns which can occur in the northern British cities:

1. Rise. A rising glide on the nuclear syllable, or a jump up from the nuclear syllable to the following unaccented material.

2. Rise-plateau. A jump up from the nuclear syllable to following unaccented material. Subsequent unaccented material remains higher pitched.

3. Rise-plateau-slump. A rise or jump up from the nuclear syllable, then the pitch may decline in the last one or two unaccented syllables in the phrase.

Of these patterns, Cruttenden claims the rise is most common in Glasgow. From these descriptions though, it appears that all three may be variations of the same contour with a greater or lesser extent of unaccented material following. It is possible that in the case of the rise-plateau and the simple rise, the plateau-slump could be cut short if not enough unaccented material follows the nuclear accent.

Glasgow intonation has been described within the AM framework in Mayo (1996); Mayo, Aylett & Ladd (1997). These studies suggest a specific transcription system for Glaswegian English, GlaToBI, based on the ToBI labelling system (Beckman 1997). GlaToBI has five distinct pitch accents, two phrase accents and two boundary tones (resulting in four different phrase-final contours). These are summarised in Table 8.1, see Mayo (1996, 13-16) for more detail. The greatest innovation of this system is the inclusion of an L*H tone, instead of the standard ToBI L*+H or L+H*. The justification of this L*H is that in Glasgow the placement of the accented syllable is very variable and L*H does not identify where exactly the accented syllable will fall.

Pitch accents	Explanation	Phrase-final tones	Explanation
H*	high accented syllable	H-L%	final fall
L*	low accent	H-H%	final high
L*H	rise	L-H%	final rise
!H*	downstepped high	L-L%	final low
L*!H	low rising to a downstepped high		

Table 8.1: Pitch accents and phrase-final tones in GlaToBI from Mayo (1996).

8.1.5 Intonational trends in English

While rising intonation contours are reported as traditional dialect features in a number of English dialects in northern British cities such as Belfast, Glasgow and Newcastle, these rises are very different from the kind of rise known as 'High Rising Terminal' (HRT), 'uptalk', or 'Australian Question Intonation' (AQI). HRT contours are cited as increasingly common in dialects of English across the world (Britain 1992; Warren 2005), and are therefore reviewed here as potentially relevant to the English of young Gaelic speakers. Ladd (2008, 125) describes these rises as tunes which 'begin high on the accented syllable and keep rising to the end of the phrase.' Phonetically, Guy & Vonwiller (1989) define HRT as a rise where the end pitch point is 40% higher than the point where the rise began. This is very different from the rise-plateau and rise-plateau-slump patterns reported for Glasgow and Belfast as noted by Fletcher & Harrington (2001); Fletcher, Storling, Mushin et al. (2002), and Ladd (2008, 123).

The term 'High Rising Terminal' was the term for this contour employed by Australian studies examining the phenomenon (Allan 1984; Guy & Vonwiller 1984; Horvarth 1985; Guy, Horvarth, Vonwiller et al. 1986). 'Australian Question Intonation' refers to the similarity of this contour to a typical interrogative rise. 'Uptalk' has mainly been employed by North American studies, since the term was used in a newspaper article, Gorman (1993), to refer to distinctive rising contours found in New York University students. All of these terms, however, relate to the same phenomenon.

Many Australasian studies report HRT as a recent and increasingly common phenomenon. Guy, Horvarth, Vonwiller et al. (1986) is a study of data from 130 speakers. They find more HRT in younger, female, and working class speakers. Comparison to real-time data indicates there was little or no HRT in the 1960s and the authors conclude HRT is more and more prevalent. Britain (1992) was designed to replicate the Guy, Horvarth, Vonwiller et al. (1986) study on data from speakers of different ages and ethnicities from Poirirua, New Zealand. Britain (1992) also found increasing rates of HRT in younger and female speakers, and also more HRT in speakers of Māori ethnicity compared to Pakeha (white European) ethnicity. Both Warren & Britain (2000) and Warren (2005) note that HRT is now a very common and stereotyped feature of New Zealand English. HRT is reported in a wide variety of other locations for example the United States (Ching 1982; Eckert & McConnell-Ginet

2003), Canada (Shokeir 2008), the Falkland Islands (Sudbury 2001), and the United Kingdom (Cruttenden 1995; Bradford 1997; Rait 1997; Shobbrock & House 2003). Many studies report on this feature as a very salient and noticeable aspect to prosody (Guy & Vonwiller 1984; Warren 2005). This may explain the significant number of (usually negative) articles on the phenomenon in the international press, for example Gorman (1993); Davis (2002); Horowitz (2006); Marsh (2006); Quenqua (2012).

The phonetic realisation of HRT contours is subject to some variation. Fletcher & Harrington (2001) note that HRT contours in their Australian English data generally begin on a low tone L* compared to question intonation rises, which generally begin on a high tone H*. Warren (2005) studied HRT contours in New Zealand English comparing two generations of speakers. His results indicate that younger speakers tend to align the rise later, sometimes after the accented syllable entirely, and claims that New Zealand English HRT is undergoing change toward later rises.

8.1.6 Tone, intonation, and identity in sociophonetic studies

One of the aims of this thesis is the investigate how identity affiliations are reflected in language, and how linguistic variation is used in identity construction. Several recent studies have demonstrated links between prosodic variation and identity, which are reviewed here. Stanford (2007, 2008) investigates tonal variation among the Sui, a minority people of Guizhou, China. Sui women traditionally move to a neighbouring village for marriage. Stanford found the Sui women retained tonal features of their own clan dialect rather than accommodating to the clan of their marriage, and suggests this is the result of maintaining strong clan identity even after some time with their new clan. Zhang (2005) also investigates variation in tone, but in Beijing Chinese. Zhang demonstrates that the realisation of the Mandarin neutral tone as a full tone is one resource drawn upon by Beijing 'Yuppies' in their pursuit of a cosmopolitan and professional persona. Podesva (2011) takes a different approach, analysing intonation contours across different speaking contexts among three gay professionals. This study found that the participants used different contours to different stylistic ends depending on whether they were speaking in professional, informal, or peer-group contexts. All of these studies indicate that tone and intonation are used by speakers in the construction of identity, and have implications for the analysis of variation in Gaelic tone and intonation presented here.

8.1.7 Summary and research predictions

Lexical word accents are an unusual typological feature and, comparing the historical trajectories of several languages and language groups, Salmons (1992) suggests that over time word accent systems are likely to change to intonation systems. The Gaelic tonal contrast bears minimal functional load, and English makes no use of lexical tone. Considering these factors, it is likely that the word accent system in Gaelic may be liable to change due to Gaelic's

context of endangerment and revitalisation coupled with the structure of community-dominant English. It is therefore likely that the use of tone will be less distinct or non-existent in younger speakers' Gaelic. Previous research on situations of language endangerment where virtually no monolingual speakers of the minority language exist also indicate that we might expect some direct influence from English on Gaelic speakers' intonation (Elordieta & Calleja 2005; O' Reilly, Dorn & Ní Chasaide 2010; O' Rourke 2012). For the Glaswegian young people, influence is likely to come from Glaswegian English. Lewis English is described as heavily influenced by the segmental aspects of Gaelic and no mention is made of suprasegmental aspects (Shuken 1984). It is therefore difficult to predict in what way such a dialect of English could in turn influence Gaelic. Speakers both in Glasgow and in Lewis may, however, also be influenced by patterns of intonation which are not local to their area, such as High Rising Terminal. The ethnographic portion of this thesis revealed locally relevant social distinctions among the young people such as community of practice affiliation in Glasgow and the distinction in Lewis between people from the country and people from the town. Recent studies such as Zhang (2005); Stanford (2007, 2008); Podesva (2011) have shown that speakers use variation in tone and intonation in identity construction. This is also likely to be the case in the Gaelic data presented here.

8.2 Analysis 1: The intonation model of Scottish Gaelic

Analysis 1 aims to answer the first research question of this chapter:

> Do speakers use the intonation model described in the previous literature?

Section 8.2.1 describes the methods used to extract Intonation Phrases from the interviews, code them, conduct an initial descriptive prosodic analysis, and assess whether speakers used the described system. Section 8.2.2 details the results of Analysis 1, and provides an initial AM description for Scottish Gaelic. These results are discussed in Section 8.2.3. Section 8.2.4 makes some interim conclusions and describes how these results informed Analysis 2.

8.2.1 Methods for Analysis 1

Defining Intonation Phrases

As this study relies on the Intonation Phrase (IP) as representing a large prosodic unit within which analysis can take place, it was crucial to find consistent criteria by which long chunks of speech could be divided into IPs. Pierrehumbert (1980, 19) states that IP boundaries can be found where a speaker makes a non-hesitation pause, or at a point where they could pause without disrupting the flow of discourse. However, as pointed out by Cruttenden (1997, 29) and Nolan (2008, 440), in spontaneous speech there may be little or no pause between IPs. Instead, these authors suggest looking at a combination of prosodic features which taken together may be indicative of an IP boundary. Such prosodic features can include lengthening

of the final syllable, a large pitch excursion (up or down), a change in loudness (usually quieter at the end of an IP), and a general slowing down of speech rate (Cruttenden 1997, 29-37).

I analysed only IPs with clear boundaries according to these criteria. Additionally, only IPs containing two or more pitch accents were analysed. In the AM framework, the nuclear accent is the last pitch accent in the IP, but in the British School of intonational analysis, the nuclear accent is the most prominent pitch accent and not necessarily the final accent (Ladd 2008, 81). In this study I adopted a compromise and only examined IPs where the final pitch accent was also the most prominent. To define 'most prominent accent', I looked for the accent which typically involved the greatest pitch excursion and greatest intensity excursion.

Extracting Intonation Phrases

According to the criteria for defining IPs outlined above, suitable IPs were identified in ELAN (Sloetjes & Wittenburg 2008), transcribed orthographically and then coded for speaker code, and token code. Approximately thirty IPs per speaker were coded. The data were then converted to Praat TextGrids (Boersma & Weenik 2012) for prosodic labelling. Using a Praat script, a separate TextGrid was made for each IP.

Both of the analyses in this Chapter use data from the 39 interview participants, summarised on the left of Table 4.2. In this chapter 1230 IPs in total were analysed. Each IP contained both a pre-nuclear pitch accent (the accent preceding the nuclear accent), and a nuclear accent, each of which were analysed. I therefore analysed a total of 2460 pitch accents. The total number of pitch accents analysed for each speaker group is in Table 8.2.

Speaker group	pre-nuclear accents	nuclear accents	Total
Glasgow	664	664	1328
Lewis young	381	381	762
Lewis old	185	185	370
Total	1230	1230	2460

Table 8.2: Number of tokens analysed in pre-nuclear and nuclear position according to speaker group.

Discourse function

A primary function of intonation is to convey pragmatic or discourse level meaning, as discussed in Section 8.1.1 (Ladd 2008, 6). In order to compare equivalent prosodic structures when conducting this intonational analysis on interview speech, a method was needed to control for different pragmatic functions. A range of coding frameworks were considered including Conversation Analysis (CA) (Sacks, Schegloff & Jefferson 1974; Schegloff, Jefferson & Sacks 1977), narrative analysis (Labov & Waletzky 1967; Smith 2006), and systemic

functional grammar (Eggins & Slade 1997). CA was not used as it is designed around turn-taking. In these interview data there was perhaps not as much turn-taking as could be expected in free conversation. Eggins and Slade's (1997) framework was also not chosen as it seeks to code multi-party turn-taking in spontaneous speech, and was not suited to interview data. Labov and Waletzky's (1967) framework appears immediately amenable, as it was designed to explore similar interview data to my own. However, this framework was designed to analyse narrative structures, and does not provide a holistic framework for all types of discourse. The coding framework chosen here is an adapted version of the Discourse Context Analysis (DCA) outlined in Gregersen, Nielsen & Thøgersen (2009). DCA was developed by researchers at the LANCHART intstitute, Copenhagen, as a way of analysing the discourse structure of a wide range of sociolinguistic data from a real-time corpus. The DCA framework aims to classify different kinds of speech data in sociolinguistic interviews. There are six components within the framework:

1. Type of speech event
2. Activity type
3. Interaction structure
4. Macro speech act
5. Speech genre
6. Enunciation

The first two of these were held constant in my data as they relate to the structure of the interview and number of participants, and whether an interview, elicitation task, or reading task is taking place. The third component looks at the interaction structure and characterises different kinds of speech which depart from the typical interviewer asking questions and participant answering. I controlled for interaction structure within my analysis by examining stretches of the interview which conformed to the default structure of interview and participant answering.

The Macro speech act component draws on the theory of Michael Halliday (e.g. Halliday (1994)) which conceptualises speech as a series of exchanges. Within the DCA framework, five kinds of exchanges are recognised: Exchange of [1] Knowledge, [2] Attitudes, [3] Emotion, [4] Information about the physical setting of the interview, and [5] Exchange of fiction. Gregersen, Nielsen & Thøgersen (2009) state that the exchange of knowledge is by far the most common macro speech act occurring in their sociolinguistic interview. Exchange of knowledge covers fact giving about the participant's life, experiences, and activities. In my data the exchange of attitudes was also fairly common. This is when the participants gave opinions on certain events, situations or individuals. However I chose to narrow the focus of my investigation and concentrated on the exchange of knowledge as this speech act appeared the most commonly occurring in my data, similar to Gregersen, Nielsen & Thøgersen (2009).

'Speech genre' captures the way in which each macro speech act is realised. According to the DCA framework there are eight subcategories of speech genre: [1] Narratives, [2] Specific accounts, [3] General accounts, [4] Soap box, [5] Gossip, [6] Confidences, [7] Reflections, and [8] Jokes. I chose to analyse examples of general accounts and narratives. Further details of the other speech genres can be found in Gregersen, Nielsen & Thøgersen (2009). Also excluded from my analysis were lists and interrogatives.

Narratives are stories describing unique events and are usually characterised by several stages, detailed in, for example, Eggins & Slade (1997, 244). Specific and general accounts are related to narratives but lack the expected structure of narratives. Specific accounts refer to events that have happened or will happen on one occasion, whereas general accounts are used by participants to describe the way the world works and how things happen as routine (Gregersen, Nielsen & Thøgersen 2009).

The original DCA labels large sections of discourse as one particular speech genre. This was not suitable for my analysis, which required a more detailed coding of every Intonation Phrase. To exemplify the differences between the original DCA and my adapted version, the text in Table 8.3 illustrates an example from my data which would be coded as 'narrative' in the original DCA. My analysis considers individual IPs and is therefore coded as follows:

- IPs 1 and 2 are Narrative as they refer to specific events.
- IP3 is General as it refers to a habitual routine by the speaker's father: habitually he does strange things.
- IPs 4, 5 and 7 are Narrative.
- IPs 6 and 9 refer to opinions expressed by the participant and were not included.
- IP10 is a Narrative.
- IP11 expresses an attitude and was not coded.
- IPs 12 and 15 are IP fragments with less than two pitch accents and were not coded.
- IPs 13, 14 and 16 express attitudes and were not coded.

IP number	Dialogue and translation
1	oh eh 's e turkey gu bhith againn *We're going to have turkey [for Christmas]*
2	fhuair sinn fear err fhuair an Dad agam bliadhna sa chaidh *and we got err last year my Dad got*
3	tha an dad agam an còmhnaidh a' dèanamh rudeigin neònach *my Dad is always doing something weird*
4	is thug e fear- thug e fear a bha beò fhathast *and he got a live one*
5	agus bha e as am barn againn *and it was in our barn*
6	agus bha sin dìr- bha e uabhasach scary coimhead air *and it was really scary to look at*
7	sgàth bha e dìreach a' coimhead ort le na sùilean *because it just looked at you with its eyes*
9	is bha e dìreach gu math feagalach *and it was just really scary*
10	ach am bliadhna seo tha mi a' smaointinn gu bheil sinn dìreach ceannach fear bho am bùth *but this year I think we're going to just buy one from the shop*
11	so [LAUGH] chan eil sinn ag iarraidh an Dad agam a' toirt fear air ais a-rithist *so [LAUGH] we don't want Dad to bring one back again*
12	so LAUGH bha sinn dìreach mar ahhhh *so [LAUGH] we were just like ahhhh*
13	is th- tha iad gu math chan eil iad a' coimhead cho èibhinn sa tha iad air an tele *and they're really- they don't look as funny as they do on the telly*
14	tha iad a' coimhead gu math feagalach *they look really scary*
15	so LAUGH chan eil iad a' *so [LAUGH] they don't*
16	tha iad uabhasach scary a' coimhead *they're really scary looking*

Table 8.3: 'Turkey for Christmas'. (Speaker lf06 14:30-15:23.)

Examples comparing narrative and general account IPs in isolation are in Table 8.4.

Narrative	**General account**
Cha do bhris mi an cas bha e mar an ligament. *I didn't break the foot it was like the ligament.* speaker gf11	Bha minibus agus van eadar an dhà bhaile *There was a minibus and a van for the two villages* speaker lf07
Tha sinn a' dol gu Inbhir Nis airson aon latha *We went to Inverness for one day.* speaker lm01	Bidh mi a' faighinn pàipearan. *I get the newspapers.* speaker lm12
Bhàsaich dà phiuthar dhomhsa. *My two sisters died.* speaker lf08	Ach chan eil mi a' coimhead air an news. *But I don't watch the news.* speaker gm06

Table 8.4: Some examples of narratives and general accounts from the dataset.

Descriptive prosodic labelling

Each IP was listened to several times and the intonational prominences noted. The nuclear and pre-nuclear pitch accents were then labelled. I labelled whether the accent was a pre-nuclear or nuclear accent, and whether the accented word was monosyllabic (Accent 1) or polysyllabic (Accent 2) according to previous descriptions of Gaelic such as Ternes (2006). The duration of the pre-nuclear and nuclear-accented vowels was also labelled. Initially, I gave each pitch accent a descriptive label in order to provide a initial description without imposing a phonological analysis. These labels were provided using auditory analysis assisted with reference to the f0 trace. The descriptive labels aimed to assess whether speakers were using the word accent system traditionally described for Gaelic. They therefore had to distinguish between low pitch on an accented syllable, a rise, a fall, a rise-fall, and high pitch. The labelling also reflects the possibility that speakers might produce a fall-rise, even though this is not traditional for Gaelic. I chose to use labels inspired by AM, but without the pitch accent symbol * indicating which part of the pitch contour was the most important accented component. This allowed some initial description but without the phonological analysis of where the * should fall. The descriptive prosodic labels are in Table 8.5. The low (L) and rise (LH) contours are traditional for Accent 1 words, and the high (H), fall (HL), and rise-fall (LHL) labels are traditional for Accent 2 words. The fall-rise (HLH) contour does not feature in traditional descriptions of Gaelic.

Contour description	Descriptive label
low	L
rise	LH
high	H
fall	HL
rise-fall	LHL
fall-rise	HLH

Table 8.5: Descriptive prosodic labels and descriptions of the contours they represent.

Signal Detection Theory analysis

A method was needed to assess whether speakers were using the word accent system described in the literature. One potential method was to match up the descriptive labels with whether the accented word was Accent 1 or Accent 2, and see whether speakers produced contours consistent with the traditional dialect descriptions of Gaelic. For example, a rise on an Accent 1 word is consistent with previous descriptions, but a fall on an Accent 1 word is inconsistent. Speakers could then be given a score on how consistent or inconsistent they are. I will refer to this as a 'consistency rating'. However, this method does not take into account whether speakers are using the word accent system, or producing consistent accents by chance. For example, the data revealed that many young Glaswegians produced accentual rises almost 100% of the time. The consistency rating method does not distinguish whether these rises are produced as part of a word accent system, or speakers just produce rises across the board and sometimes these are consistent with the word accent system as some words happen to be Accent 1.

The method used for solving this issue is Signal Detection Theory (SDT) analysis. Signal Detection Theory is commonly used in psychology to determine how people make decisions in uncertain contexts. A common experimental design is where participants have to decide whether a stimulus is present or absent in a noisy environment. There are four possible outcomes in this scenario referred to with different terminology described below:

1. Stimulus **is** present, participant says it **is** present = 'hit'
2. Stimulus **is not** present, participant says it **is** present = 'false alarm'
3. Stimulus **is** present, participant says it **is not** present = 'miss'
4. Stimulus **is not** present, participant says it **is not** present 'correct rejection'

In order to assess how good participants are at discerning whether the stimulus was present or not, their hit rate is compared to their false alarm rate to give them a score known as 'd prime', or d'. This score is calculated as:

$$d' = z(H) - z(F)$$

H is the hit rate calculated as the number of hits out of the possible number of hits (where the participant 'hit' or 'missed'), and F is the false alarm rate calculated as the number of false alarms out of the possible number of false alarms (where the participant 'falsely alarmed' or 'correctly rejected'). A high d' value indicates the participant had a very good ability to discriminate the stimuli, and a low d' indicates they found the task very difficult.

Applied to the current analysis, Signal Detection Theory allows me to give participants a score about how consistently they used the word accent system taking into account that some of the time they were likely to use a traditional pitch contour just by chance. In this case, the 'hit' rate is when the participant used a contour traditional to Gaelic, for example, using a low or rise for an Accent 1 word, and the 'false alarm' rate is when they used for example a low or rise on an Accent 2 word. The total number of pitch accents falling on Accent 1 and Accent 2 words and analysed in this way is presented in Table 8.6.

Speaker group	**pre-nuclear accents**		**Nuclear accents**		**Total**
	Accent 1	Accent 2	Accent 1	Accent 2	
Glasgow	303	361	234	430	1328
Lewis young	186	195	163	218	762
Lewis old	81	104	64	121	370
Total	570	660	461	769	2460

Table 8.6: Number of tokens analysed in pre-nuclear and nuclear position for Accent 1 words and Accent 2 words according to speaker group.

Statistics for Analysis 1

Statistical analysis was conducted on the Signal Detection analysis results described above. As there was only one d' value per speaker, it was impossible to construct mixed effects models with speaker as random effect. A fixed effects regression model was therefore constructed with the d' values of each speaker as the dependent variable. Independent variables were: speaker group (Lewis old, Lewis young, Glasgow young), gender, and an interaction of speaker group and gender. Lewis old speakers were set as the baseline, and Lewis younger speakers and Glasgow speakers coded as dummy variables. Female speakers were the gender baseline.

8.2.2 Results of Analysis 1: The intonation model of Scottish Gaelic

The contours for the different groups of speakers used for words with different word accents are presented in Figure 8.2. The figure clearly shows that the older Lewis speakers make a large distinction between Accent 1 and Accent 2 words. For the other two groups of speakers there is little difference between Accent 1 and Accent 2.

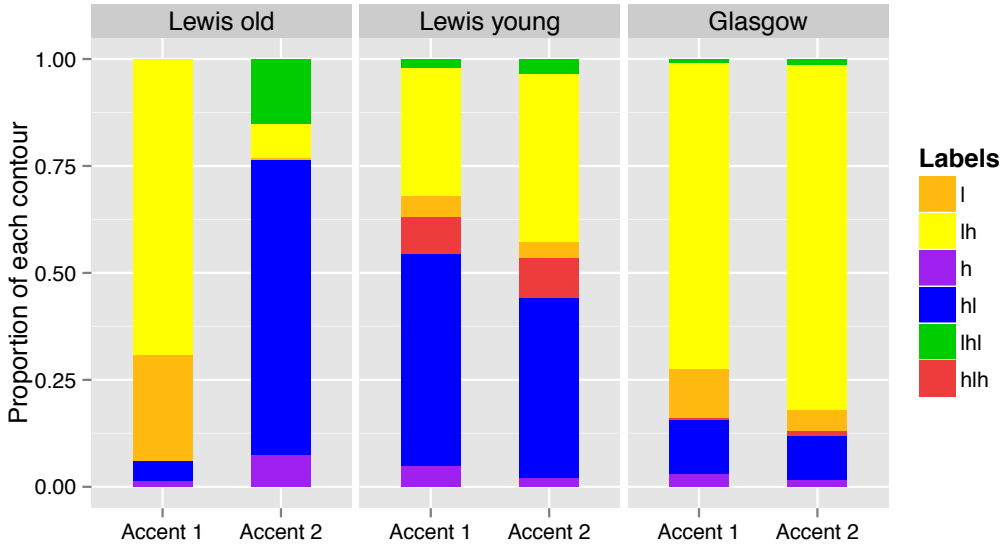

Figure 8.2: Descriptive prosodic labels for the different speaker groups for Accent 1 words and Accent 2 words. n = 2460.

The results of the Signal Detection Theory analysis are displayed in Figure 8.3. Again there is a very clear split between the older Lewis speakers, and the younger speakers in Lewis and Glasgow. Large values in this analysis mean the speakers have very separate Accent 1 and Accent 2 productions, and a value of zero would indicate no distinction between Accent 1 and Accent 2.

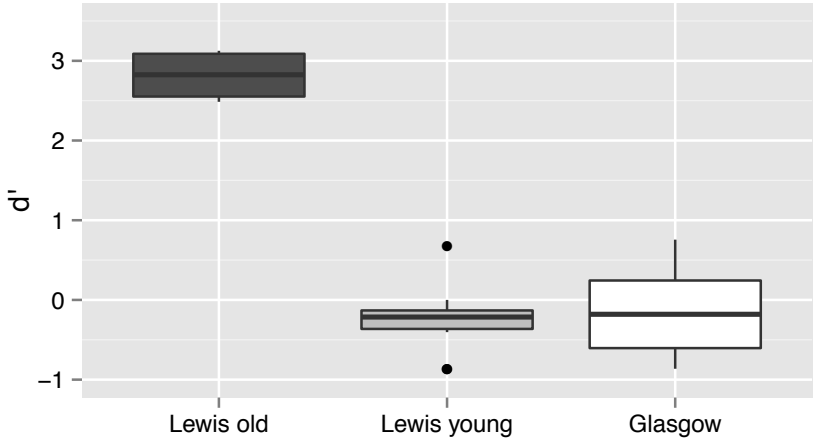

Figure 8.3: d' values for the different speaker groups. n = 36.

The regression model confirmed that Lewis older speakers were behaving very differently to both Lewis younger speakers and Glasgow young speakers. Three speakers had to be excluded from the analysis: one drawback of the d' analysis is that if a speaker produces 'hits' or 'false alarms' 100% of the time, the equation produces infinite values. Two of the older Lewis speakers produced 'hits' (appropriate word accent contours) 100% of the time, and one

of the Glasgow young females produced rises in every single contour, leading to a 100% false alarm rate. These three speakers were not included in the regression analysis. The final model is in Table 8.7.

	β	SE β	t	p
intercept	2.82	0.22	12.92	$<.001$
Lewis young	-3.06	0.25	-12.15	$<.001$
Glasgow	-2.98	0.24	-12.51	$<.001$

Table 8.7: Final regression results comparing d' values among the different speaker groups. $F(2,33) = 85.02, p<.001$. Adjusted R^2 = 0.83. n = 36.

While there were some individual differences among speakers in their d' values, none of the values from the young people were close to the older speakers' values. The results from individuals are displayed in Figure 8.4. Speaker gf03's value is infinite as she produced a 100% false alarm rate, and speakers lf08 and lm12's values are infinite as they produced a 100% hit rate.

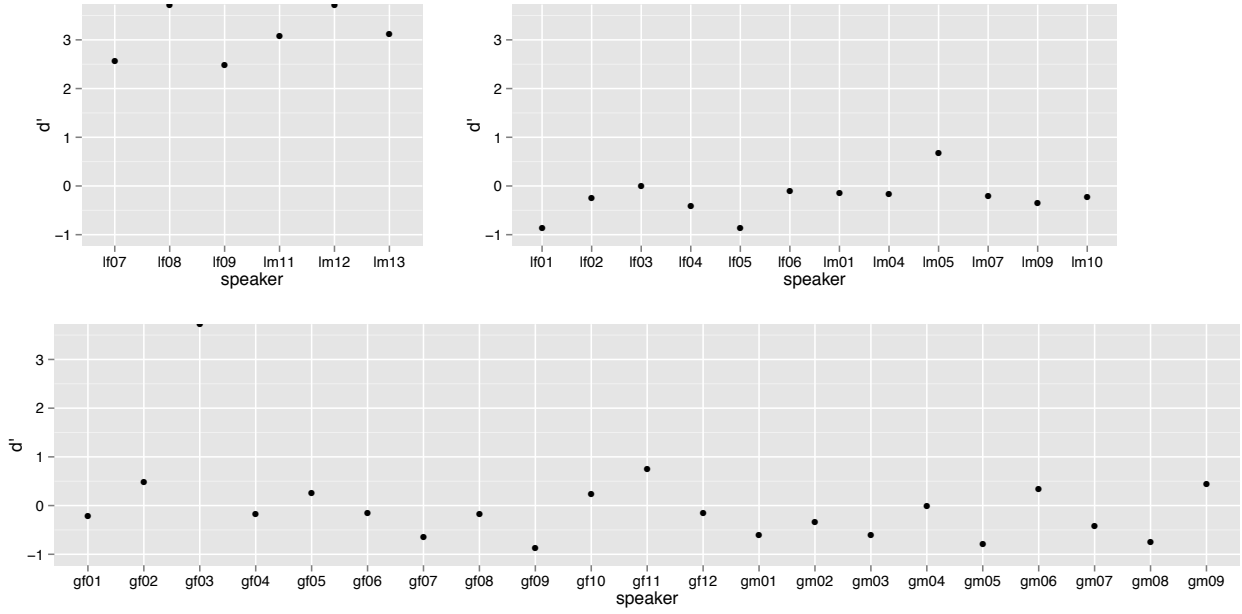

Figure 8.4: Individual d' values. Higher values indicate more separate productions of Accent 1 and Accent 2 words. Top left panel: old speakers in Lewis; top right: young people in Lewis; bottom panel: Glasgow speakers. n = 39.

The box plots in Figure 8.3 indicate that the median d' values for the younger speakers are below zero. In order to test whether they were significantly different from zero, I conducted one-sample t-tests on the data from the Glasgow young people and separately on the data from the Lewis young people. A significant result (d' values below zero), would indicate they were making a word accent distinction, but in the wrong direction. A non-significant result indicates d' scores are not significantly different from zero and young speakers are not

making a word accent distinction at all. Both tests returned non-significant results indicating the latter case: young speakers produce no prosodic differences according to the accent of a word.

AM description of Gaelic word accents

No study has previously described Gaelic tone and intonation within the AM framework. This section provides an initial phonological analysis, based on the speech of the older speakers. It also discusses when older speakers do not use accents within the described system and offers some explanations for why this might occur. The descriptions of the contours found on each pitch accent, along with knowledge of the word accent system informed the decisions made about each prosodic label. These labels are tabulated in Table 8.8 with justification for the non-standard labels.

Accent	Description	Phonological label	Justification
1	low	L*	
	rise	L*+1	Low tone with subsequent rise This is typical of Accent 1, hence '+1'
2	high	H*	
	fall	H*+2	High tone with subsequent fall in pitch Typical of Accent 2, hence '+2'
	rise-fall	L+H*+2	The presence of an accented high tone, H*, typifies Accent 2. This is the same as the fall with an additional L preceding.

Table 8.8: Suggested phonological labels for the Gaelic intonation model

AM analyses typically include a boundary tone at the final boundary of every IP. Previous descriptions of Gaelic report low pitch at the end of every phrase (Oftedal 1956; Dorian 1978; MacAulay 1979). This analysis therefore assumes a final boundary L which was not labelled. Analyses of 'downstep' have been central in AM discussions since the publication of the seminal work in this area (Pierrehumbert 1980). Downstep refers to an H*+L contour which is realised at significantly lower pitch than the preceding H*+L. Deciding what constitutes a downstepped H*+L and what does not requires some experience and detailed language-specific knowledge, as it is a fine-grained phenomenon. As this is the first AM analysis of Gaelic I have chosen not to look at downstep within these data. A figure showing the suggested AM labels and stylised f0 contours they represent is in Figure 8.5.

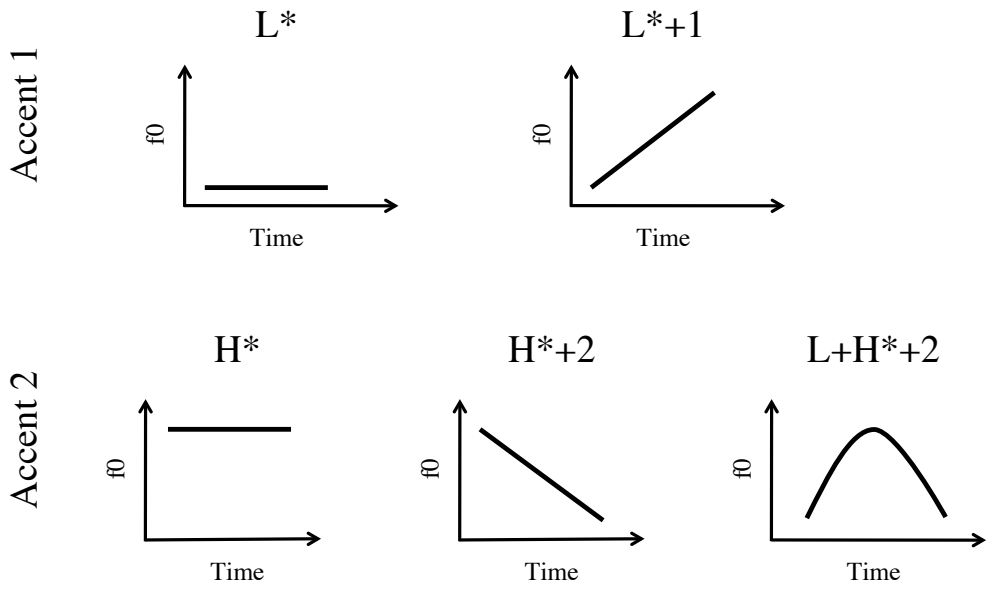

Figure 8.5: AM labels proposed here for Gaelic with stylised f0 contours showing what they represent.

The six older speakers in this dataset employed the system described above the majority of the time, as shown in the Signal Detection Theory analysis. Some examples of the different contour patterns occurring in the data are in Figure 8.6 and 8.7. In each case the accented vowel is highlighted, but in many cases in these data pitch movement was not necessarily aligned with the accented vowel: instead it often occurred after the accented vowel similar to the Greek cases described in Arvaniti, Ladd & Mennen (2000).

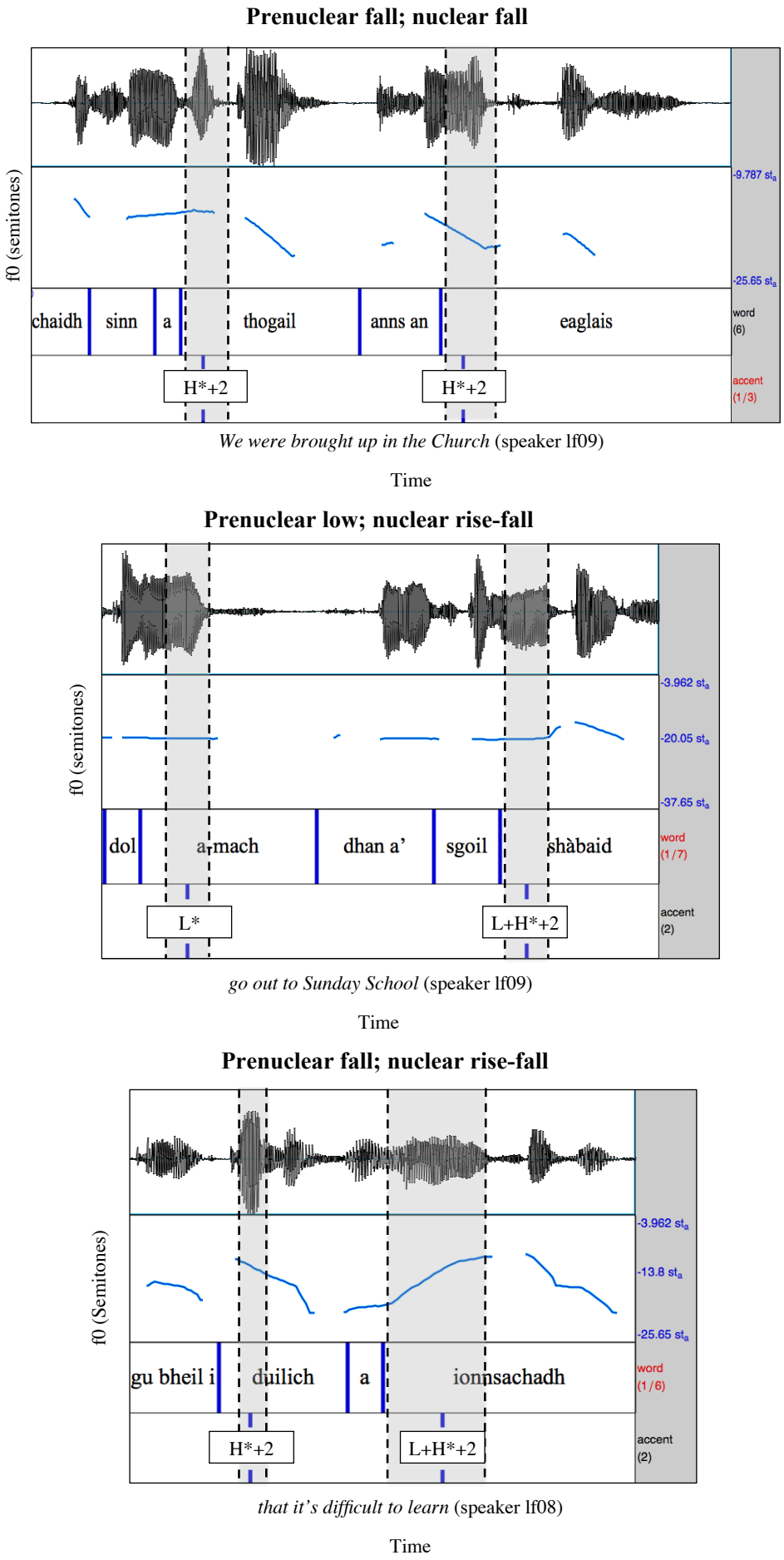

Figure 8.6: Example pitch contours from the older speakers.

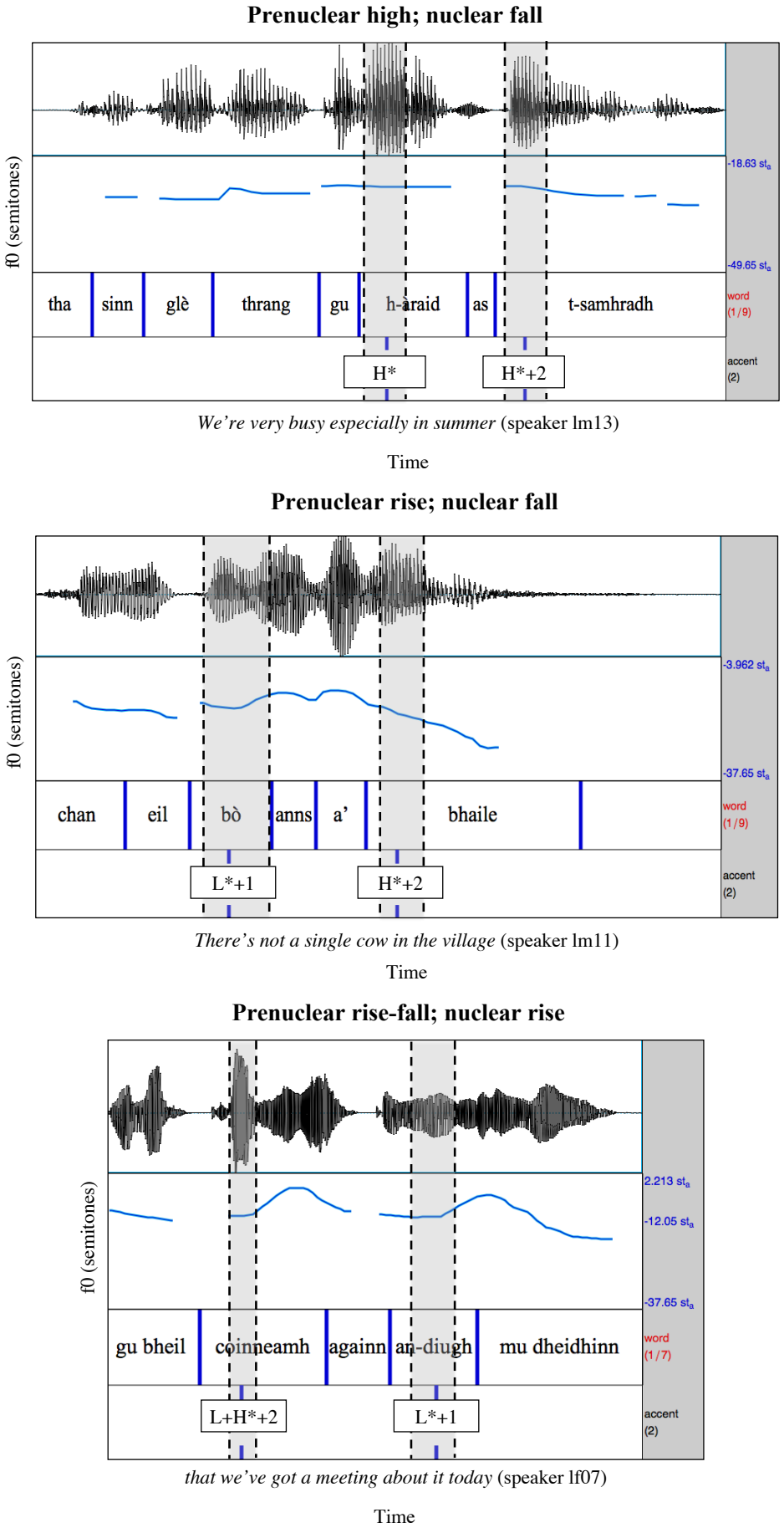

Figure 8.7: Example pitch contours from the older speakers.

The exact contours chosen by speakers for each word accent is in Figure 8.8. Out of 370 pitch accents only 25 were not what would be expected within the Gaelic word accent system described in the literature. This included occasional loan words from English which were almost without exception integrated into the Gaelic intonation model. The most common way in which speakers differed from the previous descriptions of the system was for an Accent 2 word to be produced with a rise like an Accent 1 word (17/25 examples). pre-nuclear accents were more susceptible to behaving differently from the described system than nuclear accents (16/25 examples). The proportions these deviating tokens represent out of the whole dataset are very small, and are tabulated in Table 8.9.

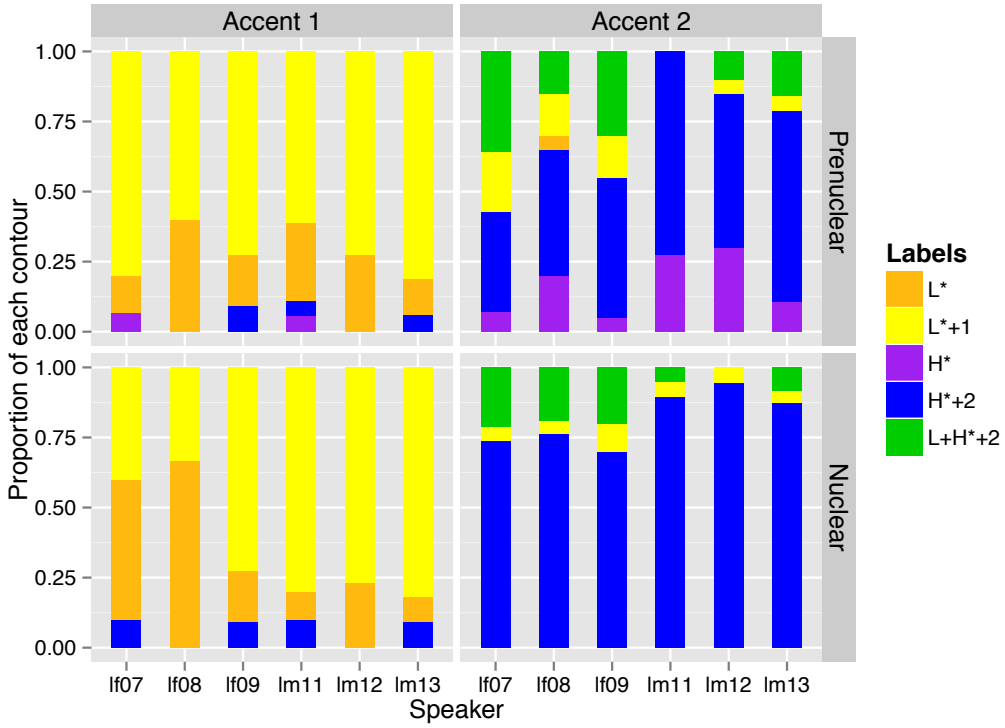

Figure 8.8: Contours produced by the older Lewis speakers according to word accent and pre-nuclear/nuclear accent. n = 370.

	pre-nuclear	**nuclear**	**Proportion of total**
Accent 1 word produced like Accent 2	0.03	0.03	0.02
Accent 2 word produced like Accent 1	0.06	0.03	0.05
Proportion of total	0.09	0.05	0.07

Table 8.9: Proportions of tokens which differed from the traditionally described Gaelic word accent system.

8.2.3 Discussion of Analysis 1

This analysis has shown that older speakers in Lewis do use the word accent system as described in the literature, e.g. Ternes (2006). Younger speakers in Glasgow and in Lewis however, do not. This is clear from the descriptive labelling shown in Figure 8.2, and very clear from the statistical analysis of the d' scores. The distribution of the older speakers' d' values is entirely separate from the range of values among the young people. Although the median values for d' among the young speakers were slightly below zero, they were not significantly different from zero indicating young speakers make no word accent distinction in any way. Using the data from the older speakers, I have provided an initial AM description of the Gaelic word accents, and presented the occasions when they do not produce accents in line with traditional descriptions. The number of these occurrences was, however, very small.

8.2.4 Conclusions from Analysis 1

The results from Analysis 1 indicate a large difference in the structure of Gaelic as spoken by older speakers in traditional communities and young people in immersion education. For older speakers, Gaelic is a word accent language, but for young people, Gaelic has no word accents and is therefore an intonation language. The d' analysis indicates that when younger speakers use the contour appropriate for the Accent of a word, this is by chance. The prosodic activities of the younger speakers are discussed in Analysis 2 (Section 8.3).

8.3 Analysis 2: Variation in intonation production

Analysis 2 aims to answer the final three research questions of this chapter:

1. If speakers do not use the intonation model described in the literature, what do they use?
2. Are there differences between speakers in Lewis and speakers in Glasgow?
3. Are local identity affiliations reflected in tone and intonation productions?

Analysis 1 indicated that the younger speakers do not use the word accents traditional for Gaelic. This section examines the prosody of the younger speakers within an analysis framework designed for intonation languages. Results indicate that younger speakers in Glasgow typically use intonation contours similar to those reported for Glaswegian English. Younger speakers in Lewis use differing contours to the Glaswegians, indicating that intonation is one respect in which Glasgow Gaelic is divergent from Gaelic varieties in the heartland areas.

8.3.1 Methods for Analysis 2

The data used in this analysis were the same Intonation Phrases used in Analysis 1: 664 IPs from the Glaswegians (1328 pitch accents in total), and 381 IPs from the Lewis young speakers (762 pitch accents). The data were additionally coded for discourse function, and linguistic context effects, as these are known to effect intonation, and were then prosodically labelled using the AM transcription system IViE (Grabe, Nolan & Farrar 1998; Grabe, Post & Nolan 2001). This coding and labelling is described in the following three sections.

Linguistic context

As well as varying according to different pragmatic functions, intonation can also vary substantially due to the syllabic makeup of the accented word, the makeup of previous and following accented words, and the nature of unaccented material. This section describes which effects are relevant and how these were accounted for in the analysis. Nuclear accents are susceptible to 'truncation' and/or 'compression'. These terms refer to strategies adopted by speakers when there is not enough material after the nuclear accent to fully realise a contour. Speakers can adopt two strategies: either end their contour abruptly and not produce a full rise or fall, 'truncation' (Erikson & Alstermark 1972); or they can compress the full contour into a short space of time, 'compression' (Bannert & Bredvad 1975). As Ladd (2008, 134) notes, compression and truncation are not phonological typological differences between languages and/or varieties, but merely the surface phonetic differences in the end of a contour. As shown by Grabe, Post, Nolan et al. (2000), different varieties of the same language can adopt either truncation or compression. If truncation takes place, contours which are phonologically the same but happen to be produced on different words may be mis-identified as different contours. In order to allow for this possibility I labelled the number of syllables following the nuclear accent.

Pitch accents are also susceptible to the effects of 'tonal crowding' (e.g. Arvaniti, Ladd & Mennen (2006)). This refers to a process by which pitch accents occurring in close succession are affected by the proximity of other pitch accents. In order to account for this possibility, I labelled the number of syllables between each pitch accent.

Prosodic labelling

The phonological labelling system used for the younger speakers was an adapted version of IViE (Grabe, Nolan & Farrar 1998; Grabe, Post & Nolan 2001). IViE assumes left-headed pitch accents H* or L*, with movement described as H*+L for a fall and L*+H for a rise. A fall-rise is denoted as H*+LH and a rise-fall as L*+HL. IViE recognises three different boundary tones: H% (high), L% (low), and 0% (level). I have also included a 0L% boundary tone to represent the plateau-slump boundary pattern which has been noted for Glaswegian English e.g. Cruttenden (1997, 133). Table 8.10 compares these labels to contour descriptions and the labelling system previously proposed for Glasgow from Mayo (1996).

Postion	Contour description	Phonological label	Mayo (1996)
Pre-nuclear	High	H*	H*
	Fall	H*+L	-
	Fall-rise	H*+LH	-
	Low	L*	L*
	Rise	L*+H	L*H
	Rise-fall	L*+HL	-
Nuclear	High	H* 0%	H* H-H%
	Fall	H*+L 0%	H* H-L%
	Fall-rise	H*+L H%	H* L-H%
	Fall-rise-plateau	H*+LH 0%	-
	Low	L* 0%	L* L-L%
	Rise	L*+H 0%	L*H H-H%
	Rise-plateau-slump	L*+H 0L%	L*H H-L%
	High Rising Terminal	L*+H H%	-
	Rise-fall	L*+H L%	L*H H-L%
	Rise-fall-plateau	L*+H 0%	-

Table 8.10: Labelling system used for the young people compared to a previous intonational study of Glasgow English, Mayo (1996).

The greatest innovation of the GlaToBI system compared to standard ToBI labelling is the use of L*H meaning movement from low to high (i.e. a rise), but not making explicit whether this is rise from accented to unaccented material (L*+H), or a rise from unaccented to accented material (L+H*). IViE on the other hand, always assumes left-headed pitch accents so rises are always L*+H. Ladd (2008, 145) notes that in Glasgow:

> the alignment and scaling of the L* and H tones appear to be quite variable. It is not clear whether all this variation is phonologically conditioned (e.g. 'compression' conditioned by the number of available syllables), or whether any of it is meaningful.

This was the reasoning behind the L*H category in the Mayo, Aylett & Ladd (1997) study. As I have chosen to use IViE I have retained their labelling convention of L*+H, though whether the exact transcription in Glasgow Gaelic should be L*+H, L+H* or L*H could provide material for future research.

This labelling system recognises three types of phrase-final rise: a simple rise, a rise-plateau-slump, and a High Rising Terminal (HRT). The first two of these have been described as common in Glasgow (Mayo 1996; Mayo, Aylett & Ladd 1997; Cruttenden 1997, 2007; Ladd 2008), and the third as becoming more common in varieties of English across the world Britain (1992); Warren (2005). The differences between these phrase-final rises is illustrated in stylised pitch contours in Figure 8.9.

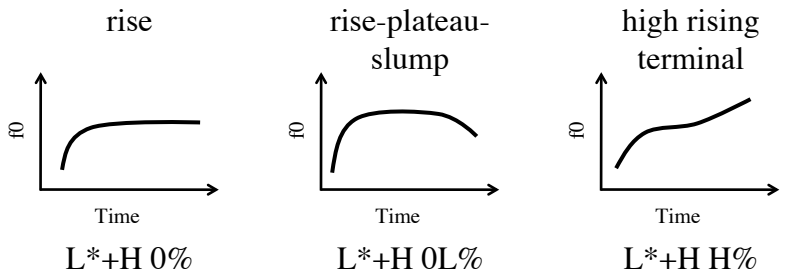

Figure 8.9: Stylised f0 contours representing the different kinds of phrase-final rise recognised in the labelling system used here.

Statistics for Analysis 2

The statistics used to compare intonation contours among the younger speakers are mixed effects logistic regression. Separate models were run on pre-nuclear and nuclear accents. In each model speaker was included as a random effect. Three sets of analyses were carried out: firstly comparing speakers in Lewis with speakers in Glasgow. Secondly, I investigated variation within the Glasgow speakers, and thirdly within the Lewis speakers. The exact models constructed are described in the relevant sections below.

8.3.2 Results for Analysis 2: Variation in intonation production

Are there differences between speakers in Lewis and speakers in Glasgow?

This section presents comparative results for younger speakers in Lewis and in Glasgow. Figure 8.10 displays the proportional realisations of pre-nuclear and nuclear accents in Glasgow and Lewis. In summary: in Lewis, pre-nuclear accents are mostly falls, but still with 20% rises. In Glasgow, pre-nuclear accents are mostly rises (63%), with a large minority of low and falling tones. For nuclear accents on the other hand, in Lewis, nearly half of nuclear pitch accents were rises, and 30% were falls. In Glasgow, a huge 90% of nuclear pitch accents were realised as rises. In Lewis, nearly half of the nuclear rises were simple rises, and just over half were High Rising Terminal. Most of the nuclear rises in Glasgow were rise-plateaux. 13% of the nuclear rises were traditional Glasgow rise-plateaux-slump, and 12% were High Rising Terminals. Lewis speakers use a greater range of tones: six different pre-nuclear tones and seven different nuclear tones. Glasgow speakers use all six pre-nuclear tones, but only six different nuclear tones.

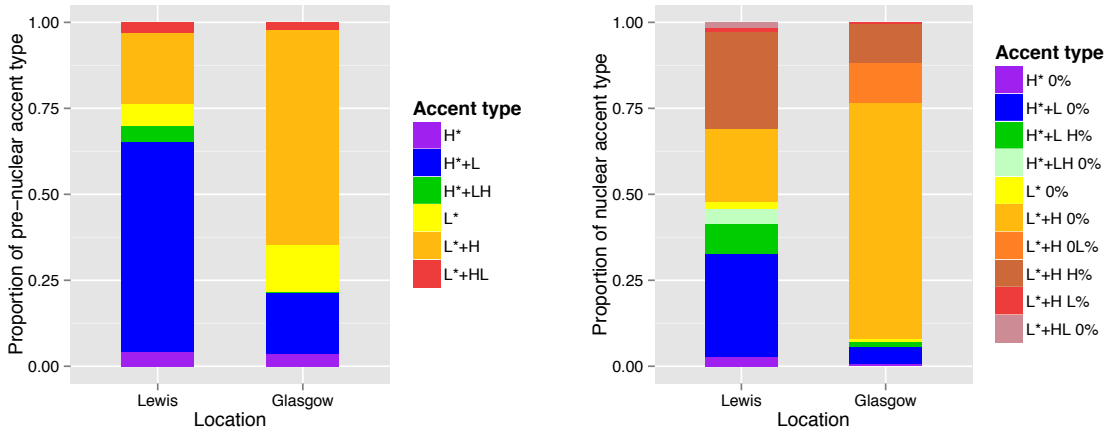

Figure 8.10: Left panel - proportions of pre-nuclear accent types in Glasgow and Lewis; Right panel - proportions of nuclear accent types in Glasgow and Lewis. n = 1045 for pre-nuclear and nuclear, 2090 total.

For pre-nuclear accents, the large difference between the communities appears to be that speakers in Glasgow use more L*+H and speakers in Lewis use more H*+L. In order to test this I constructed a mixed effects logistic regression model comparing H*+L accents with L*+H accents. This subset of the data contains 841 pre-nuclear pitch accents. The dependent variable was whether an accent was H*+L or L*+H, and the independent variables and their interactions are summarised in Table 8.11. Speaker was included as a random effect. For location, Lewis was the baseline so the model shows how different Glasgow is. The baseline gender was female so the model shows how divergent males are, and the discourse genre baseline was general accounts, so the model looks at how narratives diverge from this. The results of this analysis are in Table 8.12.

Fixed effects	**Random effects**
location	speaker
gender	
discourse genre	
location*gender	
location*genre	
gender*genre	

Table 8.11: Regression variables comparing pre-nuclear accents in Lewis and Glasgow

In nuclear accents, the differences between the locations again appeared to lie in the number of rises compared to the number of falls. This is complicated by the presence of three distinct rising contours: L*+H 0% (rise), L*+H 0L% (rise-plateau-slump), and L*+H H% (High Rising Terminal). In order to test for differences, I constructed a model as above for pre-nuclear accents comparing the number of nuclear falls (H*+L 0%) and rises, but this time including all three rises: L*+H 0%, L*+H 0L%, L*+H H%. This subset of the data included 947 nuclear accents. The model variables were the same as above in Table 8.11, with the

additional linguistic context factors of number of syllables between pre-nuclear and nuclear accents, and number of syllables following the nuclear accent. Results are in Table 8.12.

It was not necessary to test whether there were differences according to location in the number of nuclear L*+H 0L% contours as speakers in Lewis never produced these. In order to test for location differences in the number of L*+H H% contours I compared only rising nuclear accents, and compared the number of L*+H H% (HRT) contours to the number of other nuclear rises (L*+H 0L% and L*+H 0%). This subset of the data includes 798 observations. The independent variables and random effect in the model were otherwise the same for the model above comparing nuclear rises and falls. The results of this analysis are in Table 8.12.

Model		β	**SE** β	z	p
pre-nuclear rise/fall	**intercept**	-1.23	0.30	-4.15	<.001
	location	2.63	0.37	7.04	<.001
Nuclear rise/fall	**intercept**	-0.08	0.44	-0.18	0.86
	location	3.10	0.54	5.75	<.001
	genre	0.65	0.22	2.92	0.004
	syllables between pitch accents	0.13	0.07	1.91	0.06
HRT	**intercept**	0.27	0.30	0.88	0.38
	location	-2.42	0.38	-6.36	<.001

Table 8.12: Final regression results comparing Lewis young and Glasgow speakers. Pre-nuclear accents n = 841; nuclear accents n = 947; HRT n = 798.

The above analyses indicate that there are more pre-nuclear and nuclear rises in Glasgow compared to Lewis. There are more nuclear rises in the narrative discourse genre, and more nuclear rises when there is a greater gap between the pre-nuclear and nuclear accents. There is more HRT in Lewis than in Glasgow.

Are local identity affiliations reflected in tone and intonation productions?

In order to examine patterns of variation among the groups of young speakers I first tested within the Lewis young people and subsequently within the Glasgow young people. Separate models were run on pre-nuclear and nuclear accents. Similar to above, I first compared pre-nuclear rises (L*+H), and pre-nuclear falls (H*+L). I then compared nuclear rises (L*+H 0%, L*+H 0L%, L*+H H%) and nuclear falls (H*+L 0%), and finally nuclear HRT (L*+H H%) to other nuclear rises (L*+H 0%, L*+H 0L%).

Among the Lewis speakers I tested the variables in Table 8.13 with the dependent variable of pre-nuclear rises or falls. The models for nuclear accents and for HRT compared to other nuclear rises were the same with the addition of fixed effects of number of syllables between accents, and number of syllables following the nuclear accent. The baseline for town/country was the country so the model shows how divergent pupils from Stornoway were.

The discourse genre baseline was general accounts so the model compares narratives to this baseline. The gender baseline was female. The baseline for 'Gaelic at home' was again no Gaelic spoken in the home, so the models show how different the vowels were of pupils with one Gaelic-speaking parent. The model is constructed so that negative numbers mean more falls and positive numbers mean more rises. The results are in Table 8.14.

Fixed effects	**Random effects**
town/country	speaker
Gaelic at home	
discourse genre	
gender	
town/country*Gaelic	
gender*genre	
gender*Gaelic	
gender*town/country	
Gaelic*genre	
Gaelic*town/country	

Table 8.13: Regression variables comparing young people in Lewis

Model		β	**SE** β	z	p
pre-nuclear rise/fall	**intercept**	-1.08	0.36	-3.00	$<.001$
	town/country	-2.60	1.10	-2.36	.02
	Gaelic at home	1.78	0.66	2.71	.007
	gender*Gaelic	-1.75	0.81	-2.17	.03
	town/country*genre	2.86	1.14	2.51	.01
Nuclear rise/fall	**intercept**	0.16	0.34	0.46	0.64
	genre	0.86	0.27	3.22	.001

Table 8.14: Final regression models examining pre-nuclear and nuclear rises/falls in Lewis young people. Pre-nuclear n = 304; nuclear n = 311.

Speakers from the country produced more pre-nuclear rises overall. Among the speakers from Stornoway, there were more pre-nuclear rises in the narrative discourse genre. There were no differences among the boys according to whether Gaelic was spoken in the home or not, but among the girls those who spoke Gaelic at home produced more pre-nuclear rises and fewer falls. These results are illustrated in Figure 8.11. In nuclear accents, there were more rises in the narrative discourse genre. The HRT model produced no significant results.

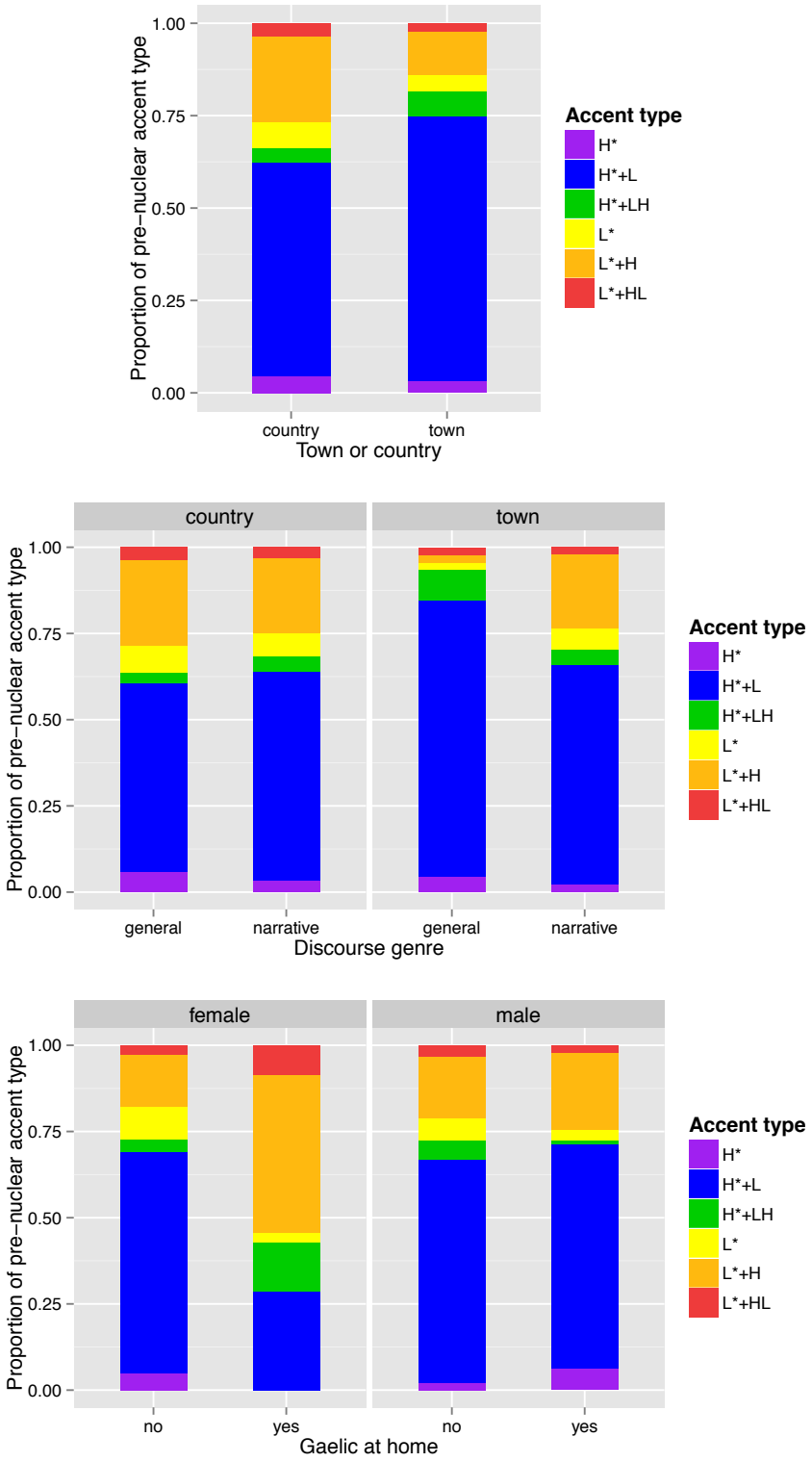

Figure 8.11: Variation among the Lewis speakers in pre-nuclear accents. n = 381.

The independent variables among the Glasgow speakers are summarised in Table 8.15. For nuclear accents, the additional independent variables of number of syllables between pre-nuclear and nuclear accents, and number of syllables following the nuclear accent were included. Separate models were run on male and female students as there was no crossover between the male and female communities of practice, and constructing one model including the variables of gender and community of practice would lead to multicollinearity. The baseline for the female 'community of practice' variable was Beth's group, so the models shows how different Vicky's group were, and the baseline for the male 'community of practice' variable was the football boys, so the models shows how different the music boys were. The baseline for 'Gaelic at home' was no Gaelic spoken in the home, so the models show how different the vowels were of pupils with one Gaelic-speaking parent. School class was a binary variable reflecting the two classes I worked with in the Glasgow school. Class 1 was the baseline. The primary school pupils attended was coded as a dummy variable with the Glasgow school primary as baseline.

Fixed effects	**Random effects**
community of practice	speaker
Gaelic spoken at home	
distance pupil lived from school	
primary school attended	
school class	
discourse genre	
genre*community of practice	
community of practice*Gaelic at home	

Table 8.15: Regression variables comparing social groups in Glasgow

The results of these analyses are in Table 8.16 and Figure 8.12. There are more pre-nuclear and nuclear rises among boys who do not speak Gaelic at home, and more nuclear rises among girls who do not speak Gaelic at home. Among the female students, those in Vicky's group produced more more pre-nuclear rises. The models of the HRT contours returned no significant results.

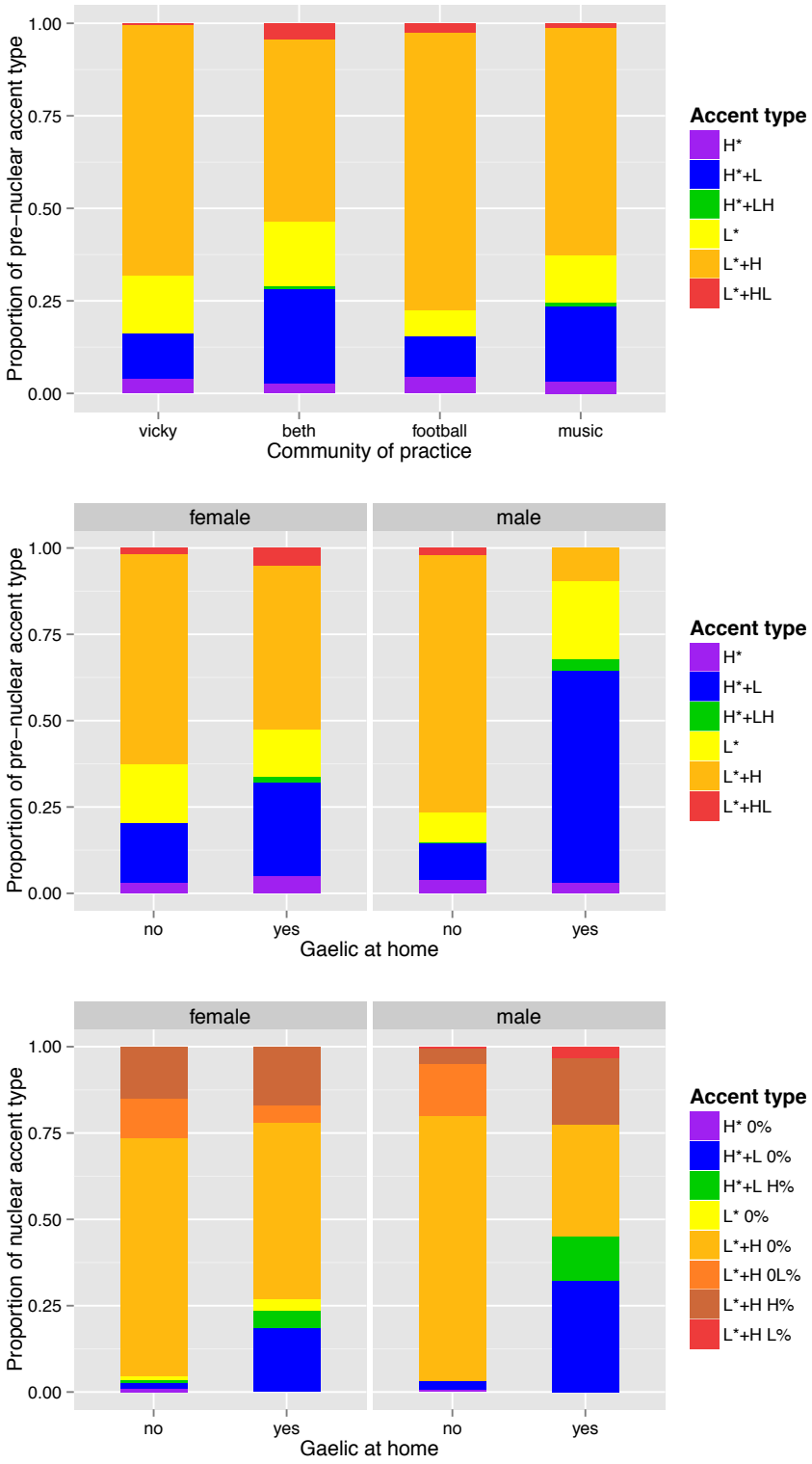

Figure 8.12: Variation among the Glasgow speakers. Pre-nuclear n = 664, nuclear n = 664.

Model	Gender		β	SE β	z	p
pre-nuclear rise/fall	male	**intercept**	1.98	0.24	8.35	<.001
		Gaelic at home	-3.86	0.74	-5.19	<.001
	female	**intercept**	0.65	0.18	3.54	<.001
		community of practice	1.05	0.29	3.62	<.001
Nuclear rise/fall	male	**intercept**	3.72	0.41	9.00	<.001
		Gaelic at home	-3.25	0.58	-5.63	<.001
	female	**intercept**	4.24	0.53	8.01	<.001
		Gaelic at home	-2.70	0.86	-3.13	.002

Table 8.16: Final regression models examining pre-nuclear and nuclear rises/falls in Glasgow males and females. male pre-nuclear n = 238; female pre-nuclear n = 292; male nuclear n = 279; female nuclear n = 364.

Individual variation

Interesting patterns can be observed in the intonation of the individual young people in Lewis and Glasgow. To exemplify this, plots of the nuclear accent realisation among the Lewis and Glasgow young people are in Figure 8.13. In Lewis, there is variation among the individuals, but speakers lf04 and lm01 are different from the overall patterns: speaker lf04 uses a large number of HRT nuclear rises, and lm01 uses a large number of nuclear falls. Interestingly the speaker were noted in the ethnographic section of this thesis to stand out from his peers at the Lewis school was speaker lm01, Calum, because he was a member of multiple friendship networks and styled himself as the 'funny man' of the class. Speaker lf04 is Megan, a pupil with two parents from the south of England. Two individuals are substantially different from the overall pattern in Glasgow: speakers gf08, Sophie, and gm09, Phil. These two young people are two of the three Glaswegians who had one Gaelic-speaking parent (see Figure 5.5 for linguistic background summary).

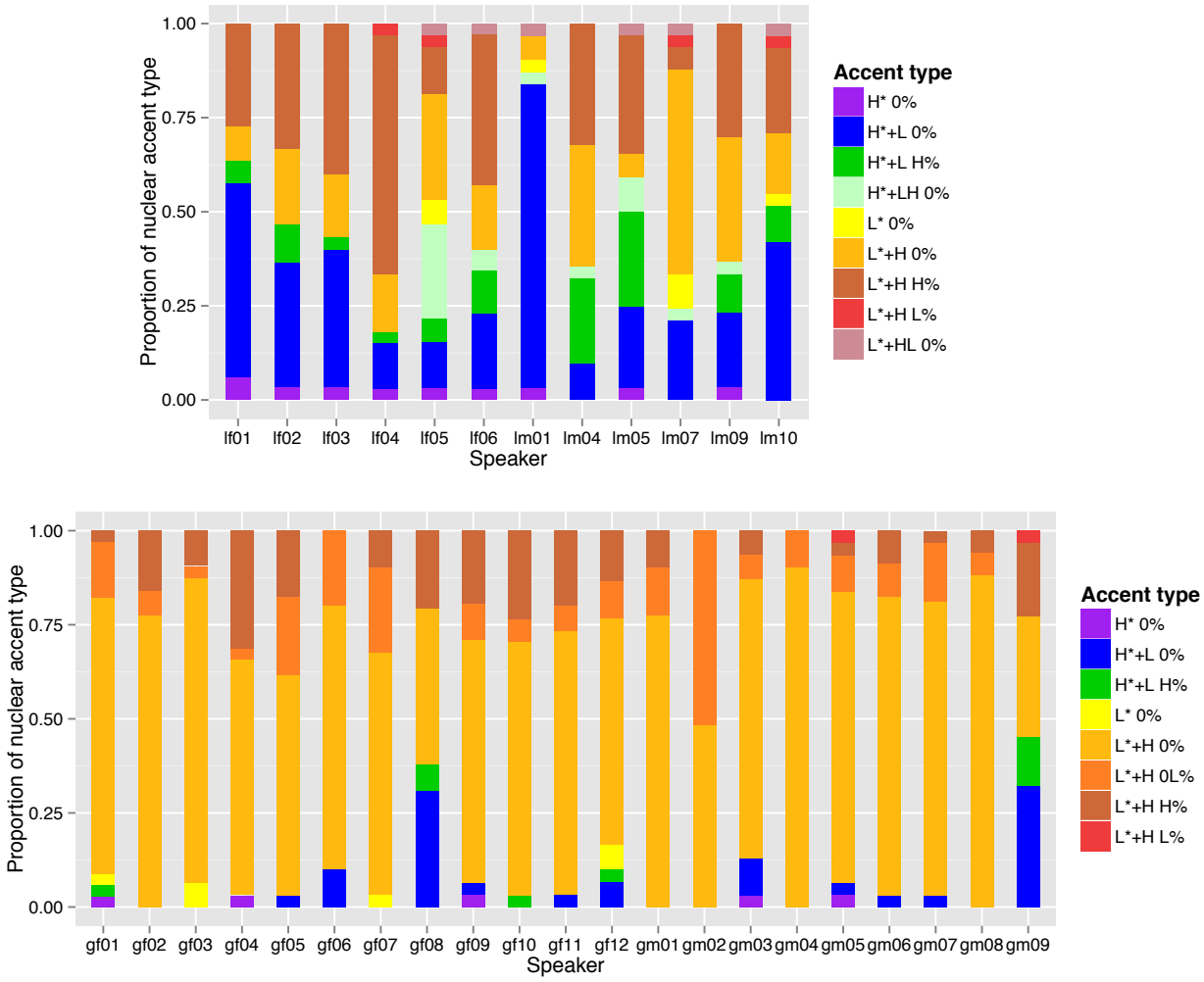

Figure 8.13: Individual patterns in nuclear pitch accent realisation. Top panel: Glasgow young people; bottom panel: Lewis young people. n = 1045.

Summary of results from Analysis 2

Analysis 2 has explored the intonation used by young Gaelic speakers. The analysis indicates significant differences between speakers in Lewis and in Glasgow: young people in Glasgow use more pre-nuclear and nuclear rises, but comparing just the nuclear rises, there are more HRT contours in Lewis. There were also more nuclear rises in the narrative discourse genre. For the Lewis students, there were differences according to whether the student was from the town or the country: students from the country produced more pre-nuclear rises overall, but the speakers from Stornoway differentiate between discourse genres and produced more pre-nuclear rises in the narrative genre. The girls who speak Gaelic at home produced more pre-nuclear rises. Among the Glasgow students, boys and girls who did not speak Gaelic at home produced more pre-nuclear and nuclear rises. Vicky's group produced more pre-nuclear rises.

8.3.3 Discussion of Analysis 2

This Analysis has further investigated the prosodic systems of the younger speakers, using a labelling system designed for an intonation language. The results indicate large differences between Lewis and Glasgow speakers, namely that speakers in Glasgow use far more pre-nuclear and nuclear rises than young people in Lewis. The Glaswegians also used some of the rise-plateau-slump contours traditionally described for Glaswegian English. It seems likely that the Glaswegians are using intonation more typical of local English than traditional for Scottish Gaelic. Both groups of speakers used nuclear HRT contours, which were more common in Lewis than in Glasgow. These contours are not widely reported for Scottish English, and not reported for Gaelic. There was substantial variation among the groups of young people: in Lewis there were some differences according to the locally salient identity of whether a person is from the town or country. Also two speakers identified as occupying interesting positions within the social hierarchy of the Lewis school behaved differently in their intonation compared to the other speakers. In Glasgow speakers who had one Gaelic-speaking parent used fewer pre-nuclear and nuclear rises, and Vicky's community of practice used more pre-nuclear rises. The social results from Lewis along with the community of practice result in Glasgow suggests intonation may be one resource drawn upon in the construction of identities salient to the young people.

In many cases analysed above, there were more rises in the narrative discourse genre. This suggests that in these data, intonation is indeed linked by pragmatic context: one way of signalling that a speaker is in narrative speaking mode may be through greater use of rising intonation.

8.3.4 Conclusions from Analysis 2

The results of this Analysis describe the intonation used by young Gaelic speakers. The Lewis young people are significantly different to the Glasgow young people, and the nature of the Glaswegian contours suggests contact-induced influence from local English. The data indicate that intonation may be used to signal affiliation to locally important identities such as community of practice membership. Intonation is also one way of signalling pragmatic meaning in Gaelic for these young people.

8.4 Overall discussion

8.4.1 An intonation model of Scottish Gaelic

Previous intonational studies of Gaelic have described Gaelic as a pitch accent language with an L boundary tone (Borgstrøm 1940; Oftedal 1956; MacAulay 1979; Bosch & De Jong 1997; Ladefoged, Ladefoged, Turk et al. 1998; Ternes 2006). In examining data from older Lewis speakers I have here confirmed that these descriptions are true for Lewis Gaelic as

spoken by older speakers from rural areas. I have expanded these descriptions to a dataset of spontaneous speech from six speakers measuring both nuclear and pre-nuclear pitch accents. While older speakers use this word accent intonation model, younger speakers do not appear to. The analysis designed to test to what extent the young people produced pitch accents in line with the traditional model indicated that if accents are produced which are traditional for Gaelic, this is likely to be by chance. Instead, younger speakers were labelled using IViE, a system which assumes speakers are using a system consistent with an intonation language, rather than a word accent language. IViE proved a much more successful tool for capturing the intonation of younger speakers.

This result suggests a dramatic shift in Gaelic prosodic structure: for older speakers in Lewis, Gaelic is a word accent language making some use of lexical tone, whereas for young people both in Lewis and in Glasgow, Gaelic is an intonation language making no use of lexical tone. There are three potential reasons which could explain the lack of lexical tone in younger speakers' Gaelic: a functional one, an explanation based on the social context of Gaelic as an endangered and revitalised language, and a direct language contact explanation. Firstly, as the contrast is between monosyllabic and polysyllabic words it is impossible for there to be true minimal pairs. Even the near minimal pairs such as *bò* 'cow' /poː/, and *bogha* 'underwater rock' /po.ə/, often involve lexical items which young people rarely discuss. There is therefore little or no possibility for confusion arising due to a speaker's lack of word accents. Secondly, as discussed in Salmons (1992), word accent systems are unusual and over time are liable to shift towards intonation based systems. This, coupled with the endangered and revitalised context of Gaelic may accelerate this tendency towards loss of word accents. Thirdly, Gaelic is in direct and intense contact with English, a language with no lexical tone. It therefore seems probable that the lack of minimal pairs for the tonal contrast combined with the lack of tones in English has led to their non-use in young people's Gaelic. In reality, it is likely all three of these potential explanations have combined: a low functional load, along with the social context of Gaelic and the tendency to lose word accents systems is informed and shaped by the prosodic structure of English and has led to this particular language change.

There are also differences in the intonation of the young people depending on whether Gaelic was spoken by one of their parents or not. In Glasgow, those who spoke Gaelic with one parent used fewer accentual rises, and in Lewis the girls who used Gaelic at home produced more pre-nuclear rises. Although these results appear contradictory, they are in fact indicative of a similar trend. In Glasgow speakers produce mostly accentual rises, whereas in Lewis typically speakers produce mostly accentual falls. Students who have one Gaelic-speaking parent on the other hand, use a more equal balance of accentual rises and falls. While there is no evidence to suggest these young people are using the word accent system, their greater exposure to Gaelic may make them aware that Gaelic uses a mixture of accentual rises and falls, and they have acquired this concept but without the complexities of the word accent system.

8.4.2 Future trends

The presence of High Rising Terminal (HRT) nuclear contours in the younger speakers' data was a somewhat unexpected result. This contour has never been described as present in Gaelic. Previous descriptions of Glasgow English such as Cruttenden (1997); Mayo, Aylett & Ladd (1997); Cruttenden (2007); Ladd (2008) make no mention of this contour. Many studies indeed go out of their way to say HRT does not happen in Glasgow and HRT is different from Glaswegian rises (Fletcher & Harrington 2001; Fletcher, Storling, Mushin et al. 2002; Fletcher, Grabe & Warren 2005; Ladd 2008). However, the most recently published phonetic study of Glasgow intonation, Sullivan (2010), does mention that some female speakers in her Glasgow English data produced examples of HRT (Sullivan 2010, 152). This was also the case in some speakers from Belfast (Sullivan 2010, 145).

High Rising Terminal is reported as increasingly common in varieties of English (Guy, Horvarth, Vonwiller et al. 1986; Britain 1992; Warren 2005). Although not widely studied in British English, some studies do report it as at least present (Cruttenden 1995; Bradford 1997; Rait 1997; Shobbrock & House 2003). Anecdotal reports in the media suggest it is salient to British listeners (Marsh 2006). It appears this feature has spread to the Gaelic of young speakers both in Glasgow and in Lewis, presumably via their English, as the feature is not reported in Gaelic. The regression analyses showed that young people in Lewis produced more HRT than young people in Glasgow. If we assume that linguistic features spread via geographical diffusion, this result is unexpected. Geographical diffusion accounts of the spread of features state that features spread from a populous, economically and culturally dominant centre. Features are more likely to spread to urban centres first, and then to rural areas in between (Trudgill 1986; Britain 2002). A model such as this would predict that an innovative feature such as HRT would spread to somewhere rural and remote like Lewis after becoming common in Glasgow. More recent research has challenged geographical diffusion accounts of the spread of innovative features e.g. Stuart-Smith, Timmins & Tweedie (2007), but even bearing these challenges in mind it is still unusual for a rural community to have adopted HRT in Gaelic to such a large extent when it has hardly been reported in Scottish English (but see Sullivan (2010, 152)), and is not widely reported in English English. I suggest that this feature may be more widespread than previously thought in varieties of Scottish English (implied in Sullivan (2010)), indeed as discussed in Chapter 2, changes in a revitalised language often reflect changes occurring in the community-dominant language (King, Watson, Keegan et al. 2009). Also, the speaker with the highest rate of HRT in the dataset, Megan, has parents from the south of England and regularly visits family there. Speakers such as Megan and people who have moved to Lewis from England may have introduced this contour to the area. Glaswegian English may be slow to adopt this contour as it is a dialect which already uses an extremely high rate of different accentual rises. The pre-existing rises in Glaswegian phonology may block the acceptance of a new kind of rise. In Lewis English on the other hand this is not the case leaving the way open to adoption of a new phrase-final rising contour.

The interview setting in the students' (and the interviewer's) non-dominant language may favour the use of HRT. Warren (2005) notes that HRT has the typical meaning of overcoming obstacles in conversation, implying 'can I assume that you (know enough to) understand what I am saying?' (Meyerhoff (1991) quoted in Warren (2005)). This may be particularly pertinent in the case of a non-dominant language interview. Evidence to support this argument that HRT confirms understanding is found in the one example of HRT found in the Lewis older speakers. Speaker lm13 produced a HRT contour on the final word of *Chaidh mi an uair sin dhan a' Chaisteal* 'Then I went to the Castle'. The use of 'Chaisteal' has a Lewis-specific meaning, referring to Lews Castle College, a vocational college set in the only castle on the island. It is probable the speaker used HRT to check I knew what was meant by the local term 'Chaisteal'. HRT is also reported as serving to build a relationship between speaker and listener, confirming that both share the same attitudes and beliefs (Britain (1992), Meyerhoff 1991 in Warren (2005)). Again, this may be important in an interview setting, where speakers were seeking confirmation from myself in what they were saying. Even if the high rates of HRT usage in these data (28% of nuclear accents for Lewis young people) are an artefact of the interview setting, it is extremely interesting that firstly this feature is present in Gaelic at all, and secondly that it is present in the speech of Glaswegian young people and young people from Lewis.

8.4.3 Differences between Lewis and Glasgow young people

Among the younger speakers, there were large differences in the way pitch accents were realised in Lewis and in Glasgow. Specifically, Glaswegian pre-nuclear and nuclear accents are almost always realised as rises, whereas in Lewis pre-nuclear accents are generally falls, and nuclear accents are approximately one third falls, two thirds rises. Lewis speakers also produced more HRT contours, discussed above.

In Glasgow, the tendency towards accentual rises is very probably due to the influence of Glaswegian English. These Gaelic data are very similar to previous studies of Glasgow English intonation (Mayo 1996; Mayo, Aylett & Ladd 1997; Cruttenden 2007; Sullivan 2010). Previous descriptions of Glasgow English have mainly focussed on nuclear pitch accents, describing contours as rise-plateau and rise-plateau-slump. No significant effects were found according to the length of unaccented material following the nuclear accent, so in these Gaelic data rise-plateau and rise-plateau slump are two different contours unaffected by the linguistic context of length of following material. Although this study did not take any phonetic measures of f0, it did appear that substantial 'slumps' were rare, and 'slumps' to the bottom of a speaker's range (Ladd 2008, 125) were non-existent. Sullivan (2010, 144) also notes this was the case in her English data from Belfast.

Despite Gaelic input from their teachers from the Highlands and Islands at primary and secondary school, the Glaswegian students did not use traditional intonation models of Gaelic and instead used contours similar to their own native dialect of English. This supports

the comment by Matras (2009, 231) who suggests prosody is particularly susceptible to cross-language influence.

8.4.4 Local identity affiliations

Within the Lewis speakers and within the Glasgow speakers there was some variation in the production of intonation contours. Among the Lewis younger speakers, the most important social factor in the data is whether the student was brought up in Stornoway or in the country. Speakers from Stornoway produce more accentual falls than speakers from the country. Above in Section 8.4.1 it was argued that those young speakers with more exposure to Gaelic produced a more equal balance of rises and falls without acquiring the full complexities of the word accent system. It is possible that the same pattern explains the town and country differences as well. Stornoway is known as being more anglicised than the rest of Lewis due to a large influx of English-speaking migrants when the town expanded as a fishing port in the nineteenth century (Macdonald 2004). Today this is reflected in census figures: data from the 2001 census indicated that 60% of the Stornoway population had some knowledge of Gaelic compared to 70-75% of people in the country. The students from the country, more exposed to Gaelic in their daily lives may be producing a more equal balance of rises and falls similar to the students with one Gaelic-speaking parent. In the more anglicised 'town', students produce contours more typical of Scottish Standard English with nuclear falls.

Two speakers stood out as different from the patterns among the other Lewis young people: Megan who has two parents from England, and Calum who fits in with multiple friendship networks and is the class joker. Megan produced very high rates of HRT. To relate this to discussions of language change from Chapter 2, Megan's example confirms discussions of change explored in Milroy & Milroy (1985); Milroy (1992). HRT appears to be an innovative feature in Gaelic as it has not previously been described in the language, and is not widely reported as a feature of the language variety in most intense contact with Gaelic, Scottish English. Megan is therefore one of the speakers to have adopted this feature early on. As her parents and family networks are based in southern England, this is potentially where the feature originated in Megan's speech repertoire. She is one of the geographically mobile, peripheral members of the group who can introduce innovative features into the community.

Among the Glasgow speakers, the most noticeable variation was according to whether Gaelic was spoken at home or not. This is discussed above in Section 8.4.1. The other significant factor which divided the students was community of practice membership among the girls. Vicky's group produced more pre-nuclear rises than Beth's group. There were no significant differences between the male communities of practice. This result supports the results for variation in the production of Gaelic [ʁ]. In intonation as well it is among the female communities of practice that linguistic differences are found in Gaelic. The default intonation contour for Glasgow English pitch accents is reported to be a rise. It appears that Vicky's group orient more towards Glasgow English intonation production, and Beth's group

less so. These results support the variation in [ʉ], where Vicky's group produced more fronted [ʉ] similar to Glaswegian English. These results are discussed further in the Chapter 9.

In Glasgow, Sophie and Phil stood out as using fewer accentual rises than their peers. Sophie and Phil were two of the three students with one Gaelic-speaking parent in the sample. These results suggest that within the two communities intonation is used as one social resource for identity construction: in Glasgow this is evidenced in the community of practice differentiation, and in Lewis the town/country distinction and the socially pertinent role Calum occupies in their peer-group. In Glasgow, intonation patterns are also highly predictable from the language background of the students, suggesting intonation is a feature subject to multiple influences both for social reasons and language background.

8.5 Interim conclusions

The main findings of this chapter are as follows: older speakers in Lewis produce lexical tones consistent with Gaelic as a pitch accent language (Ternes 2006). Younger speakers on the other hand produce intonation contours consistent with an intonation language. There are large differences between the intonation contours of younger speakers in Lewis and younger speakers in Glasgow. Young people in Lewis produce a variety of rises and falls, whereas young people in Glasgow overwhelmingly produce accentual rises. The pitch accents used by speakers in Glasgow are very similar to those described for Glaswegian English (Mayo 1996; Mayo, Aylett & Ladd 1997; Cruttenden 2007), so it is argued the Glaswegian Gaelic prosody is likely to be directly influenced by the young Glaswegians' English prosody. Both young people in Lewis and young people in Glasgow produced examples of High Rising Terminal in nuclear accents, and these were more common in Lewis than in Glasgow. For both groups these HRT accents were distinct from traditional Glaswegian rise-plateaux and rise-plateaux-slump. A very recent study of Glasgow English intonation (Sullivan 2010) also indicated HRT in Glasgow, and I argue this is a recent, or at least recently described addition to the inventory of pitch accents found in Glasgow. It seems likely this contour is also the result of contact influence from English, as it is not mentioned in previous descriptions of Gaelic, and is most common in Megan's speech, a speaker with substantial interaction with southern English varieties of English.

This thesis considers the linguistic outcome of language revitalisation, both in a Gaelic-heartland area in Lewis, and in a non-traditional community in Glasgow. The information provided from these intonation data suggests a large prosodic difference in the speech of younger new speakers compared to older speakers: older speakers speak a pitch accent language and younger speakers speak an intonation language. While initially this may appear a radical difference, it does not mean that younger speakers' Gaelic is incomprehensible. In Swedish, native speakers of the Swedish dialects spoken in Finland do not use any word accents (Gårding 1989, 63), and many learners do not produce any word accents but are considered fully fluent (Schmid 1986).

A group of speakers have emerged in Glasgow as a result of revitalisation measures who use intonationally very different Gaelic to young people growing up in Lewis. Glasgow Gaelic intonation is very similar to Glaswegian English intonation and I have argued this is due to language contact. This indicates another dimension on which Glasgow Gaelic is a distinct linguistic variety. New varieties can be formed as a result of language revitalisation, and are informed by the local linguistic patterns, such as Glaswegian English in this case.

A third aspect to these intonation data is that local social identities are reflected in Gaelic intonation contours. Among the female Glaswegians, Vicky's group produced more rises, and among the Lewis speakers there were differences according to whether a speaker was brought up in Stornoway or not. These results support the results for /u/ where local social identities patterned significantly with vowel acoustics. Both of these results indicate that in language revitalisation contexts the negotiation of local social identities is important for understanding linguistic variation.

Chapter 9

Discussion

9.1 Introduction

This chapter brings together the results of the ethnographic and linguistic analysis chapters and discusses them in relation to the research questions asked in Chapter 1. The main aim of this thesis is to examine the sociophonetic outcome of language revitalisation measures. In doing so, my research contributes to knowledge about the impact of social change on language, specifically the nature of sound change in minority revitalised language contexts. The specific research questions outlined in Chapter 1 are:

1. Is Gaelic changing across generations in heartland communities such as the Isle of Lewis?

2. Are new dialects forming as a result of language revitalisation measures in non-traditional Gaelic communities such as Glasgow?

3. What is the role of identity construction in language revitalisation developments?

In the following section I summarise the main findings of the analysis chapters. In Section 9.3 I discuss the first research question, whether Gaelic is changing across generations, with evidence from the generational differences in the linguistic data. In Section 9.4 I discuss whether the Gaelic spoken by young people at the Glasgow school can be considered a new dialect of the language, and in Section 9.5, I discuss the role identity construction plays in these developments for Gaelic.

9.2 Summary of main findings

The ethnographic chapter investigated the role Gaelic plays in the lives of the participants, and the social structures and histories affecting their daily existence. Among older participants in rural Lewis, Gaelic is an unmarked code of everyday interaction which they learned from their earliest years. Social change and economic hardship have hit rural communities hard

and many people spoke about depopulation and lack of employment opportunities leading to young people leaving the area, disillusioned with local culture. Among the young people investigated both in Lewis and in Glasgow the use of Gaelic is a marked choice. The language is something associated with the school context, especially in Glasgow, and is very rarely if at all used outside of the classroom. Very few of the young participants in this study spoke Gaelic with their family, though this was more common in Lewis than in Glasgow. None of the young participants spoke Gaelic with both parents (Figure 5.5).

The results of the linguistic analyses showed large differences between the older speakers in Lewis, the younger speakers in Lewis, and the young people in Glasgow: in lateral productions the older Lewis speakers produced 100% palatalised laterals in their appropriate context, but for younger speakers this was not the case with some producing laterals with no palatalisation, or palatal glides with no laterality. Variation in vowel productions also revealed differences between the older and younger speakers. Older speakers produced fronter [ʉ] overall, but greater effects of coarticulation: when [ʉ] was preceded by /r/ it was produced as more back, but when [ʉ] was preceded by /j/ it was more front. This was not the case among the young people: in Lewis there were fewer effects of coarticulation present among the young people, and fewer again among the Glaswegians compared to the Lewis young speakers. The investigation of the intonation model used by speakers indicates that older speakers in Lewis speak Gaelic as a word accent language, making limited use of lexical tone, whereas young people speak Gaelic as an intonation language, making no use of lexical tone.

The results also showed large differences between the Gaelic spoken in Glasgow and the Gaelic spoken in Lewis: Glasgow speakers produced fewer palatalised laterals, backer [ʉ], and more accentual rises (but less High Rising Terminal) than the Lewis speakers. There were also some differences in the dataset according to whether Gaelic was spoken by one of the student's parents: in Glasgow those who spoke Gaelic at home produced fewer accentual rises, and in Lewis girls who spoke Gaelic at home produced more accentual rises. I have argued that these patterns appear contradictory but reflect the same tendency: those who have one Gaelic-speaking parent produce a more equal balance of accentual rises and falls, rather than a majority of rises in Glasgow or a majority of falls in Lewis. Glasgow speakers also produced alveolar laterals with a lower F2-F1 than Lewis speakers, and Lewis speakers produced velarised laterals with a higher F2-F1.

Investigation of locally relevant social categories revealed in the ethnography showed these also pattern with linguistic variation to some extent. In the vocalic analysis, Vicky's community of practice produced fronter [ʉ] than Beth's community of practice. This result was supported by the intonational analysis which showed Vicky's group produced more pre-nuclear rises than Beth's community of practice. In Lewis, the locally salient distinction between 'town' and 'country' was reflected in intonational variation, with speakers from the town producing more accentual falls. Two speakers in Lewis stood out as producing intonational contours which differed from the general pattern among young Lewis speakers: Megan produced a very high rate of HRT, and Calum produced a high rate of nuclear falls.

These two individuals occupy interesting positions in the social hierarchy of the school: Megan has two parents from the south of England, and Calum moves between multiple friendship networks. It is possible these two pupils are using intonational variation as one way of marking their social position in the Lewis school.

9.2.1 Summary of individual variation

Comparing the behaviour of individuals across the different features analysed here is not straightforward due to the different units and measurement methods used: continuous formant values, formant distance measures, proportion of categorical variants, proportions of binary variants. One way of visualising the performance of individuals across these different methods of measuring is to look at their productions relative to other speakers in the dataset. To this end, I selected the measures most representative of each analysis chapter, and divided the results into deciles. Speakers can therefore be compared across the different measurement techniques according to their productions relative to the rest of the dataset. The measures chosen were:

- Laterals (Chapter 6): mean F2-F1 (Bark) for velarised laterals, mean F2-F1 (Bark) for alveolar laterals, mean F2-F1 (Bark) for palatalised laterals, proportion of phonemically palatalised laterals produced as palatalised laterals.
- Vowels (Chapter 7): mean F1 difference (normalised Bark), mean F2 difference (normalised Bark), mean F3 difference (normalised Bark), mean Euclidean distance (normalised Bark).
- Intonation (Chapter 8): proportion pre-nuclear falls, proportion nuclear falls.

The decile each speaker's values fell into across each of these measures is shown in Figure 9.1. The plot was created so that speakers with whiter tiles have productions most like older Lewis females, and speakers with the least white cells have productions most different from the Lewis older females. In the case of intonation, for which the older Lewis speakers were not measured, whiter tiles indicate more Lewis-like intonation (greater proportion of falls). Three measures (F2-F1 for velarised laterals, F2 difference, F3 difference) had to be 'flipped' so that higher deciles in each case showed the Lewis older women. The colours in Figure 9.1 therefore indicate the following: whiter colours mean *lower* F2-F1 velarised laterals, *higher* F2-F1 alveolar laterals, *higher* F2-F1 palatalised laterals, *higher* proportion palatalised laterals, *higher* F1 difference, *lower* F2 difference, *lower* F3 difference, *higher* Euclidean distance, *higher* proportion pre-nuclear falls, *higher* proportion nuclear falls.

This plot clearly shows a difference between the speaker groups across different measurements: the Glasgow speakers generally behave differently to the Lewis younger speakers, who in turn behave differently to the Lewis older speakers. The teachers from Glasgow pattern similarly to the Lewis older speakers in terms of their laterals, the only feature measured from

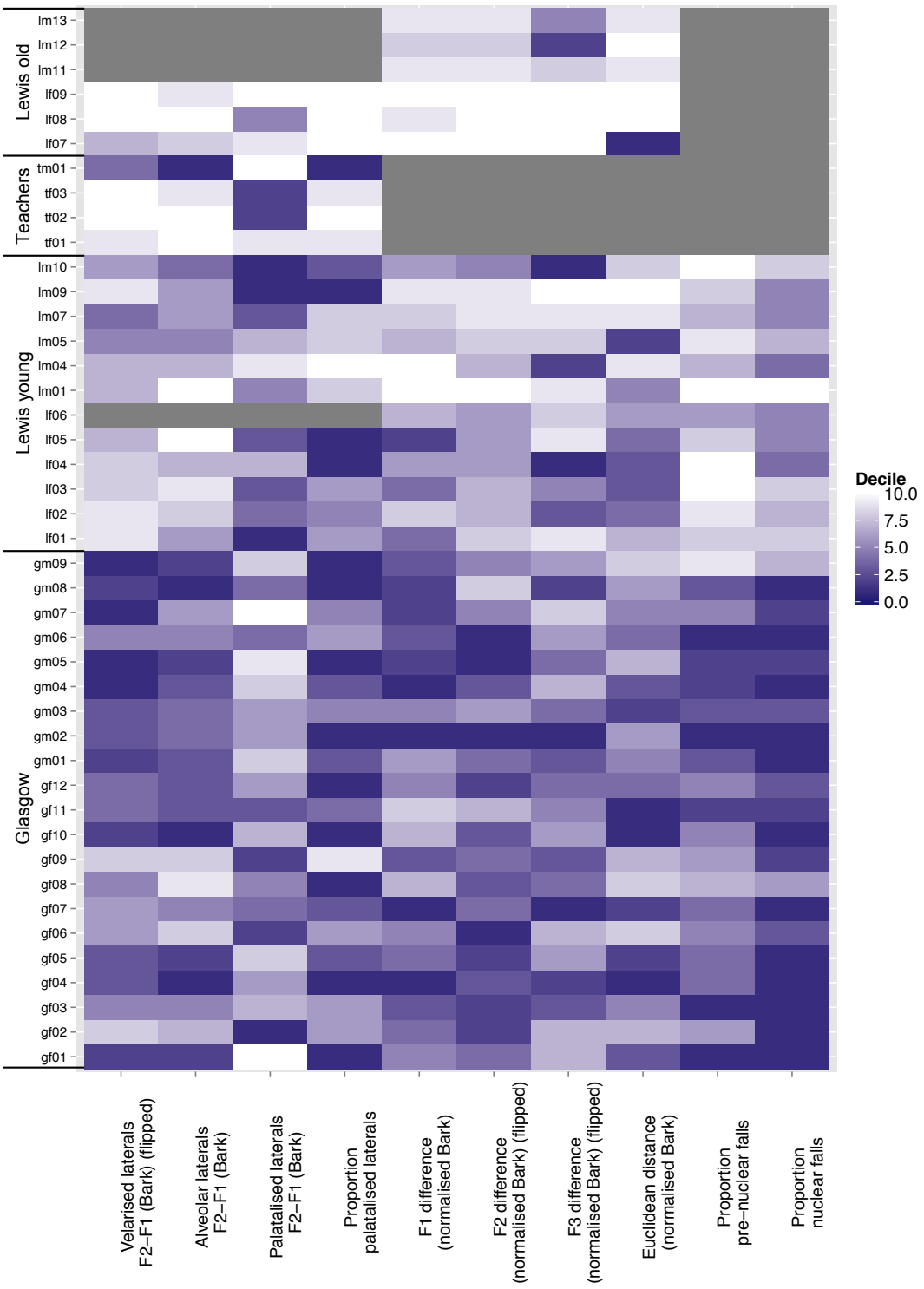

Figure 9.1: Comparison of individuals across different linguistic measures. Grey areas indicate no linguistic analysis performed on this speaker or linguistic feature.

this group. In Chapters 6–8 I identified some interesting patterns according to individuals, for example that Megan produces a very high number of High Rising Terminal contours (Section 8.4.4). While some of the individual data is explainable feature by feature, there are few consistent patterns across features. This may be due to the variety of linguistic features examined here: consonants, vowels, and prosody, or it may be the case that further linguistic and social analysis is required in order to gain a better understanding of this variation. It is

also interesting to note that those young people with one Gaelic-speaking parent (speakers lm09, lm07, lf06, gm09, gf12, gf08) do not consistently differ from the other speakers across features. This is discussed in more detail below in Section 9.3.4.

9.3 Is Gaelic changing across generations in Lewis?

Using the apparent-time model (Labov 1994), there is evidence of language change in Lewis Gaelic: the linguistic analysis indicates differences in consonants, vowels, and prosody between younger and older speakers. Labov's (1994) model states that language change can be observed in synchronic data: by looking at patterns in older speakers and younger speakers we can assume that if young people's speech stays the same until they become the older generation then the overall structure of the language will have changed. This progression can be observed by examining older and younger speakers in a community. The model assumes a certain amount of stability in an individual's speech, which has been questioned in, for example, Harrington's (2000; 2006; 2007) study of change in the Queen's speech, and Evans & Iverson's (2007) study of university students. Despite this reservation, studies have largely shown the apparent-time model is relatively robust (Bailey, Wilke, Tillery et al. 1991; Bailey 2002; Sankoff & Blondeau 2007). However there is one crucial assumption in the apparent-time model of change which is of relevance to the current study: the model assumes the community speaking the language, and the language variety itself, are stable social entities. If there is no continuity in the community speaking the language, change cannot be inferred.

In the case of Gaelic in Lewis this limitation is particularly relevant: this thesis has compared the speech of older Gaelic speakers to that of younger Gaelic speakers. The comparison is valid in that both generations are speaking Gaelic, but the ethnographic research indicates the social place of Gaelic in Lewis society has utterly changed in the recent historical past. Indeed the majority of the young Lewis participants in this study did not learn Gaelic through intergenerational transmission in the family, unlike their older counterparts (see also Munro, Taylor & Armstrong (2011) on the decline of intergenerational transmission in Lewis). Clearly, the situation is complex and there is some overlap between the Gaelic spoken in families as a community language and the Gaelic spoken in immersion classrooms, for some participants more than others. But the fact remains that there are large differences between the role of Gaelic in the lives of older and younger people. If 'what a language is' is defined by both linguistic and social criteria (e.g. Bourdieu (1991)), then the Gaelic spoken by young people in Lewis (and indeed in Glasgow) can almost be considered a different language to that spoken by older generations: it linguistically different, used for different purposes, and largely acquired in a different way. In this case, it is perhaps more realistic to speak of 'language replacement' rather than 'language change'. Although the sociological data indicate the varieties spoken by the different generations are socially and linguistically distinct, the generations still understand one another, so it is not the case that older speakers' Gaelic has been completely replaced by a mutually incomprehensible variety.

The remainder of this section offers some discussion of why the speech of young people takes the form outlined in this thesis. I here discuss language contact, language obsolescence/revitalisation, functional explanations, and language background of the students, the status of new Gaelic speakers, and then discuss the relationship between language and social identity in Section 9.5.

9.3.1 Direct language contact

The presence of High Rising Terminal contours in the younger speakers' Gaelic is likely to be a result of direct contact with English. This feature is not reported in previous descriptions of Gaelic, but has been reported in varieties of British English, particularly English English (Cruttenden 1995; Bradford 1997; Rait 1997; Shobbrock & House 2003). Also, King, Watson, Keegan et al. (2009) suggests that changes occurring in a revitalised language will mirror those occurring in the community-dominant language. In support of this argument, the speaker in Lewis with the highest rate of HRT is Megan, the speaker who has the most interaction with English English as she has two English parents and regularly visits family in the south of England. However, it is also probable that the interview context augmented the likelihood of speakers producing HRT contours. It must also be kept in mind that the use of HRT could also have developed in Gaelic without contact influence from English.

Another possible case of direct language contact is found in the phonetics of the young Lewis speakers' laterals. Young Lewis speakers produced the phonemically velarised lateral with a higher F2-F1 than the other speaker groups (Figure 6.13). This is potentially because the lateral in Lewis English is produced with minimal tongue backing/retraction (Shuken 1984), and this means that young Lewis speakers produce the Gaelic lateral which is phonemically velarised similarly to the way they produce their English lateral, resulting in a higher F2-F1 than the other speakers.

In the case of all the other intergenerational differences described in this thesis, the case for contact-induced change is less clear cut. As discussed in Thomason (2001, 62), language change can be direct as suggested in the case of HRT above, or indirect where change occurs that would not have occurred had the languages not been in contact. Many previous studies of endangered and revitalised languages discuss changes of this kind that are typically affected by the structure of the community-dominant language (Dorian 1981; Schmidt 1985; Campbell & Muntzel 1989; Silva-Corvalán 1994; Dressler 1991; Mougeon & Beniak 1991; Jones 1998; Broderick 1999). For example, Jones (1998) describes the Welsh of students in immersion schooling, which has fewer initial mutations than older speakers' Welsh. This development is attributed to indirect influence of English in a language endangerment/revitalisation context: English does not have initial mutations so Welsh is potentially more susceptible to lose them. Developments in the current dataset which potentially reflect this phenomenon are discussed in the following section.

9.3.2 Impact of language endangerment and revitalisation

In the chapter on lateral production (Chapter 6), I suggested that the large amount of variability in palatalised lateral production may be due to the indirect influence of English in the revitalisation context of Gaelic: English does not contrast phonemically palatalised and other laterals, so this might lead to loss of this category in Gaelic. Many varieties of English use (albeit allophonically) laterals similar to the Gaelic velarised and alveolar laterals, but a palatalised lateral is more unusual. This is why the palatalised lateral is subject to much variability, more so than the Gaelic velarised and alveolar laterals. Similarly, Maguire (1991) discusses the developments in the sonorant system of Irish as spoken by young people in the Belfast Shaw's Road Community as potentially an effect of indirect transfer from English: English does not make as many contrasts as Irish does so this may shape young people's Irish systems. A similar argument may also partly explain the lack of lexical tone in the Lewis young people's Gaelic. English makes no use of lexical tone, and neither does the Gaelic of young people spoken in Lewis.

One of the outcomes of language endangerment is a restriction in contexts for using the endangered language (McMahon 1994, 285). The case of Gaelic revitalisation in Lewis is similar: Gaelic is used by young people mainly inside the classroom and while some young people speak Gaelic to family members, the language is very rarely used for peer interaction. This limited context in which the language is used could lead to there being little need to express certain contrasts made in previous varieties of Gaelic. This explanation for differences between the generations is therefore functional, but initiated by a contact situation: if there is no need for speakers to make a particular contrast, then the form of the language will be different. Functional explanations are further explored in the following section.

9.3.3 Functional explanations

Functional explanations for differences between the generations are relevant to both the lateral and intonational data. In Gaelic there are few minimal pairs already, and as the word accent distinction is made on syllabicity, there are no real minimal pairs for this contrast. This situation coupled with the limited context in which Gaelic is used among young people could lead to the developments documented in this thesis. Functional explanations for change are widely cited in the literature on sound change, for example Labov (1994), and appear to also be very relevant to the Gaelic situation of language revitalisation.

9.3.4 Language background of students

Some of the differences between older and younger speakers in this thesis can potentially be explained with reference to their language background at home. Other studies of minority language variation among young people such as Jones (1998); Gathercole & Thomas (2009); Morris (2013) suggest that those who speak the minority language at home with at least one

parent have significantly different productions to those who do not. Similarly, Mougeon, Rehner & Nadasdi (2004) suggest that students with more contacts in the minority language-speaking community are more likely to reproduce the language's traditional systems. The suggestion is that those who have less exposure to, and interaction with, the minority language will not acquire the language in the same way. There is some evidence to support this view in the data presented here: those students who spoke Gaelic with one parent produced significantly different intonational patterns, and individual variation in lateral production may also be linked to language background at home. There were no differences among the pupils according to language home background in vowel production, but some evidence to suggest that lack of exposure to previous varieties of Gaelic might influence production. The [ʉ] of young people in Lewis (and also in Glasgow) was not as susceptible to the coarticulatory effects of surrounding sounds as the [ʉ] of older Lewis speakers. This difference may have arisen from learning Gaelic in a classroom environment.

Although this Section has identified some cases in which home language background appears to make a difference in linguistic productions, there were also cases where home language background appeared to make no difference. If there were a clear distinction between those young people who had acquired Gaelic from a parent in the home and those who had not, we might expect to see clear differences across all variables in Figure 9.1. The question of home language background influencing productions is clearly not clear-cut, and as argued in Section 2.5 it is very difficult in the current Gaelic context to draw a distinction between 'native' and 'non-native' young Gaelic speakers. The linguistic results offer suggestions that some exposure to Gaelic in the home may influence certain areas of production, but not all. The status of young Gaelic speakers is further discussed in the following Section.

9.3.5 New speakers and language change

Section 2.6 discussed how to conceptualise the younger speakers in language revitalisation contexts such as the one described here. It was argued that the particular context of language revitalisation makes new speakers different although some of the linguistic features present in new speakers' systems, such as lack of traditional structures and contact influence from a community-dominant language, may resemble features of L2 or heritage speech. This is particularly noticeable in the case of young Lewis speakers and young Glasgow speakers. In this context there is no 'homeland' to which they can return to find monolingual Gaelic speakers. Similarly, many second language acquisition and heritage language studies compare the productions of speakers to those of native speakers who are dominant in the particular language under study. This is not possible in the case of Gaelic-speaking adolescents. In this study no young person had two Gaelic-speaking parents; all speakers preferred using English as a peer-group language, and all grew up in a bilingual environment where Gaelic is a national minority language. Indeed, learning Gaelic in immersion schooling is now the norm for young people, even in Gaelic-speaking heartlands such as Lewis, where intergenerational

transmission of the language has been described as 'broken' (Munro, Taylor & Armstrong 2011, 12). New Gaelic speakers are the future generation of Gaelic.

Many second language studies and heritage language studies refer to 'incomplete acquisition' (e.g. Montrul 2008). While the linguistic behaviour of the new speakers in this study may resemble the linguistic behaviour of speakers in second language or heritage contexts, referring to young people as 'incomplete acquirers' is both inaccurate and unhelpful. It is inaccurate in the sense that these young people have fully acquired Gaelic to the extent for which it is useful in their world. As McMahon (1994, 285) notes, one of the results of language revitalisation and endangerment is that the language will be used in a smaller set of contexts than a majority language. The new speakers in this study are fully capable of fluently expressing themselves in Gaelic in the contexts in which they are required to do so. This set of contexts is smaller than the set of contexts in which their grandparents' generation used Gaelic, but it is complete for the young people's purposes, and since there is no comparable monolingual group of Gaelic speakers, it is complete for their generation. Similarly, this links to the discussion on functional reasons for change, above. Certain sound structures which are present in the speech of an older Gaelic-speaking generation, but not present in the speech of young people are not symptomatic of an 'incomplete' system: it is simply the case that young people use Gaelic as an entirely different system of communication, in an entirely different social context, and their Gaelic does not use those structures which do not aid communication.

Referring to new speakers as some kind of 'incomplete acquirer' is also unhelpful in the context of language revitalisation efforts. Gaelic-medium education is one method of language revitalisation, aiming to increase speaker numbers and increase the domains in which Gaelic can be used (Bòrd na Gàidhlig 2007, 12). However, new Gaelic speakers often face prejudice from the older Gaelic-speaking community and lack confidence when using their Gaelic (McEwan-Fujita 2010). It is not appropriate to label a group of people as 'incomplete' when new speakers lack confidence in using the language, and may be demotivated by such terminology, thus undermining revitalisation efforts to increase speaker numbers.

9.3.6 Summary: Explanations of intergenerational differences

Many of the explanations above are interlinked, and it is highly probable that their interaction has led to the developments in Gaelic explored in this thesis. For example, the social history of Gaelic and its contact with English discussed in Chapter 3 have led to the context of language obsolescence. More recent social changes have led to language revitalisation, still in a context of intense language contact. A language endangerment and revitalisation context is conducive to rapid and widespread language change (Dorian 1981; Jones 1998). Previous studies of language revitalisation suggest that the structure of the community-dominant language is likely to affect the minority language in either a direct (King, Watson, Keegan et al. 2009) or indirect way (Mougeon & Beniak 1991, 160). There is some evidence of this in the data presented here: use of HRT in Gaelic where previously there was no record of this structure,

phonetic influence in lateral productions (direct influence), and decreased use of palatalised laterals and Gaelic lexical tones (indirect influence). The types of structural change that occurs in Gaelic in its context of revitalisation is also informed by the functional load of a contrast: Gaelic lexical tones have few, if any, minimal pairs, and this contrast is not produced by younger speakers. To summarise: the potential explanations for the linguistic developments described in the Gaelic context of revitalisation intersect, and are the result of both social and linguistic developments. The following section discusses a further development in revitalised Gaelic: a new variety spoken in a non-traditional context. Section 9.5 then discusses the role identity construction plays in all of these changes.

9.4 Is a new dialect of Gaelic forming in Glasgow?

This thesis has presented evidence to suggest the Gaelic spoken by young people in the Glasgow school is linguistically distinct from other varieties. In lateral productions, Glasgow speakers produced fewer palatalised laterals than the other groups of speakers including their teachers. Glasgow [ʁ] is backer than [ʁ] in Lewis, and Glasgow intonation has more accentual rises than Lewis intonation overall, but fewer High Rising Terminals.

Previous studies of new dialect formation and koineisation suggest that one of the defining features of a koine or 'new dialect' is that it is passed on to future generations as a stabilised variety (Siegel 1985; Kerswill & Williams 2005). Ethnographic research carried out among the Glasgow students indicates this variety of Gaelic is unlikely to be passed on in families on any large scale, if at all. Pupils did not speak Gaelic to one another, and due to the small number of students graduating from this school there is limited likelihood of many households containing two parents speaking Glasgow Gaelic, further decreasing the chances of the variety being passed on to children (De Houwer 2007). Another dissimilarity between this case and cases such as Lane (2000); Kerswill & Williams (2005); Gordon, Campbell, Hay et al. (2004) is that Glasgow Gaelic is spoken by a group of young people from one place, Glasgow, who all speak another language, Glasgow English. In contrast, the cases in Denmark, Milton Keynes, and New Zealand describe contexts where mainly monolingual speakers from multiple localities came together in one place.

The young Glaswegians in this study are learning what, for many of them, is a second language in a context removed from the language's traditional heartland. These young people were also learning French at school, and their French was also produced with distinctly Glaswegian features. Glasgow Gaelic is, however, very different socially from, for example, Glasgow French. I will argue that it is this social distinction which means that Glasgow Gaelic can be recognised as a distinct variety. As discussed in Sections 2.6 and 9.3.5, young Glasgow Gaelic speakers can be considered 'new' speakers which is different from a prototypical case of second language learning or heritage language learning in several ways: there is no 'homeland' for Gaelic where the language is community-dominant, there is no age-equivalent group of young people growing up as Gaelic monolinguals, and the Gaelic community

recognises these young people as fluent speakers and the future of the language. Indeed, learning Gaelic through immersion schooling is now the norm for young Gaelic-speakers even in rural heartland communities (Munro, Taylor & Armstrong 2011). Also, the 2001 census showed there were approximately 10,000 people under the age of 19 who can speak Gaelic. Even allowing for some alterations to this figure in the years since 2001, the 800 pupils at the Glasgow primary and secondary schools together represent a large proportion of the total number of young Gaelic speakers. Glasgow Gaelic speakers, therefore, represent learners in a very distinctive social position: not only are they, along with other new speakers, the future generation of the language, they also represent a large proportion of Gaelic's total number of speakers.

The Glasgow Gaelic variety is largely restricted to the local social context of the Glasgow school, but is recognised as a socially distinct entity by speakers. Joseph (2013) provides some discourse analytic evidence to suggest Glasgow Gaelic is recognised in the wider Gaelic-speaking community. In my dataset, the students at the Glasgow school said they knew they spoke differently to teachers, and spoke a kind of Glasgow Gaelic which sounded similar to Glasgow English:

> Tha mar like na tidsearan tha na accents acasan diofraichte chionns gu bheil iadsan a' tighinn bho suas bho na h-Eileanan ach mar tha na accents aig mar like na sgoilearan diofraichte chionns gu bheil sinne bho like Glaschu agus àitichean sìos an seo.
>
> *Like the teachers they have different accents because they're from up [there] from the Islands. But like the pupils' accents they're like different because we're from Glasgow and places down here.*
>
> Tara

> Tha mi dìreach a' smaointinn gu bheil mi a' bruidhinn mar ann am Beurla ach ann an Gàidhlig.
>
> *I just think I speak like [I do] in English, but in Gaelic.*
>
> Vicky

The situation described here clearly does not represent a clear-cut case of new dialect formation as presented in Milton Keynes or New Zealand (Kerswill & Williams 2005; Gordon, Campbell, Hay et al. 2004). However, the context described here could be considered a non-typical case of the emergence a new dialect, depending on how the process is defined. The evidence presented in this thesis suggests Glasgow Gaelic is linguistically and socially distinct, and is recognised as such by its speakers. Bearing this in mind I suggest that Glasgow Gaelic can be considered a new dialect of Gaelic, although it is limited to a restricted social context, and is unlikely to be passed on to children. As such it does not represent a canonical case of new dialect formation as described in the literature such as Gordon, Campbell, Hay et al.

(2004); Kerswill & Williams (2005), but indicates new dialect formation in different social circumstances. To relate this discussion to the framework of stages of koineisation described in Siegel (1985) (Table 2.1), Glasgow Gaelic among the adolescent speakers in this study is a variety with its own linguistic norms and social recognition, but it is not expanded to literary and standard language functions, and is unlikely to be nativised, on any large-scale level at least. These results suggest a development of Lamb (2011), who states that the only Gaelic dialects to survive in future years will be those of South Uist and Lewis. While Lamb (2011) suggests that traditional dialects may no longer remain as distinctive in the future, these results indicate that new varieties are developing in new areas such as Glasgow.

Why does Glasgow Gaelic take the linguistic form it does? Some of the arguments above in Section 9.3 are also relevant here. It is likely that Glasgow Gaelic is influenced by contact with local English; for example, in the large number of pre-nuclear and nuclear rises in intonation. Indeed, some speakers produced 100% rises, more typical of Glaswegian English than other varieties of Scottish Gaelic. Glasgow Gaelic, however, had fewer instances of High Rising Terminal nuclear contours than Lewis young people's Gaelic. I suggest this may be because the traditionally Glaswegian rise-plateau and rise-plateau-slump contours may act as a block to the integration of a new rising contour. Another case of language contact may be found in the phonetics of the lateral productions. Young Glasgow speakers produced alveolar laterals with a much lower F2-F1 than the other groups of speakers (Figure 6.13). It may be the case that the phonetics of their English laterals, reportedly produced with a low F2-F1 in Glasgow, effect the productions of the phonemically alveolar Gaelic lateral. The functional explanations for the lack of lexical tones, and modifications to the lateral system proposed above are also relevant here, as is language background of the students in some cases: speakers in Glasgow with one Gaelic-speaking parent produced significantly fewer of the Glaswegian accentual rises, and this may be due to their exposure to varieties of Gaelic as spoken by older speakers.

Glasgow Gaelic is here compared to young people's Gaelic in Lewis. The reasons for this are that Lewis is the location of the densest concentration of Gaelic-speakers, Lewis Gaelic is widely heard in the Gaelic media, and over half of the Gaelic-speaking teachers at the Glasgow school were from Lewis. This might suggest that young Glasgow speakers receive substantial input from Lewis speakers. There is, however, a perception in the wider Gaelic community that Lewis Gaelic is 'different'. This notion of 'different' was expressed by 5/28 of the young Glasgow speakers (Section 5.2.1). It is potentially the case that young Glaswegians do not sound like young Lewis speakers because they do not want to. However, the attitudes expressed by Glaswegians with respect to Lewis Gaelic in Section 5.2.1 provide very little evidence to suggest anything other than an ambivalent attitude towards Lewis Gaelic. Also, young people in Glasgow do not just sound *different* to young people in Lewis, they sound distinctly *Glaswegian*. Several of the features described here are non-traditional for all other dialects of Gaelic, but similar to Glasgow English such as the rises on virtually every pitch accent, and the low F2-F1 in alveolar laterals.

9.5 What is the role of identity construction?

This section examines the role identity construction plays in explaining patterns of variation occurring in the Gaelic speakers studied here. As explored in Chapter 2, identity is conceptualised here as fluid and dynamic, at once constructed by the reflexive self (Giddens 1991), but bounded by opportunities available due to social and historical trajectories behind the habitus (Bourdieu 1977). The resources used in the construction of identities are multiple, and include language and linguistic variation (Eckert 2012). Is there any evidence of this in this dataset? I argue that there is evidence of identity construction affecting the linguistic variation observed in this thesis in two respects: firstly in changing conceptions of the self (Section 9.5.1), and secondly in the use of low-level phonetic variation as one aspect of self construction (Section 9.5.2).

9.5.1 Changing conceptions of the self

The first area where the concept of identity is relevant to these data is in the conception of what it means to be a Gaelic speaker. As discussed in the ethnographic analysis (Chapter 5), there were large differences between the groups of speakers in this respect: for older speakers Gaelic is an unmarked way of communicating with friends and neighbours, and is very much tied to local conceptions of place and family. For the young speakers on the other hand, being a Gaelic speaker in an otherwise English-speaking world is very unusual, especially in Glasgow. Glasgow Gaelic speakers tended to hide that they went to the Glasgow school from their acquaintances, and some mentioned that their parents asked them to 'perform' Gaelic in front of family and friends. The differing place Gaelic plays in the identity formation of the different speaker groups led to the argument in Section 9.3 that young people's Gaelic is so socially distinct from old people's Gaelic that it should almost be considered a different language (at least socially).

The differences between the groups of speakers can be conceptualised as partly reflecting a generational difference in notions of the self which have changed due to social developments in the twentieth and twenty-first centuries (Giddens 1991; Sweetman 2003; Adkins 2003; Adams 2006). The authors just cited suggest that in modern society, the self is increasingly reflexively defined in a way that was not the case in previous generations. The shift towards a more reflexive self is not as simple as a generational distinction, but this is a tendency. Another tendency, argued by Adkins (2003), is that the ability to reflexively 'choose' oneself is often more available to men than to women. The data from this analysis appear to largely support these tendencies identified in the sociological literature: for the older generation in Lewis Gaelic is associated with traditional structures of community and family. While the older generation are all active bilinguals and can choose which language they speak, their notion of Gaelic as a part of self is ingrained and part of the fabric of life. This situation is reminiscent of the traditional notion of habitus discussed by Bourdieu (1977): older Lewis speakers possess a series of ingrained dispositions to act in a certain way at certain times,

whilst still leaving room for some individual spontaneity. By contrast, young people are faced by a social world in which there is a much greater encounter with difference, including linguistic difference. In this world, previously existing practices cannot be taken for granted or accepted without reflection, and young people are therefore more likely to reflect on what view of themselves to present to the world, both consciously and unconsciously, informed by the habitus. In the context of Gaelic language revitalisation in an English-speaking world, young people's decision about self definition crucially affects both whether they use Gaelic at all, and indirectly informs the linguistic form their Gaelic takes.

The historical odds are stacked against young people using Gaelic in an unselfconscious way: as discussed in Chapter 3, Gaelic has suffered a long history of persecution and is now associated with rural parts of the Outer Hebrides which are suffering depopulation and lack of opportunities (Table 5.1). Similarly, Chapter 5 discussed some of the material challenges faced in Gaelic-medium education such as the lack of qualified teachers and lack of appropriate materials. Such a context may well shape perceptions regarding the language in the minds of young people, and help to explain some sense of stigma felt in speaking the language, or the embarrassment in revealing to friends that you attend the Glasgow school. In contrast to this, on the other hand, Gaelic is now a language which has employment opportunities and recognised political status in Scotland. For young people, however, the immediate challenges faced at school in association with the social difficulties in strong Gaelic-speaking areas seem to override these new opportunities in Gaelic.

The changing nature of identity to something more self-constructed and fluid, coupled with the current status of Gaelic as a minority language could directly affect the nature of Gaelic's linguistic features: the language is barely used among the young people's peer group which may explain the large discrepancies between their Gaelic and that spoken by their grandparents' generation. As Gaelic is not regularly used for peer communication it may be more susceptible to the influence of community-dominant English, and more susceptible to the kinds of functional change and indirect language transfer explored in the discussions of lateral production, and tone and intonation. In other words, the changes discussed above involving the direct and indirect influence of English, the nature of the way in which adolescents in immersion schooling have acquired Gaelic, and functionally initiated sound changes, are all potentially developments which happen to a language without conscious engagement by speakers. The forces driving such developments however, are decisions taken by speakers about the place of Gaelic in the construction of self, which are in turn influenced by the social and historical trajectory of Gaelic.

9.5.2 The use of linguistic variation in identity construction

The second way in which identity formation is relevant to these data is in the use of linguistic variation to reflect differing social identities among the speakers. Some of the variation in [ʉ] production and intonation among the Glasgow speakers was explained using the community

of practice model. This model states that sustained mutual engagement in particular activities can lead to social practices emerging which are common to members of a particular group (Eckert & McConnell-Ginet 1992). One such social practice to emerge as shared between the group can be the use of particular linguistic variants. This analysis indicated that Vicky's group use significantly different productions of Gaelic [ʉ] to Beth's group, and that Vicky's group use more pre-nuclear rises than Beth's group. This variation, in [ʉ] at least, does not represent a straightforward case of existing patterns in English being transferred into Gaelic, as the community of practice distinctions among the girls were not present in their English [ʉ]. The explanation behind the nature of this variation is relevant to the point raised above; i.e. that Gaelic occupies a very different role in the different lives of the participants. For Vicky and her friends, Gaelic was something that happened at school that they did not necessarily find useful. Indeed, Vicky's group were the less studious of the two female groups and were often sent out of class for giggling, which was less common among Beth and her friends. The social distinction made by the groups of girls around attitudes to school and Gaelic has led to the emergence of socially-structured linguistic variation among the female groups in vowels and intonation. Such distinctions do not define the male groups and no significant differences were found between the male communities of practice in Gaelic. The community of practice differences are not explicable by other factors such as where the students went to primary school, differing language backgrounds at home.

Among the young Lewis people as well, variation in Gaelic productions was reflective of locally relevant social identities. For example, the pupils from the 'town' produced differing intonation patterns to pupils from the country, and one individual who occupies an interesting position in the social hierarchy of the school, Calum, produced intonation patterns which differed from his peers. Another interesting example is presented by Megan, a pupil who represents an interesting test case for the arguments regarding the spread of language change put forward in Labov (2001) and Milroy & Milroy (1985); Milroy (1992). Labov suggests that prominent figures in peer group networks have the social resources to both adopt a changing feature and spread it to the rest of the community. The Milroys' argument instead states that those most prominent members of social networks are the least likely people to innovate language change, and change is instead initiated by peripheral, mobile, network members who then pass it on to those with more social capital who tend to be the agents responsible for diffusing change around the group. This model is supported in Stuart-Smith & Timmins (2010) following Rogers' (2003) model of the spread of innovations in research from across the social sciences. Megan produces very high rates of a new feature, HRT, which she has potentially adopted as a result of contact with English varieties of English. The fact that Megan is very mobile suggests that she may be one of the first people to use a new feature, but is unlikely to diffuse it to the group. Megan provides evidence to support the Milroys' distinction between those who initiate change and those who spread it to the community.

These results of both the vocalic and intonational analysis indicate that linguistic variation in Gaelic can be used by young people as one resource in constructing their identities. In turn

this is informed by the place Gaelic plays in their lives and their conception of what it means to be a young Gaelic speaker, which is very different to what it means to be an older Gaelic speaker in rural Lewis.

9.6 Summary

This chapter has discussed the various linguistic and ethnographic results of this thesis and attempted to answer the research questions asked in Chapter 2. I have presented evidence for large differences between generations in a heartland Gaelic community, the Isle of Lewis, suggested that a new dialect of Gaelic is developing in Glasgow, and explored the role identity construction plays in these developments. The reasons behind the linguistic developments described here are numerous and interrelated: what it means to be a Gaelic speaker today is largely contingent on the status of Gaelic as an endangered and revitalised language. In turn this has implications for the use of linguistic variation in identity construction. Language contact has led to the social context of endangerment and revitalisation, which may explain some of the developments, and also contact-induced transfer, of some of the features occurring in young people's Gaelic. Functional reasons have been cited as explaining other developments, but these are accelerated and accentuated by the social context of language use.

Chapter 10

Conclusions

Here I aim to give an overview of what my research has uncovered about language variation and change in Scottish Gaelic, and the role identity construction plays in these processes. The social context to this research is a background of language endangerment and revitalisation. In particular I concentrate on the sociophonetic outcome of language revitalisation: what particular linguistic developments occur in revitalisation contexts, and what social and linguistic factors inform these developments. This research aims to contribute to wider debates about the nature of phonetic variation and sound change, particularly in minority language and revitalisation contexts.

10.1 The sociophonetic outcome of language revitalisation

The data presented here suggest that there are large differences between the Gaelic as spoken by older generations and the Gaelic spoken by young people in immersion schooling both in the language's traditional heartlands and in urban areas. As well as linguistic differences, I have shown that there are substantial social differences in the way Gaelic is conceptualised, and how it is felt or understood to form part of the identity of its speakers. These differences are so great that I have argued that the apparent-time model of language change is not necessarily appropriate when applied to different generations of Gaelic speakers in Lewis. Instead, it is perhaps more appropriate to conceptualise the situation as one in which a particular linguistic and social kind of Gaelic is replacing another.

In such dramatic circumstances, large-scale differences between the Gaelic of older speakers and that of younger speakers are hardly surprising. I have shown that there are substantial differences in consonants, vowels, and prosody. The reasons for these particular developments taking place are multiple and largely interrelated, including direct and indirect language contact, functional explanations for change, social reasons such as a restriction of contexts in which Gaelic is used and transmitted, which then lead to functional reasons.

Gaelic language revitalisation has led to relatively large numbers of new speakers of the language in non-traditional areas such as Glasgow. This thesis has shown Glasgow Gaelic, as spoken by pupils at the Glasgow school, is linguistically distinct from Highland and Island

varieties of Gaelic such as that spoken in Lewis. The Glasgow Gaelic situation is not a typical case of 'new dialect formation' or 'koineisation' as described in the previous literature, but the data here indicate a distinct Gaelic variety is definitely present in Glasgow. Glasgow Gaelic is atypical to previously described cases of new dialect formation in two respects: firstly, the social circumstances involved indicate that Glasgow Gaelic as described in this thesis will probably not be passed on to future generations in any large-scale manner. Secondly, all Glasgow Gaelic speakers are also speakers of Glasgow English. However, the Glasgow Gaelic variety is socially and linguistically distinct, and recognised as such by its speakers. I therefore suggest Glasgow Gaelic can be considered a new dialect, although it represents a variety formed in a different way to the new dialects previously described in the literature.

Phonetic variation has also been explored in relation to locally salient identities such as community of practice membership, and the locally relevant town/country distinction in Lewis. Results indicate that young people do adopt linguistic variation as one resource in creating distinctions in their peer group. This is a new development in the study of the linguistic form of minority revitalised languages, and indicates that local identities and peer group relations are important in all kinds of language contexts. This thesis also considers changing conceptions of the self and how this relates to language variation and change. I have argued that the change from Gaelic as something ingrained, automatic and 'given', to something which has to be reflexively made part of oneself has partially led to, and informed, the linguistic developments described here: speakers may opt to use either of their languages through an act of conscious or unconscious decision. This decision is informed by the status of Gaelic as a minority language, and the language's social and historical trajectory. The young people studied here, while they are fluent Gaelic speakers, do not use the language among their peers. This act may make Gaelic more susceptible to change, and direct and indirect cross-language influence.

King, Watson, Keegan et al. (2009) note two tendencies of linguistic change in language revitalisation contexts: [1] sound changes will parallel sound changes occurring in the community-dominant language; and [2] phonemes which do not occur in the dominant language may be lost. These data support the two points above: young speakers' Gaelic includes HRT, a feature of English which is becoming more common. Also, structures lacking in the community-dominant language, English, such as palatalised laterals and lexical tones, are subject to variability, or are not produced in the Gaelic of young people. Based on my analysis I can now modify and contribute several more points to those of King, Watson, Keegan et al. (2009):

1. Sound changes will parallel sound changes occurring in the community-dominant language.

2. Structures which do not occur in the dominant language may be lost.

3. Structures with low functional load are liable to change.

4. New varieties of a revitalised language may arise in the new social conditions of the language.

5. Language background of young people affects the production of some linguistic features, but in other cases the influence of the peer group is more important.

6. Identity construction is an important factor in these processes, both in the conception of the self, and in the use of linguistic variation as a resource for identity construction.

7. The social context of a revitalised variety is entirely different to the social context of the language before revitalisation, and this must be recognised in linguistic analyses.

10.2 Future directions

There are still many unanswered questions following on from this research. Gaelic is not a widely studied language, and while this thesis and works cited in it provide initial descriptive analyses, much work remains to be done. For example, phonetically describing Gaelic's complex rhotic and nasal consonant system, describing dialects other than that of the Isle of Lewis, describing more aspects of the vocalic system. Here I present data describing the tone system of Gaelic as spoken by older speakers, but many intonational questions remain such as the nature of boundary tones, the effects of morphological inflections on Gaelic word accents, the nature of downstep in Gaelic, and the effects of different syllabic structures surrounding each tone.

My analysis has provided evidence to suggest that adolescents in Glasgow are developing a distinctively new variety of Gaelic. Questions however remain as to how they acquire this variety in primary school, since adolescents sound so Glaswegian but are taught by different speakers of different Island dialects. Future research will investigate the speech of primary school pupils and assess the impact of different dialects on the children's Gaelic development. While I have suggested that the sociological data support the claim that Glasgow Gaelic is a distinct variety of the language, perceptual testing of linguistic production differences would support this and could provide further qualitative data on Gaelic speakers' attitudes towards and recognition of the variety.

This thesis is entirely phonetic and phonological in the nature of its linguistic analysis. The phonetic data have led to some interesting conclusions about the nature of linguistic variation and its use in identity construction, and about how identity construction is informed and affected by social contexts and language status. However, further information could be gained from a morphosyntactic analysis of the data, which would allow the investigation of language variation and change from a different and potentially contrasting perspective. Also, research into language change such as Bybee (2002) suggests that word frequency is extremely important in understanding change. This has not been considered in the current study, but could be the subject of future research.

10.3 Closing remarks

This thesis has shown that language revitalisation may lead to varieties that are linguistically different to previous varieties, including the development of entirely new varieties of the language. Many interacting factors inform the nature of linguistic developments; for example, the change from the language as an unmarked code of communication to one which is extremely unusual among young people, the nature of the language varieties in contact, the contexts in which the revitalised language is used, and the internal structure of the revitalised language. Locally relevant social categories also inform the use and extent of variation within the revitalised language. Socially, the revitalised language is a very different entity to previous varieties, and this must be taken into account when exploring patterns of variation and discussing possible language change, or replacement by a new variety.

Contexts of rapid language change can often invoke alarm in older communities. What I find here, however, is that the range of variation in the new young speakers of Gaelic reflects the communicative purposes for which Gaelic is used in the contemporary world. Understanding the social world in which young people use Gaelic, and the social histories in which it is embedded, facilitates a broader perspective on their use of linguistic variation. To this end, Gaelic-medium education has a significant role to play in these young people's lives, providing them with extended access to Gaelic in an immersion environment, as well as providing them with another resource for identity construction. Greater recognition should be awarded to the immense achievements of Gaelic-medium education, and minority language revitalisation in general. The rest is phonetic detail.

Appendices

Appendix A

Information sheets and consent forms

A.1 Older Lewis speakers - information

Gaelic recordings
Information for participants

Thank you for agreeing to take part in my study. This interview is part of my PhD research at the University of Glasgow (funded by a Kelvin-Smith scholarship). I am interested in Gaelic speakers in different communities. I might use the data from this recording in conference presentations or in future publications, but the data will be completely anonymised. The recordings will be kept securely on password-protected University network drives, only accessible to myself and those working on this project.

For further information or to address any concerns, please contact me, Claire Nance:
c.nance.1@research.gla.ac.uk
Celtic and Gaelic,
3 University Gardens,
Glasgow G12 8QH
0141 330 4222

or the Head of Celtic and Gaelic Roibeard Ó Maolalaigh:
roibeard.omaolalaigh@glasgow.ac.uk
Celtic and Gaelic,
3 University Gardens,
Glasgow G12 8QH
0141 330 6327

Mòran taing!
Claire

A.2 Older Lewis speakers - consent

Gaelic recordings
Consent form

I have read and understood the information sheet and this consent form. I have had an opportunity to ask questions about my participation.

Please indicate your consent to be a research participant here by deleting 'do not agree':

- I agree / do not agree to participate in this study
- I agree / do not agree that anonymous audio recordings of my voice may be stored indefinitely and used for academic purposes (including analysis, research, academic conference presentations, publications, future applications for research funding and university teaching).

Name _____

Signature _____

Date _____

Further information is available from:
Claire Nance (c.nance.1@research.gla.ac.uk, 0141 330 4222)

and/or Professor Roibeard Maolalaigh
(roibeard.omaolalaigh@glasgow.ac.uk, 0141 330 6327).

A.3 Younger Lewis speakers - information and consent

Ceiltis is Gàidhlig / Celtic and Gaelic
University of Glasgow
3 University Gardens
Glasgow G12 8QH
20th November 2011

Dear parent/guardian, a charaid chòir,

I am writing to provide you with further information about an ongoing research project at the Lewis school. This project, based at the University of Glasgow, is investigating the Gaelic spoken by young people in Lewis.

The next stage of the project will involve interviews with some of the students, and your child has been selected to take part. The session will involve an informal chat in Gaelic and English, and reading some Gaelic words off a computer screen. The interview will be recorded in order to allow analysis after the session. Anonymity will be strictly adhered to. In recognition of their participation, students will receive a £5 voucher for music or books from Amazon. This study has undergone full ethical review by the University of Glasgow's Research Ethics Board to ensure safety and well-being of all participants. Anonymised extracts from the recordings may be used in future conference presentations, teaching and research projects.

Full consent is required from both the child and parent/guardian for participation in this study. Please sign below to indicate your consent, and return slips to Claire Nance during morning registration. If you have any questions or concerns about this study, please do not hesitate to contact me at c.nance.1@research.gla.ac.uk. Thank you for your cooperation.

Yours faithfully / le deagh dhùrachd,
Claire Nance, Ceiltis is Gàidhlig / Celtic and Gaelic, University of Glasgow

I give permission for ..... to take part in this study as detailed above.

Signed (parent / guardian) _____

Signed (child) _____

Date _____

A.4 Glasgow speakers - information

Ceiltis is Gàidhlig / Celtic and Gaelic
University of Glasgow
3 University Gardens
Glasgow G12 8QH
21st April 2011

Dear parent/guardian, a charaid chòir,

I am writing to inform you about a research project at the Glasgow school taking place in May 2011. This project is based at the University of Glasgow and is investigating how young people use Gaelic. The research will form part of my PhD in Gaelic and Linguistics at the department of Celtic and Gaelic.

Over the next month I will be attending classes at the Glasgow school in order to observe the pupils' interactions with one another and with staff, and in particular, how pupils use language in their everyday lives at school. I would like to emphasise that I will not be 'targeting' individuals and that I will not be studying teaching practices, and anonymity will be strictly adhered to.

From the end of May I will ask whether pupils would voluntarily like to part in a recorded interview. This interview will not take up any school time and participation will be entirely voluntary. I will be sending out further information about the interview part of the research at the end of May. Full parental/ guardian consent will be sought before any pupil is recorded.

If you have any questions or concerns about this project, please do not hesitate to contact me at c.nance.1@research.gla.ac.uk.

Please complete the tear-off slip below and return to the Glasgow school office by Tuesday 26th April 2011. Thank you for your co-operation.

Yours faithfully / le deagh dhùrachd,
Claire Nance, Ceiltis is Gàidhlig / Celtic and Gaelic, University of Glasgow

I have received information on the research project to be completed by Claire Nance, University of Glasgow.

Signed (parent / guardian) _____

Date _____

A.5 Glasgow speakers - consent

Ceiltis is Gàidhlig / Celtic and Gaelic
University of Glasgow
3 University Gardens
Glasgow G12 8QH
8th May 2011

Dear parent/guardian, a charaid chòir,

I am writing to provide you with further information about an ongoing research project at the Glasgow school. This project, based at the University of Glasgow, is investigating the Gaelic spoken by young people in Glasgow.

The next stage of the project will involve interviews with some of the students at the Glasgow school, and your child has been selected to take part. The session will involve an informal chat in Gaelic and English, and reading some Gaelic words off a computer screen. The interview will be recorded in order to allow analysis after the session. Anonymity will be strictly adhered to. In recognition of their participation, students will receive a £5 voucher for music or books from Amazon. This study has undergone full ethical review by the University of Glasgow's Research Ethics Board to ensure safety and well-being of all participants. Anonymised extracts from the recordings may be used in future conference presentations, teaching and research projects.

Full consent is required from both the child and parent/guardian for participation in this study. Please sign below to indicate your consent, and return slips to Claire Nance during morning registration. If you have any questions or concerns about this study, please do not hesitate to contact me at c.nance.1@research.gla.ac.uk. Thank you for your cooperation.

Yours faithfully / le deagh dhùrachd,
Claire Nance, Ceiltis is Gàidhlig / Celtic and Gaelic, University of Glasgow

I give permission for ..... to take part in this study as detailed above.

Signed (parent / guardian) _____

Signed (child) _____

Date _____

Appendix B

Participant biographical information

This Section provides information relating to each participant's background and self-reported language use collected during each interview. The questions asked are in Section 4.5.5. Answers relating to where the participant and their family were from, and their language use patterns are in Section 5.3. These tables display the answers to questions 1, 2, 6, 19, 24 and 25. The age of the older participants is shown in 5-year bins for anonymity. For convenience, the participants' pseudonyms and numbers are also given, as well as their speaker group (Lewis old, Lewis young, Glasgow), their gender, the young people's distance travelled to school (in 5-mile bins for anonymity), primary school attended (coded here as numbers for anonymity), class at the Glasgow school, community of practice at the Glasgow school, and town/country distinction at the Lewis school. Participants analysed phonetically have a star after their name.

Pseudonym	Number	Group	Gender	Age at recording	Primary	Glasgow class	Distance to school (miles)	COP	Lived elsewhere
John	lm16	Lewis old	m	60-65	n/a	n/a	n/a	n/a	at sea
Aonghas	lm15	Lewis old	m	85-90	n/a	n/a	n/a	n/a	Glasgow, Edinburgh
Alasdair	lm14	Lewis old	m	85-90	n/a	n/a	n/a	n/a	at sea
Murdo*	lm13	Lewis old	m	60-65	n/a	n/a	n/a	n/a	Glasgow, at sea
Donald*	lm12	Lewis old	m	85-90	n/a	n/a	n/a	n/a	at sea
Malcolm*	lm11	Lewis old	m	65-70	n/a	n/a	n/a	n/a	no
Ina	lf12	Lewis old	f	60-65	n/a	n/a	n/a	n/a	Glasgow, Edinburgh
Christina	lf11	Lewis old	f	55-60	n/a	n/a	n/a	n/a	Glasgow
Margaret	lf10	Lewis old	f	65-70	n/a	n/a	n/a	n/a	Aberdeen, Central Scotland
Magaidh*	lf09	Lewis old	f	60-65	n/a	n/a	n/a	n/a	Edinburgh
Ciorstaidh*	lf08	Lewis old	f	70-75	n/a	n/a	n/a	n/a	Central Scotland
Donaldina*	lf07	Lewis old	f	75-80	n/a	n/a	n/a	n/a	Edinburgh
Harry*	lm10	Lewis young	m	13	11	n/a	5-10	country	no
Andrew*	lm09	Lewis young	m	13	2 and 11	n/a	5-10	country	Glasgow 5 years
Angus	lm08	Lewis young	m	13	7	n/a	0-5	town	no
Ed*	lm07	Lewis young	m	13	11	n/a	0-5	country	no
Niall	lm06	Lewis young	m	13	7	n/a	0-5	town	no
Connar*	lm05	Lewis young	m	13	14 and 7	n/a	0-5	town	Inner Hebrides 6 years
Jonathan*	lm04	Lewis young	m	13	13	n/a	25-30	country	no
Dan	lm03	Lewis young	m	13	12	n/a	10-15	country	no
Frasier	lm02	Lewis young	m	13	7	n/a	15-20	country	Stornoway 5 years
Calum*	lm01	Lewis young	m	13	10	n/a	0-5	country	no
Rachel*	lf06	Lewis young	f	13	11	n/a	5-10	country	no
Katie *	lf05	Lewis young	f	13	10	n/a	0-5	country	no
Megan*	lf04	Lewis young	f	13	9	n/a	5-10	country	Stornoway
Molly*	lf03	Lewis young	f	13	7	n/a	0-5	town	no
Shannon*	lf02	Lewis young	f	13	7	n/a	0-5	town	no
Amy*	lf01	Lewis young	f	13	8	n/a	5-10	country	no

Table B.1: Biographical information from Lewis older speakers and Lewis younger speakers.

Pseudonym	Number	Group	Gender	Age at recording	Primary	Glasgow class	Distance to school (miles)	COP	Lived elsewhere
Will	gm14	Glasgow	m	14	7	2	0-5	football	Glasgow
Jamie	gm13	Glasgow	m	14	2	2	5-10	football	no
Darren	gm12	Glasgow	m	14	3	2	35-40	football	no
Phil*	gm09	Glasgow	m	14	6	2	50-55	music	overseas 1 year
Mark*	gm08	Glasgow	m	14	3	2	40-45	music	no
Jim*	gm07	Glasgow	m	14	2	1	10-15	football	Outer Hebrides 1 year
Luke*	gm06	Glasgow	m	13	3	1	55-60	football	no
Jonathan*	gm05	Glasgow	m	13	1	1	20-25	music	no
Harry*	gm04	Glasgow	m	14	2	1	0-5	music	no
Max*	gm03	Glasgow	m	14	2	1	10-15	football	no
Matthew*	gm02	Glasgow	m	14	2	2	5-10	football	no
Joe*	gm01	Glasgow	m	14	1	1	20-25	music	no
Flora	gf16	Glasgow	f	13	5	1	5-10	Beth	Outer Hebrides 10 years
Jen	gf15	Glasgow	f	14	4	1	0-5	Beth	Outer Hebrides 10 years
Alice	gf14	Glasgow	f	14	3	1	40-45	in between	no
Gemma	gf13	Glasgow	f	13	2	2	20-25	Beth	no
Catriona*	gf12	Glasgow	f	14	2	1	10-15	in between	no
Miranda*	gf11	Glasgow	f	14	2	2	0-5	Vicky	no
Nicola*	gf10	Glasgow	f	14	3	1	35-40	Vicky	no
Kirsty*	gf09	Glasgow	f	14	2	1	10-15	Beth	no
Sophie*	gf08	Glasgow	f	14	2	2	5-10	Beth	no
Sarah*	gf07	Glasgow	f	14	1	1	15-20	Vicky	overseas 2 years
Izzie*	gf06	Glasgow	f	14	1	2	30-35	Beth	no
Tara*	gf05	Glasgow	f	14	1	2	15-20	Vicky	no
Hannah*	gf04	Glasgow	f	14	2	2	5-10	Beth	South England one year
Rebecca*	gf03	Glasgow	f	14	2	2	5-10	Vicky	Inner Hebrides 5 years
Beth*	gf02	Glasgow	f	14	1	2	15-20	Beth	no
Vicky*	gf01	Glasgow	f	14	1	2	20-25	Vicky	no

Table B.2: Biographical information from Glasgow speakers.

Pseudonym	Number	Group	Gaelic leisure activity	Contexts in which you use Gaelic	Contexts in which you use English
John	lm16	Lewis old	church	Gaelic speakers	non Gaelic speakers
Aonghas	lm15	Lewis old	church	Gaelic speakers	non Gaelic speakers
Alasdair	lm14	Lewis old	church	church, family	non Gaelic speakers
Murdo*	lm13	Lewis old	church	specific people	non Gaelic speakers
Donald*	lm12	Lewis old	church	Gaelic speakers	non Gaelic speakers
Malcolm*	lm11	Lewis old	church	Gaelic speakers	non Gaelic speakers
Ina	lf12	Lewis old	church	Gaelic speakers	shopping, non Gaelic speakers
Christina	lf11	Lewis old	church	Gaelic speakers	non Gaelic speakers
Margaret	lf10	Lewis old	church	Gaelic speakers	Shopping, non Gaelic speakers
Magaidh*	lf09	Lewis old	church	Gaelic speakers	non Gaelic speakers
Ciorstaidh*	lf08	Lewis old	church	all the time	Specific people
Donaldina*	lf07	Lewis old	church	family, church	Some people
Harry*	lm10	Lewis young	sradagan	school, family	With friends
Andrew*	lm09	Lewis young	no	school, family	Everything
Angus	lm08	Lewis young	no	school	Everywhere
Ed*	lm07	Lewis young	no	family	Most of the time
Niall	lm06	Lewis young	no	school	Most of the time
Connar*	lm05	Lewis young	no	Gaelic classes in school	Everything else
Jonathan*	lm04	Lewis young	no	school, church, old people	Everyday life, talking to friends at school
Dan	lm03	Lewis young	no	usually at school	School and at home
Frasier	lm02	Lewis young	no	school, family	Family, with Mum
Calum*	lm01	Lewis young	sradagan	school, family	Everywhere
Rachel*	lf06	Lewis young	sradagan	speaking to old people	Talking to younger people
Katie*	lf05	Lewis young	no	school	Home and English subjects at school
Megan*	lf04	Lewis young	no	usually at school	Home, family
Molly*	lf03	Lewis young	no	school	Home, friends, English subjects
Shannon*	lf02	Lewis young	sradagan	Gaelic classes in school	Home, out and about, secret language
Amy*	lf01	Lewis young	no	speaking to old people	Talking to everyone

Table B.3: Biographical information (continued) from Lewis older speakers and Lewis younger speakers.

Pseudonym	Number	Group	Gaelic leisure activity	Contexts in which you use Gaelic	Contexts in which you use English
Will	gm14	Glasgow	no	School	Everything
Jamie	gm13	Glasgow	no	at school (answering questions)	most of the time
Darren	gm12	Glasgow	no	School	Talking to my friends
Phil*	gm09	Glasgow	no	In school, at home and at relatives houses	Everywhere, except school
Mark*	gm08	Glasgow	no	School	All the time
Jim*	gm07	Glasgow	no	School, grandparents	Everyday
Luke*	gm06	Glasgow	no	School	All of the time
Jonathan*	gm05	Glasgow	sradagan	Speaking and writing	Speaking and writing and reading
Harry*	gm04	Glasgow	no	School/ talking to granny	All the time
Max*	gm03	Glasgow	no	School and seeing my grandparents and other family	With my friends and my dad
Matthew*	gm02	Glasgow	no	Sometimes talking to my mum or in school	Mostly everything
Joe*	gm01	Glasgow	no	School	Out of school
Flora	gf16	Glasgow	no	School, talking to my Gran	most of the time
Jen	gf15	Glasgow	no	School and my uncle	talking to people
Alice	gf14	Glasgow	no	School	School and home
Gemma	gf13	Glasgow	no	School	Home
Catriona*	gf12	Glasgow	no	going to school, speaking to dad, granny, teachers	mum, friends, at home
Miranda*	gf11	Glasgow	no	School	Everywhere
Nicola*	gf10	Glasgow	no	School	Home and school
Kirsty*	gf09	Glasgow	no	School, when in Outer Hebrides	Everywhere else
Sophie*	gf08	Glasgow	no	To my mum and her parents, school	My friends. To my Dad's side.
Sarah*	gf07	Glasgow	no	At school	At home
Izzie*	gf06	Glasgow	no	School	Talking to friends
Tara*	gf05	Glasgow	no	at school	Whenever I'm talking
Hannah*	gf04	Glasgow	no	School	Daily life
Rebecca*	gf03	Glasgow	Gaelic drama camp	School	Home, outside school
Beth*	gf02	Glasgow	no	School	Everywhere
Vicky*	gf01	Glasgow	no	School	All the time in and out of school

Table B.4: Biographical information (continued) from Glasgow speakers.

Appendix C

Reading passage

There was once a poor shepherd boy who used to watch his flocks in the fields next to a dark forest near the foot of a mountain. One hot afternoon, he thought up a good plan to get some company for himself and also have a little fun. Raising his fist in the air, he ran down to the village shouting 'Wolf, Wolf.' As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety, and two of his cousins even stayed with him for a short while. This gave the boy so much pleasure that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf that had just escaped from the zoo was looking for a change from its usual diet of chicken and duck. So, overcoming its fear of being shot, it actually did come out from the forest and began to threaten the sheep. Racing down to the village, the boy of course cried out even louder than before. Unfortunately, as all the villagers were convinced that he was trying to fool them a third time, they told him, 'Go away and don't bother us again.' And so the wolf had a feast.

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