What is a Merger, and can it be Reversed?

The Origin, Status and Reversal of the 'NURSE-NORTH Merger' in Tyneside English

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What is a Merger, and can it be Reversed? The Origin, Status and Reversal of the 'NURSE-NORTH Merger' in Tyneside English.

This thesis examines the apparent merger of the NURSE and NORTH lexical sets in Tyneside English. In order to determine its origin and status, whether reversal of the merger has taken place, and whether Wells (1982) is correct in his assertion that no hypercorrection has occurred, I examine two kinds of data: (1) traditional dialect phonetic transcriptions; and (2) an auditory and acoustic phonetic analysis of a socially stratified corpus of Tyneside English, the Tyneside Linguistic Survey (Pellowe *et al.* 1972).

Analysis of the first data-set suggests that there was indeed a merger of these two lexical sets. However, the sampling and elicitation methods employed mean that the real distribution of the merger within the speech community and within the speech of the informants themselves remains unknown. The second data-set is key, therefore, in that it reveals a range of speaker types, from those with complete merger to those with completely distinct NURSE and NORTH lexical sets. Additionally, there is evidence that hypercorrection of the NORTH lexical set has occurred, but on a narrower phonetic scale than Wells (1982) originally envisaged.

In light of these divergent data and accounts of other 'mergers', it is argued in this thesis that mergers are, in reality, diverse and complex sociolinguistic phenomena, so that questions such as *Is X a merger?* and *Has merger X been reversed?* only make sense when we know what kind of 'merger' X really was. Since the 'NURSE-NORTH Merger' is limited linguistically, geographically and socially, it is argued here that its reversal has been achieved with minimal disruption to the linguistic system in a way that would not be possible for other more widespread and entrenched mergers. Furthermore, it is suggested that it has been reversed in a phonetically gradual manner, such that obvious hypercorrection has been avoided. This possibility of phonetically gradual but lexically specific reversals of merger raises important questions for models of sound change.

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Dedicate to people of Tyneside, past, present and future.

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Chapter 1: Mergers and Merger-like Phenomena

1.1. Introduction

In his account of the accent of Tyneside in northeast England (colloquially known as 'Geordie'), Wells (1982: 374-5) states that:

> In the broadest Geordie the lexical set NURSE is merged with NORTH, /ɔ:/: *work* [wɔ:k], *first* [fɔ:st], *shirt* [ʃɔ:t] (= *short*). What is elsewhere a central vowel has undergone backing through the influence of /r/ [ɹ] which once followed ... Thus [wɔ:k], which in most accents of English can only be *walk*, is *work* in broad Geordie, while *walk* has the unambiguous form [wa:k].

Wells (1982: 137-140) defines the NURSE lexical set[1] as that set of words which contains /ɜ:/ in RP and /ɜr/ in General American English, and he defines NORTH as that set of words which contains /ɔ:/ in RP and /ɔr/ in General American English (Wells 1982: 159-160). The merger described by Wells (1982) is, in this thesis, called the 'NURSE-NORTH Merger'.

Wells notes (p. 375) that this account of the NURSE and NORTH lexical sets is only half the story, however:

> In a less broad Newcastle accent, NURSE words have [ɜ:] or something similar, e.g. rounded centralised-front [ø:]. It appears that no hyper-correction of the type *short* *[ʃø:t] occurs: either the merger of NURSE and NORTH was never categorical, or speakers are unusually successful in sorting the two sets out again.

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[1] In order to make sense of the variety of pronunciation and lexical incidence in the accents of English, Wells (1982) establishes 27 keywords, "each of which ... stands for a large number of words which behave the same way in respect of the incidence of vowels in different accents" (Wells 1982: 119-120). These groups of words are called "standard lexical sets" (p. 122), and are used as a tool for comparing the lexical incidence of different pronunciations in different accents of English, with Received Pronunciation (RP) and General American (GenAm) acting as the base reference points of lexical distribution. I discuss Wells's lexical sets in detail in Chapter 2.

Thus Wells records a significant structural disjunction, as regards the NURSE and NORTH lexical sets, between traditional forms of Tyneside English (TE) on the one hand and "less broad" forms on the other, giving rise to what may be termed 'Wells's problem': if the NURSE and NORTH lexical sets were previously identical in TE, how is it that speakers have been able to re-sort the words that belonged to this merged lexical set into the two original sets without any errors? In order to solve 'Wells's Problem', I suggest that six specific questions must first be addressed. These questions are:

1) What are the NURSE and NORTH lexical sets and are they the same in Tyneside English as they are in Wells's definitions?
2) How did the 'NURSE-NORTH Merger' develop?[2]
3) What does Wells mean when he questions whether the 'NURSE-NORTH Merger' was "categorical"?
4) Is it possible that the 'NURSE-NORTH Merger' was never a merger in the first place and, if so, how?
5) Have speakers of Tyneside English reversed the 'NURSE-NORTH Merger'?
6) Have speakers of Tyneside English been "unusually successful" at sorting out the 'merger' into its two contributing lexical sets (i.e. is it true that there has been no hypercorrection of NORTH in the apparent reversal of the 'NURSE-NORTH Merger')?

Answering these questions will form a major part of this thesis, and in the following section, each of them is discussed in turn.

1.1.1. Specific questions arising from 'Wells's Problem'

Question 1: What are the NURSE and NORTH lexical sets and are they the same in Tyneside English as they are in Wells's definition?

As mentioned above, Wells (1982: 137-140, 159-160) defines the NURSE and NORTH lexical sets with reference to two accents of English, RP and GenAm. In

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[2] Including the sub-questions (i) what was the role of the historical uvular R which once followed the vowel in these words, and (ii) what does the historical development of the 'NURSE-NORTH Merger' tell us about its nature?

order to understand the 'NURSE-NORTH Merger' more fully, it is not only necessary to clarify precisely which words in English are members of the NURSE and NORTH lexical sets, but also to determine whether the membership of these two lexical sets, as defined by Wells (1982), is the same as the membership of either the combined NURSE-NORTH lexical set in "broad" TE, or of the separate NURSE and NORTH lexical sets in "less broad" TE. The importance of this point is highlighted by the existence of certain distinctions and mergers in regional accents and dialects of English which potentially interfere with Wells's classification of words as belonging to either NURSE or NORTH. In Standard Scottish English, for example, a three-way phonemic contrast exists between words such as *circle* (/ɪr/), *earth* (/ɛr/) and *turn* (/ʌr/), such that there is no unified NURSE lexical set (Wells 1982: 200). Were similar distinctions to be found in the dialects of northeast England, it would be necessary to determine the relationship of these lexical subsets to each other and to NORTH before a definition of the 'NURSE-NORTH Merger' could be given. Similarly, a merger of Wells's NORTH and FORCE lexical sets is characteristic of many accents and dialects of English in England (see Section 1.3.2 below), and this too would impact on any definition of the 'NURSE-NORTH Merger' were it also characteristic of the accents and dialects of northeast England. These issues, which potentially impact on the definition of the 'NURSE-NORTH Merger' and the solving of 'Wells's Problem', are addressed in Chapters 2 and 3.

Question 2: How did the 'NURSE-NORTH Merger' develop?

In the discussion of Question 1 immediately above, it was suggested that the precise membership of the NURSE and NORTH lexical sets needs to be known before any definition of the 'merger' can be given. Since the membership of any lexical set is the result of a series of historical developments (see Chapter 3), it follows that we need to know the history of the lexical sets in order to determine their membership. Furthermore, the mechanism by which the merger of NURSE and NORTH in TE occurred may well have an impact on the status of the merger, since it is demonstrable that not all mergers develop in the same way (see Section 1.2.1 below for further discussion). As one of the key questions in this thesis is whether the NURSE and NORTH sets were, in reality, merged, an explanation of how they appear to have merged may well shed some light on its status. The question of the historical development of the 'NURSE-NORTH Merger' is addressed in Chapter 3.

Question 3: What does Wells mean when he questions whether the 'NURSE-NORTH Merger' was "categorical"?

In Wells's statement, he suggests, as a possible explanation for the correct separation of the two lexical sets, that the merger of NURSE and NORTH may never have been "categorical", but he does not indicate what he means by this term. A number of different interpretations of his use of the term "categorical" can be imagined. For example, the 'merger' may have affected only parts of the NURSE or NORTH lexical sets, as indicated in Questions 1 and 2 above, such that other parts of the two lexical sets did not need to be sorted out again. Or the merger may have been variable for all speakers, such that alternate pronunciations existed for one or both of the two lexical sets in addition to those which made them identical. Alternatively, the merger may only have been characteristic of a subsection of the Tyneside population rather than the whole of it. Additionally, some combination of some or all of these might also have been possible (e.g. only some of NURSE merged with NORTH in only part of the Tyneside population and, even then, only variably so).

Whichever of these possible meanings of "categorical" Wells intended, it is clear that each may have arisen in different ways and would have important, and perhaps rather different, consequences for any definition of the 'NURSE-NORTH Merger' or the ease with which it might have been "sorted out".

The question of the categoricalness or otherwise of the 'NURSE-NORTH Merger' (and what, for that matter, the term "categorical" might mean) is central to this thesis and is addressed in particular in Chapters 2, 3, 4, 6 and 8.

Question 4: Is it possible that the 'NURSE-NORTH Merger' was never a merger in the first place and, if so, how?

Related to the previous question is the issue of whether the 'NURSE-NORTH Merger' was ever a merger in the first place. A negative answer to this question assumes that Wells and others who have reported the merger of the NURSE and NORTH lexical sets in the northeast of England were mistaken and that, despite the phonetic similarity of the two lexical sets, they were not, in fact, phonetically identical. Although this might seem a rather bold proposition in the face of considerable evidence to the

contrary (as discussed in Chapters 2 and 3), research by, for example, Labov *et al.* (1972) and Milroy and Harris (1980) has shown that it *is* possible for two vowel phonemes to have been mistakenly reported as the same, even by those who know the dialects concerned well, but for a small (though significant) difference in their phonetic distributions to remain, such that they are not truly merged at all. Mergers of this type have been called 'near-mergers'. Since, in such cases, no merger has taken place, the question of whether a reversal of the merger has occurred is a *non sequitur* and, as a result, this would have profound consequences for all of the questions considered in this chapter if this were found to be the case with the NURSE and NORTH lexical sets in TE.

The question of whether the 'NURSE-NORTH Merger' was, in fact, a near-merger is also central to this thesis and, following discussion of the nature of near-mergers in Section 1.4 of this chapter, it is addressed in particular in Chapters 2, 3, 6 and 7.

Question 5: Have speakers of Tyneside English reversed the 'NURSE-NORTH Merger'?

Although Wells (1982: 375) reports that, "in a less broad Newcastle accent", NURSE and NORTH are no longer the same, the question remains, in the absence of a quantification of the distribution of NURSE and NORTH variants in the community, to what extent the 'NURSE-NORTH Merger' survives or has disappeared in TE. If it is the case that the 'NURSE-NORTH Merger' is now (and perhaps has been for some time) moribund in TE, our approach to the analysis of its disappearance will necessarily be rather different than if it is still widely present in the speech community. Furthermore, the distribution of the 'merger' in the community may very well indicate the history of the 'NURSE-NORTH Merger' and its apparent reversal: if the 'merger' is more characteristic of certain parts of the population than of others, this might indicate that it is indeed disappearing, but if it is clearly extant in the population as a whole, this might indicate that it is not. Hence, the distribution of the 'NURSE-NORTH Merger' in the community, and its presence or absence in the speech of particular sub-groups of that community, might indicate whether the 'merger' is being reversed in TE or whether it is, and continues to be, a feature of the dialect that is used by some speakers and not by others. This question is addressed in particular in Chapters 2, 4, 6 and 7.

Question 6: Have speakers of Tyneside English been "unusually successful" at sorting out the 'merger' into its two contributing lexical sets (i.e. is it true that there has been no hypercorrection of NORTH in the apparent reversal of the 'NURSE-NORTH Merger')?

Wells (1982: 375) suggests that in separating out the NURSE and NORTH lexical sets, speakers of TE have correctly assigned each word to the appropriate lexical set, since he finds no examples of NORTH words with the vowel [ø:], which, he claims, is characteristic of NURSE in "a less broad Newcastle accent". The question remains whether this is (or was) indeed the case, since it might well be necessary to examine the speech of a large number of speakers of TE from a transitional period in the development of the NURSE and NORTH lexical sets in order to be certain. Furthermore, such an investigation should enable us to determine not only whether hypercorrection has taken place, but also whether Wells is right in his assumption that it would be of the type *short* *[ʃø:t] rather than some other, perhaps more subtle, effect. This issue is addressed in Chapters 4, 6, 7 and 8.

1.1.2. General questions arising from 'Wells's Problem'

This thesis seeks to answer these questions in order to solve 'Wells's Problem'. It is already apparent in the discussion of them, however, that they are interconnected and that they ultimately depend upon the answers to a number of more general questions which also need to be addressed if we are to understand the origin, status, and possibility of reversal of *any* merger. It will be seen that these questions go right to the centre of what it is we are doing as phoneticians, (historical) phonologists, and linguists. In what follows, I discuss five general questions which are of central importance in understanding the nature of mergers, including the 'NURSE-NORTH Merger', questions which form the basis of much of the discussion in this thesis. These questions are:

Question 7: How do mergers develop?

As discussed above, the way in which the 'NURSE-NORTH Merger' has developed may well impact upon its definition, since it will determine the membership of the merged class of words, the factors which led to the merger, and the mechanism by which the phonetic distribution of the two lexical sets became the same (if, indeed, they did). Since it may not be possible to determine with confidence this precise

mechanism, it will be instructive to examine the means by which other mergers have developed, and the results that arise from different kinds of development. This question is addressed in Section 1.2.1 in this chapter, but it also underpins much of the discussion in Chapters 3 and 4.

Question 8: What constitutes evidence of a merger?

All of the questions specific to the 'NURSE-NORTH Merger' above assume that linguists can identify whether or not a merger has taken place. But what kinds of evidence do linguists have to determine whether a particular merger has occurred? A range of types of evidence can be imagined, from native speaker judgements, perceptions and introspection to (auditory and acoustic) phonetic analysis, but not all might be of equal value in establishing the actuality of a particular merger. In light of the existence of near-mergers (see Section 1.4 below), the question of what constitutes evidence of a merger is even more acute, and, as such, this issue features in much of the debate throughout this thesis, particularly in Chapters 2 and 5.

Question 9: Can mergers be non-categorical and, if so, what does this mean?

In the discussion of Question 3 above, a number of ways in which a merger could be considered non-categorical were envisaged. Since its categoricalness or otherwise may be of central importance in defining whether a given merger can be reversed or, indeed, if it ought to be considered a merger in the first place, this issue is also central to the discussion in this thesis. In particular, it is central to this chapter, to the discussion in Chapters 2, 4, 7 and 8, and in the data presented in Chapter 6.

Question 10: Can mergers be reversed and, if so, how?

The comments in Wells (1982: 375) on the 'NURSE-NORTH Merger' imply that reversing mergers correctly is difficult, since he states that if speakers of TE have done so, they have been "unusually successful". In order to determine how unusual this case really is, it is necessary to determine whether mergers have been reversed in other circumstances, and how common this is. If it turns out that there are no other recorded instances of reversal of merger, this would suggest (although not prove) that reversal of merger is not possible and, *ipso facto*, that some other explanation must be sought for the apparent reversal of the 'NURSE-NORTH Merger'. If, on the

other hand, there is evidence to the effect that other mergers have been reversed, this would suggest that reversal of mergers is possible, in some (perhaps special) circumstances at least. The reversibility or otherwise of mergers is another key topic in this thesis, and is discussed in particular in Chapters 4 and 8.

Question 11: What is hypercorrection, and what are the mechanisms which give rise to it?

Wells predicts that if speakers of TE had reversed the 'NURSE-NORTH Merger' unsuccessfully, they would have produced hypercorrect forms such as [ʃø:t] for *short*. This assumes that when speakers attempt to produce a distinction which did not previously exist in their dialect, they get it completely wrong, hypercorrecting directly to some target pronunciation, rather than producing phonetically intermediate forms (such as [ʃɔ̈:t] in the Tyneside example). If hypercorrection of this phonetically more subtle kind is found to exist, it would suggest that Wells's dichotomy between perfect reversal on the one hand and reversal with obvious hypercorrection on the other need not be accurate, and may imply that subtle hypercorrection has gone unnoticed in other apparently successful reversals of merger. This issue is examined in detail in Chapters 4, 7 and 8 of this thesis.

It is the aim of this thesis to answer the six specific questions, 1 to 6, and the five more general questions, 7 to 11. Throughout this thesis, it is argued that behind these 11 questions lies one further, very general question which has important implications for our understanding of the nature of sound change, phonetic and phonological patterns, and of language in general. This question, which it is the ultimate goal of this thesis to answer, is:

Question 12: What is a merger?

It might seem odd, in a thesis that discusses a particular merger and which reviews numerous accounts of other mergers, that this question needs to be asked, since discussing these phenomena together assumes that they can be defined as 'mergers' and have something in common. Nevertheless, one of the central arguments in this thesis is that the objects which have been associated with the term 'merger' are a diverse range of sociolinguistic phenomena, and the term 'merger'

actually means a variety of things, in different contexts. Since each of the specific questions, 1 to 6 and, even more so, each of the general questions, 7 to 11, assumes that there is such a thing as a 'merger', the answer to question 12 is clearly crucial. As such, it forms the background to and is frequently central to the discussion throughout this thesis. It is worth noting at this point, however, that the answer to Question 12 is far from straightforward – nor is it new. Macaulay (1978: 142), for example, suggests that:

> The central problem in linguistics, after all, is the classification of two tokens, whether whole utterances or only segments, as 'the same' or 'different'. The presence of certain similarities or differences *per se* does not determine the classification as 'the same' or 'different'; that depends on whether the similarities or differences are significant.

How do we determine whether two linguistic phenomena are the same or different, then? Although the specific questions 1 to 6 above depend upon the more general questions 7 to 11, and they in turn depend upon this central question *(What is a merger?)*, it is contended in this thesis that the only way in which we can answer this general question (as well as 7 to 11) is through examination of specific cases of merger which give rise to questions such as 1 to 6. That is, it is only through examining a variety of cases of merger and the particularities of mergers such as the 'NURSE-NORTH Merger' in detail that we can answer the question *What is a merger?* Before examining the 'NURSE-NORTH Merger' in detail itself, however, I first examine previous accounts of a range of phenomena associated with the term 'merger', not only to begin approaching the more general issues, but also in order to establish the best ways of approaching the more particular case of the 'NURSE-NORTH Merger' recorded in northeast England.

The remainder of this chapter is organised as follows. In Section 1.2, I begin with a preliminary investigation of some previous definitions of 'merger', noting that since merger is a historical phenomenon, we can only understand it in those terms. As such, I examine the mechanisms which, it has been hypothesised, give rise to merger. In Section 1.3, I discuss a range of phenomena which have been called 'mergers' in order to begin to answer the questions posed at the outset by examining the ways in which they have developed, and their linguistic, social and geographical distributions. Finally, in Section 1.4, I examine the phenomenon of 'near-mergers',

looking at a number of well known cases and the impact they have on our understanding of merger and the possibility of reversal of merger.

1.2. Previous definitions of 'merger' – merger as a historical process

Crystal (2003: 289) defines 'merger' as:

> A term used ... to refer to the coming together (or CONVERGENCE) of linguistic UNITS which were originally distinguishable. In cases of two PHONEMES coming together, the phrase **phonemic merger** is often used (the opposite phenomenon being referred to as 'phonemic split'). For example, the /æ:/ and /e:/ vowels in Old English have now merged in modern English /i:/, as in *meat* and *clean*.[3]

Martinet (1952: 128) models this "coming together" of phonemes as follows: with a starting point of two phonemes, A and C, "the range of dispersion of A" moves towards "the range of C", which does "not move away from invading A", such that "a phonemic confusion will take place". This may be illustrated diagrammatically as follows:

Input:	A		C
Change:	A	→	C
	C does not change		
Ouput:	A	=	C (i.e. there is only one phoneme)

Crystal's definition of merger, in particular phonemic merger, seems relatively clear at first sight – two previously distinct phonemes "come together". A number of rather important questions remain, however. In particular, what does it mean to say that two phonemes "come together", and how is this "coming together" achieved? And although Martinet's definition characterises phonemic merger in terms of the movement together of the "range of dispersion" (presumably the phonetic range) of

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[3] Note, however, that *meat* derives from Old English *mete* (/e/, not /e:/) and *clean* from Old English *clǣne*.

two phonemes, it does not explain how this "phonemic confusion" proceeds nor, indeed, precisely what "phonemic confusion" entails.

Hoenigswald (1960: 90-91) describes two kinds of phonemic merger: "unconditioned merger" and "conditioned merger with primary split". In "unconditioned merger", two phonemes, *a* and *b*, "merge where they have contrasted ... owing to a phonetic alteration in *a*, in *b*, or in both" (p. 90). As an example of unconditioned merger, Hoenigswald (1960: 91) gives the example of the Proto-Semitic consonants ʿ and *ɣ*, which "have fallen together in most Semitic languages", since "the phones of *ɣ* changed in the direction of the phones of ʿ". In "conditioned merger", some allophones of *a* merge with the allophones of *b* in some particular phonological environment. Hoenigswald (1960: 92) gives as an example of "conditioned merger with primary split" the merger of Early Latin /s/ with /r/ in some phonological environments only (primarily between vowels), such that only some instances of /s/ became /r/.

Labov (1994: 295) states that mergers "eliminate" distinctions, such that "Merger represents a loss of information, as far as the capacity of the linguistic system to distinguish meanings is concerned" (Labov 1994: 324). He suggests that in cases where "Two vowels fell together" (p. 310), two things happened – there was a loss of phonetic distinction between the two vowels, and a concomitant loss of phonological distinction between them, and it is this loss of phonological distinction, the result of the loss of phonetic distinction, which is central to merger. In his discussion of mechanisms of merger (which I return to below), Labov (1994: 321) describes vowel merger as the loss of distinction of "two phonetic targets", such that "two phonemes become one". The result of two phonemes becoming one is that there is a "reduction in phonemic inventory" (Labov 1994: 331): "If two phonemes are completely merged, by definition the functional load is zero" (p. 330). Although Labov's definitions of merger, at the phonetic and phonological levels, have, up to this point, been rather unambiguous, his statement "If two phonemes are completely merged" seems rather odd. Does Labov consider it possible for two phonemes to be incompletely merged and, if so, what might this mean?

It is apparent from the comments of Crystal, Martinet, Hoenigswald and Labov that when we talk about a 'merger' being a feature of a particular language or variety of a language, what we really mean is that two (or more) phonemes have, at some stage in the history of the language, become phonetically and, hence, phonologically identical. If, for example, we talk about the merger of /w/ (as in *witch*) and /ʍ/ (as historically in *which*) in certain varieties of English, we mean that the two formerly distinct phonemes have become one. That is, merger is, at its core, a historical process, and I would argue that the term 'merger' cannot be properly understood without knowing the history of the particular merger under discussion, or how it came about. For example, if we did not know that all forms of English were formerly characterised by a /w/ ~ /ʍ/ distinction, it would be meaningless to talk about a /w/ ~ /ʍ/ 'merger', since the synchronic state of affairs (one single phoneme, /w/) tells us nothing about how it developed.

As the discussion above makes clear, two or more distinct linguistic entities become the same, such that only one linguistic entity results; all mergers are the result of a diachronic change, and the nature of this change determines the nature of the merger. Although this may seem a rather obvious point, merger, at the phonetic and phonological levels, has been found to proceed in a number of rather different ways. Labov's question, "by what route two phonemes become one: how the individual words and phonemic targets move in relation to each other" (Labov 1994: 321), suggests that the results of these different developments may potentially produce rather different outcomes, outcomes which may in turn give us an insight into the nature and status of the resultant merger. That is, it is essential to understand the diachrony of mergers to fully comprehend their synchronic status and, in what follows, I discuss the various means by which mergers have been found to develop.

1.2.1. The development of mergers

Harris (1985: 299-310) and Labov (1994: 321-323) discuss the precise mechanisms by which merger at the phonetic and phonological levels is achieved. They identify three such mechanisms, *merger by transfer*, *merger by drift or approximation*, and *merger by expansion*. I discuss each of these in turn.

1.2.1.1. Merger by transfer

Perhaps the most obvious means by which merger of two phonemes can be achieved is by a process in which "words are transferred gradually from one phonemic category to another" (Labov 1994: 321). In such a change, particular instances of a given phoneme in particular words are replaced by instances of another phoneme, such that the lexical distribution of the phonemes changes. As Labov suggests, this kind of transfer process is lexically gradual, with some words containing the input phoneme transferring before others. The end result of such a change, if it is carried to its conclusion, is that all instances of the input phoneme are replaced by the output phoneme.

Merger by transfer predicts a number of things which potentially have considerable impact on the end result. Firstly, it assumes that the transfer from one phoneme to another is direct; there is no gradual progression of either of the phonetic distributions of the two phonemes towards the space of the other. This will often result in there being a considerable degree of phonetic difference between the input phoneme and the output phoneme, and there will be no phonetically intermediate forms falling in between. In such cases, it should be relatively easy to determine the phonemic category to which a particular token belongs. This is particularly so since mergers by transfer are *targeted*. That is, merger by transfer is transfer to some pre-existent, phonetically defined, destination. As such, we can expect merger by transfer to result not in close phonetic approximation of the two input phonemes but in phonetic identity of the two phonemes; merger by transfer is, by its very definition, not going to result in near-merger (see Section 1.4 below). For example, the merger of /ɛi/ in MEAT and /i:/ in MEET in south Yorkshire, reported in Harris (1985: 301), results in one lexical unit with /i:/, since speakers in south Yorkshire are realigning their lexical distribution of phonemes to bring them closer to Standard English norms.[4] It would make no sense for speakers of this dialect to transfer MEAT words

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[4] I use the term Standard English (abbreviated as StE) in this thesis to indicate varieties of (British) English which are characterised by lexical distribution of phonemes similar or identical to those of RP English. This does not mean that the pronunciation of these phonemes is the same as RP. This is close to what Wells (1982) calls 'General English'. Note that Trudgill (1984b) defines 'Standard English' without reference to phonetics or phonology.

to the target of MEET, but not quite achieve it phonetically, since the phonetic target already exists (in MEET words).

Since merger by transfer is lexically gradual, it may, like any form of lexical diffusion (see Cheng and Wang 1972, Labov 1994: 421-439, and Bermúdez-Otero 2007) cease before all of the potentially diffusing words have transferred. That is, some words may fail to transfer from the input phoneme to the output phoneme. The result of such failures is that the two original phonemes have merged, but only partially so (see Harris 1985: 300-301). Trudgill and Foxcroft (1978: 73) give two examples involving the merger of /ʌʊ/ and /ʊu/ in East Anglia. Firstly, they find that, in Norwich, only the word *no*, except where it is used adverbially, is transferred from /ʊu/ to /ʌʊ/, whilst other lexical items containing the original /ʊu/ are unaffected. Secondly, they find that speakers from Tuddenham and Bentley in Norfolk "have transferred some but not all of the /ʊu/ words to the /ʌʊ/ set".

It should be noted that these failures of transfer may or may not be permanent – it is perfectly possible, in cases of ongoing merger by transfer, that some items which have not merged may do so in the future. Even for those words which are transferred to the new phonemic target, it is necessary to assume a period of variation between the old phoneme and the new phoneme, before the new target wholly replaces the old. Neither speakers nor communities suddenly forget one phonemic form of a word and instantaneously begin to use another (but see 'merger by expansion below'). In the case of the merger of /ʌʊ/ and /ʊu/ in East Anglia, described in Trudgill and Foxcroft (1978), a period where both /ʌʊ/ and /ʊu/ are used *variably in the same words* must have occurred in the transfer of these words from the phonemic category /ʊu/ to the phonemic category /ʌʊ/.

1.2.1.2. Merger by drift or approximation

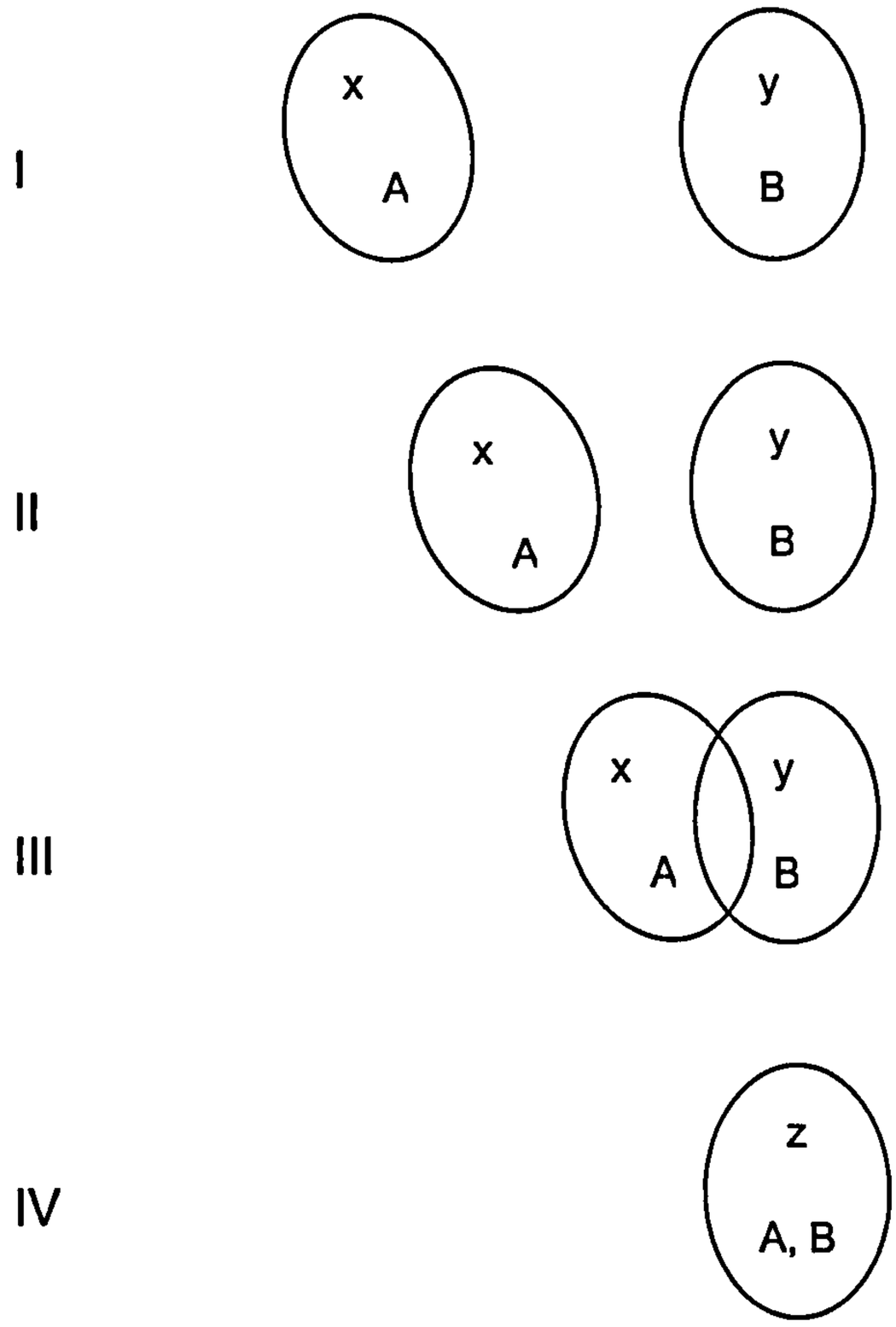
In merger by drift/approximation, the phonetic realisations of two phonemes gradually become closer (they 'drift' together or 'approximate') until no distinction remains. This may be achieved in a number of ways; for example, the merger may be in the direction of one of the input phonemes, such as the collapse of eight vowels in the history of Greek on the phonetic space of /i/ (Labov 1994: 229, 321); or the input

phonemes may merge on some phonetically intermediate point, as in the case of French /a/ and /ɑ/ (Lennig 1978, Labov 1994: 321).

Following Harris (1985: 309-310), merger by drift/approximation may be represented as in Figure 1 (A and B are two sets of lexical items, *x* and *y* are the input phonemes and *z* is the output phoneme).

As is the case with merger by transfer, merger by drift/approximation predicts a number of (different) things which may have an important bearing on our interpretation of the end result.

Figure 1: Merger by drift/approximation (Harris 1985: 310).



Firstly, merger by drift/approximation has, unlike merger by transfer, intermediate stages, as illustrated in Figure 1, and these intermediate stages are continuous rather than discrete. As such, it may well be the case that two phonemes are rather close phonetically whilst still remaining distinct. This is particularly true in the final stages of merger by drift/approximation, as indicated in Stage III in Figure 1, with two

phonemes overlapping to some degree in their phonetic distributions whilst nevertheless remaining subtly, but significantly, different. When examining apparent cases of merger, this possibility of subtle differentiation must be borne in mind since, unlike merger by transfer, it may be difficult to determine the point at which merger has been achieved.

Secondly, merger by drift/approximation, as an example of a phonetically gradual 'Neogrammarian' sound change (see Labov 1994: 440-471, Bermúdez-Otero 2007, and Section 2.3.2 for discussion) ought not to be partial, in the sense that only some of the relevant lexical items take part, since Neogrammarian phonetically gradual sound changes are generally regarded as exceptionless. As such, it does not permit lexical exceptions, unlike merger by transfer, which is a case of lexical diffusion where the change is phonetically abrupt but lexically gradual (see the discussion of merger by transfer above).

Thirdly, the model of merger by drift/approximation in Figure 1 predicts that until such times as the merger of the two input phonemes has been carried through to completion, it is possible for the two phonemes to be variably merged (phonetically) whilst still remaining distinct (as in Stage III in the diagram). That is, individual pronunciations (tokens) from either of the input phonemes may be found in at least part of the phonetic space of the other, so that they may be variably identical without being formally (phonologically) identical.

1.2.1.3. Merger by expansion

Labov (1994: 321-323), following Herold (1990), discusses a further mechanism by which phonemes may merge – merger by expansion. In merger by expansion, the phonetic range of one or both of the phonemes involved expands such that "The phonetic range of the new phoneme is roughly equivalent to the union of the range of the two phonemes that merged" (Labov 1994: 322), but with the previous lexical restrictions removed. So, for example, Herold (1990) found that although the distinction between two phonemes, /o/ and /oh/, was maintained in the speech of older speakers from Tamaqua, Pennsylvania, the distinction between them has been collapsed for younger speakers without any contraction in the phonetic space

occupied. Figure 2 and Figure 3, taken from Labov (1994: 323), show the distribution of /o/ and /oh/ words in the speech of two informants, aged 81 and 46 respectively.[5]

Figure 2: /o/ and /oh/ in the speech of J. Hogan, 81 (no merger).

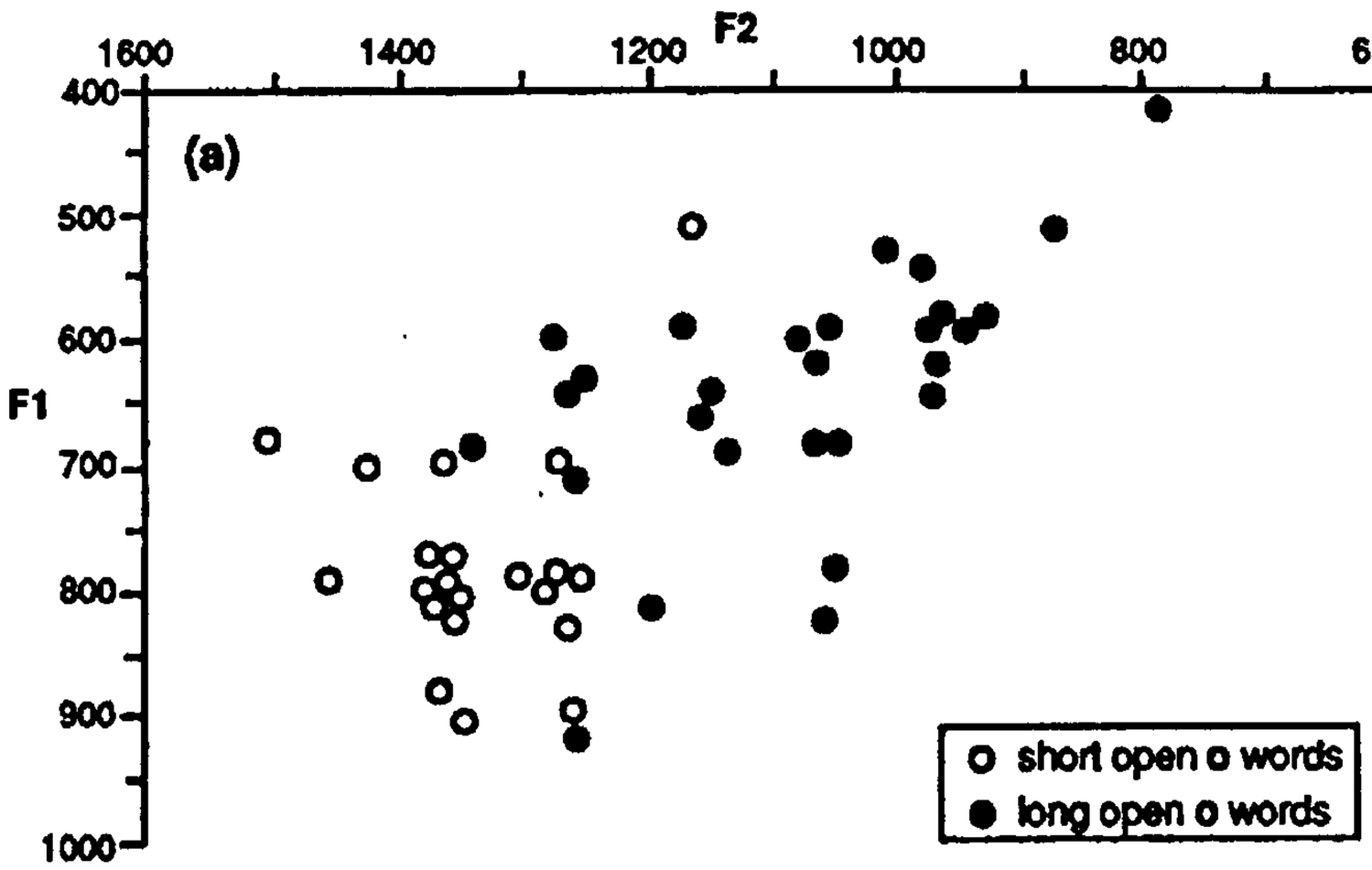
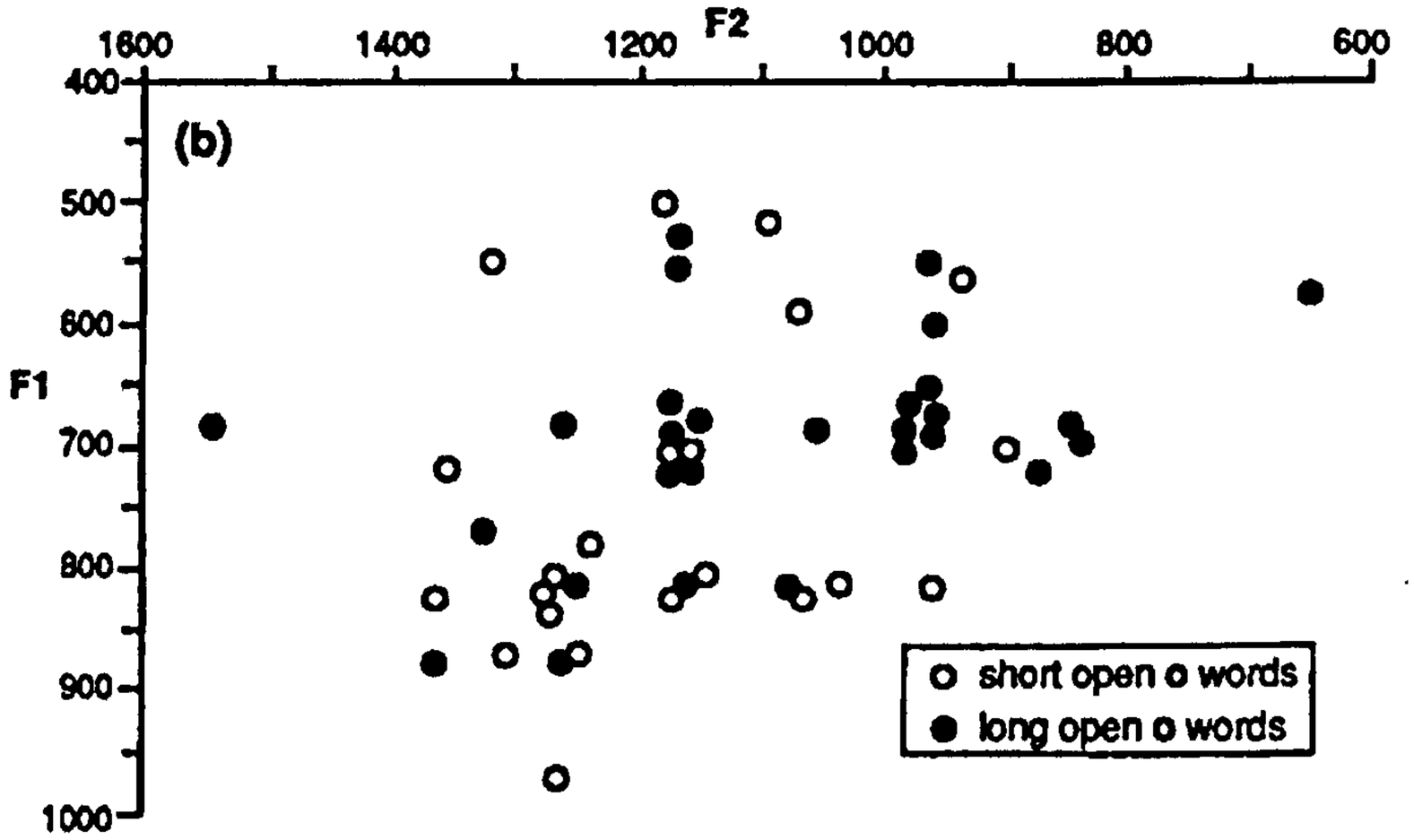


Figure 3: /o/ and /oh/ in the speech of W. Hogan, 46 (merger).



Interestingly, Labov (1994: 322) reports that Herold (1990) found no intermediate stages in this change – rather speakers either have a consistent distinction between the two phonemes or they do not, suggesting that merger by expansion is an instantaneous process.

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[5] See Section 5.7.2 for discussion of the use of F1 and F2 in analysing vowels.

As with the other means of achieving merger, merger by expansion predicts a number of things which inform our interpretation of the end result. Firstly, it is necessary, for merger by expansion to occur, that the phonetic spaces occupied by the two phonemes must be close, perhaps even contiguous, since the resultant merged phoneme occupies the former phonetic space of both. It is difficult to imagine how this would be the case if the two phonemes which merge were as far apart as, for example, /i/ and /a/ or /e/ and /o/. As such, the distinction between the two input phonemes may well be rather subtle in the first place.

Secondly, there should be no phonetically intermediate steps in merger by expansion, since merger by expansion does not involve the movement of the phonetic space of one phoneme towards the phonetic space of another, but rather the (apparently) instantaneous lifting of the lexical constraints which formerly defined the two input phonemes. Given this, it seems unlikely that merger by expansion can give rise to partial or variable merger, since it is characterised by instantaneous loss of phonemic and phonetic distinction.

As noted above, merger is, first and foremost, a historical process, and synchronic systems which evidence merger can only be understood in light of the developments which have given rise to them. The preceding discussion of the means by which merger is achieved suggests not only that these are complex processes, but also that the results of merger and our interpretation of what constitutes an instance of merger are necessarily complex too.

All three means of achieving merger raise rather crucial questions as to how we define that term. In the cases of merger by drift/approximation and merger by expansion, it may not be immediately obvious whether two phonemes have merged or have not, since they may be only subtly different phonetically. With merger by drift/approximation in particular, it may very well be difficult to determine the exact point at which merger has taken place. As such, we must be careful when making assumptions that two phonemes have, in fact, merged.

In the case of merger by transfer, it may well be the case that only some lexical items have been transferred, such that the merger is partial. In a case such as this, how do

we define the stage at which merger of two phonemes has taken place, especially since items which have not been transferred may be at some point in the future?

In both merger by transfer and merger by drift/approximation, it is also possible for the input phonemes to be variably merged such that, on some occasions, tokens from both input phonemes may be pronounced the same, but at other times differently. In cases such as these, it will be possible for speakers to determine which of the original classes particular lexical items belong to, suggesting that phonetic merger and phonological merger are not the same thing (even if the second ultimately depends upon the first).

1.3. Example mergers

In this section, a range of previous studies of mergers is discussed in order to begin to answer the general questions 7 to 12 and to indicate the best way to approach the specific questions 1 to 6 outlined earlier. In Section 1.4, a number of merger-like phenomena are discussed. A large number of mergers, particularly in English (at various stages of its history), have attracted the attention of linguists, and although examination of any of these would prove instructive, only a small number will be reviewed in detail here. Mergers not discussed in detail here include: the north-eastern and southern Yiddish mergers (Herzog 1965), the COT-CAUGHT merger (Labov 1991, 1994, Wetmore 1959; one variant of the COT-CAUGHT merger, the merger of /o/ and /oh/ in Tamaqua, Pennsylvania, has already been discussed in Section 1.2.1 above), the PIN-PEN merger (Brown 1990, Bailey and Ross 1992), the FEEL-FILL merger (Labov 1994), the PULL-POOL merger (Di Paolo 1988, Di Paolo and Faber 1990, Labov 1994; but see Section 5.7.2 below), the TOO-TOE merger (Trudgill 1974, Labov, Yaeger and Steiner 1972; see the discussion of merger by transfer above, however), the merger of /e/ and /ɛ/ in Stockholm Swedish (Janson and Schulman 1983), and the MARY-MERRY(-MARRY)(-MURRAY) merger (Labov 1994). See Gordon (2003) for further discussion.

The mergers that will be examined in detail here, for reasons that will be expanded upon later, are the 'First FORCE (or NORTH-FORCE) Merger', the MEET-MEAT merger, the FOOT-GOOSE merger, the NEAR-SQUARE merger, the /ʍ/ - /w/

merger, and the /w/ - /v/ merger. The merger-like phenomena, which are discussed in Section 1.4 in light of Labov's theory of near-mergers, are the SAUCE-SOURCE 'merger', the MEAT-MATE 'merger' and the LINE-LOIN 'merger'.

The reason for choosing these mergers and near-mergers for examination are various. Firstly, they cover a range of types of merger and merger-like phenomena which is instructive in our attempt to understand what the meaning of the term 'merger' is. Secondly, they provide a useful survey of the different types of analysis which might be used to learn more about particular kinds of merger. Thirdly, one of the mergers, the 'First FORCE (or NORTH-FORCE) Merger' interacts with the development of the 'NURSE-NORTH Merger', and it is useful at this stage to prepare the ground for discussion of this later in the thesis. Fourthly, the near-mergers in particular are some of the best known and intensively studied merger-like phenomena. Fifthly, a number of these mergers and merger-like phenomena involve reversal or apparent reversal and, hence, are of particular interest in the current examination of the 'NURSE-NORTH Merger'.

1.3.1. Complete, language-wide mergers

The most uncontroversial kinds of merger are those which are shared by all speakers of a language all of the time. At first sight, this might seem to be a rather easy kind of merger to identify, since it is certainly the case that at some stage in the history of all languages mergers have occurred which are now shared by all speakers. Nevertheless, dialect differentiation and social variation within languages often mean that what appear to be uncontroversial cases of merger in a language are, in fact, only characteristic of a subset of the speakers of that language. For example, it is almost certainly the case that ME /ɛ:/ from OE /ǣ/ and /ēa/ ("ɛ:$_1$") and ME /ɛ:/ from Middle English Open Syllable Lengthening ("ɛ:$_2$") are merged in the speech of the vast majority of speakers of English at the beginning of the 21st century. Nevertheless, the fact that the *Survey of English Dialects* (Orton *et al.* 1962-1971; henceforth SED) recorded the survival of this distinction in the traditional dialects of the northwest of England in the middle of the 20th century (see Map 59a, Anderson 1987: 90) suggests that this merger might not (yet) be categorical for all speakers of English (although of course it might be). The same could be said for other mergers of considerable antiquity, such as the merger of OE /i:/ and /y:/ (there is evidence for

the survival of this distinction in the southeast of England in Kökeritz 1932 and in the SED).

A number of mergers in the history of English which are probably found in the speech of all speakers are: (i) the merger of geminate and non-geminate consonants between the Old and Middle English (OE and ME) periods (Hogg 1992b, Lass 1992); (ii) the merger of initial /hn/, /hl/ and /hr/ with /n/, /l/ and /r/, again between OE and ME (Hogg 1992a, Lass 1992); and (iii) the merger of Proto-Indo-European palatalized and plain velars (/k'/, /g'/, /g'h/ vs. /k/, /g/, /gh/) (Sihler 1995). Note that all of these changes are of considerable antiquity and some of them may well be interpretable as partial mergers (e.g. /hn/-/n/, /hl/-/l/ and /hr/-/n/ could equally well be described as the partial merger of /h/ with Ø in a particular phonological environment).

1.3.2. The 'First FORCE (or NORTH-FORCE) Merger'

Wells (1982: 235) tells us that as a result of the loss of rhoticity, the vowel in the set of words which had contained ME /ɔ:r/ or /o:r/ (what he calls the FORCE lexical set) merged with the vowel in the set of words which had contained ME /ɒr/ (what he calls the NORTH lexical set) in some varieties of English. Wells calls this the 'First FORCE Merger', and since (as shall be seen in Chapter 2) this merger interacts with the merger which is the main focus of this thesis (the 'NURSE-NORTH Merger'), I examine the merger of NORTH and FORCE in some detail here. The more explicit term 'NORTH-FORCE merger' is also used throughout this thesis for this merger.

Lass (1999: 112) summarises the changes which led to the merger of NORTH and FORCE as shown in Figure 4.[6]

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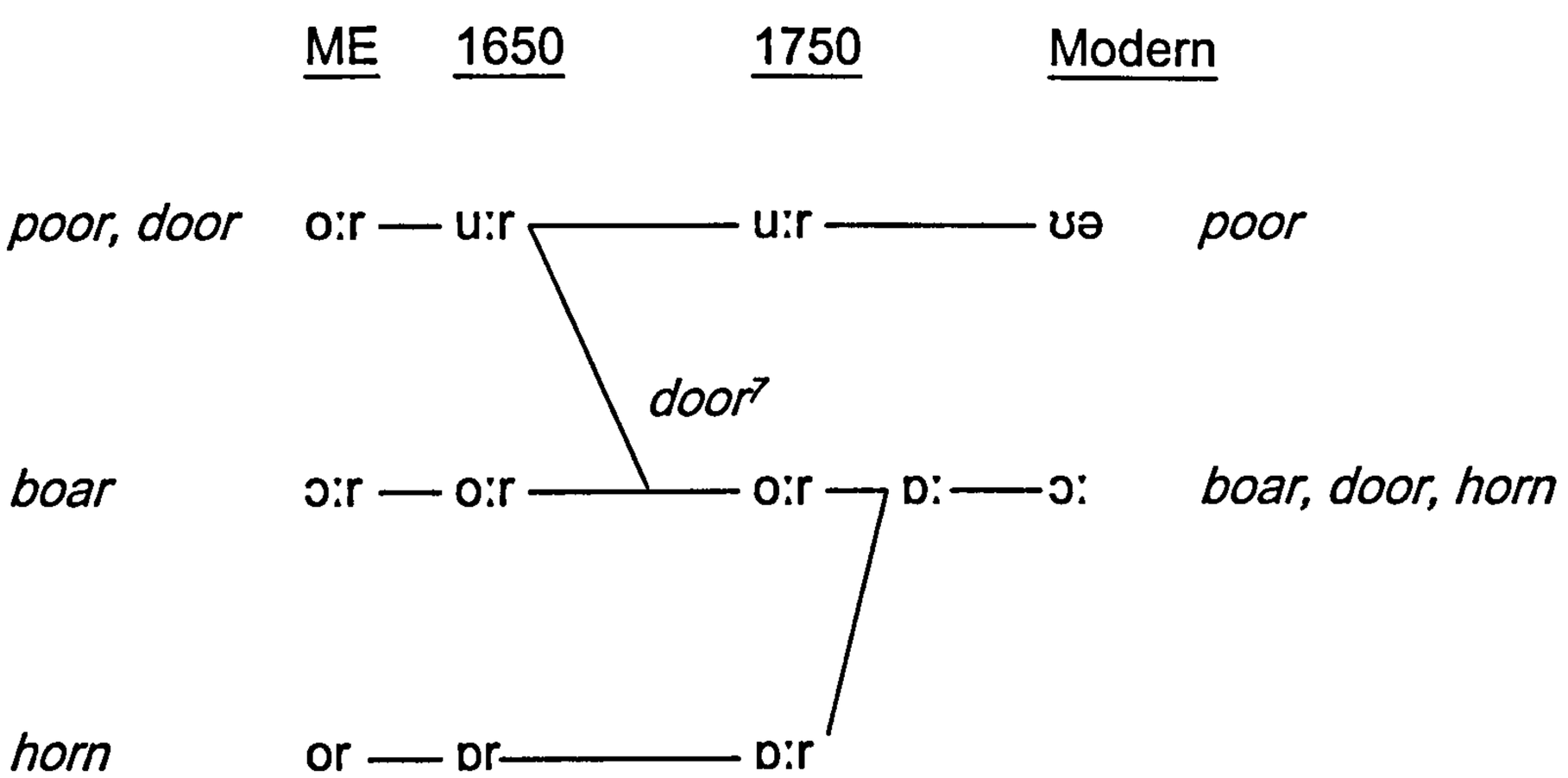
[6] For simplicity, I omit the input to this merger from ME /u:r/, also detailed by Lass (1999).

Figure 4: The history of the 'First FORCE Merger'.



Given the relatively recent development of this merger, as indicated by Lass (1999), it is not surprising that it is not shared by all varieties of English. Wells (1982: 235) tells us that NORTH and FORCE "are normally entirely homophonous in RP, as also generally in the south of England, in the southern hemisphere, and increasingly everywhere else" and, further, that "the First FORCE Merger is completed – except in some provincial, Celtic, West Indian, and American accents" (Wells 1982: 236). Even within RP, Wells (1982: 235) contends that the merger of NORTH and FORCE was not, in fact, complete until the 20th century.

It is clear from Wells's description that although the 'First FORCE Merger' is probably an unquestionable feature of the speech of millions of speakers of English, particularly in England and the southern hemisphere, it is not a complete merger in that it is geographically restricted. In the English of Ireland, for example, the NORTH and FORCE lexical sets are generally kept distinct (see Hickey 2004). Even within England, however, the 'First FORCE Merger' is not necessarily found in the speech of all speakers in those regions which it is thought to be most characteristic of. For example, Anderson (1987: 103, 118), using data from the SED finds that a distinction between ME /ɒr/ and ME /ɔːr/ (i.e. between NORTH and FORCE) is maintained, at

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[7] The split of *poor* and *door* was unconditioned.

least variably or partially so, in the traditional dialects of the vast majority of locations surveyed throughout England.[8]

As Wells (1982: 235) mentions, the 'First FORCE Merger' is spreading, even in areas such as Ireland where the NORTH-FORCE distinction is most entrenched. Hickey (2005: 231) finds that in Dublin English, for example, the NORTH-FORCE distinction is being lost (with merger on the original value of FORCE), especially in the speech of 'advanced' speakers (i.e. those speakers leading phonetic and phonological change in the variety). Similarly, the merger of NORTH and FORCE, again in the former phonetic space of FORCE, is found in Ulster English, particularly in urban and Ulster Scots areas – see Milroy (1981: 57-58), Wells (1982: 444), Harris (1984: 129), and particularly McCafferty (1999) and (2001). McCafferty (2001: 137-139, 166-171) finds that merger of NORTH and FORCE occurs "at a very low level" in (London)Derry English, and is particularly associated with "middle-class members of the Protestant community, of both sexes" (McCafferty 2001: 171). It follows from this that non-merger of NORTH and FORCE is more common in (London)Derry English, such that speakers with and speakers without merger exist side by side in the community. In addition, most of those speakers who merge NORTH and FORCE in McCafferty's sample do so only variably or partially.

Thomas (2001: 46-48) describes the pronunciation of the NORTH and FORCE lexical sets in the New World, noting that, although earlier studies of the dialects of the USA (e.g. Kurath and McDavid 1961, Nobbelin 1980) found the merger of NORTH and FORCE to be restricted to certain areas only, the NORTH lexical set "is rapidly losing its status as a distinct class because of its merger with /or/ (which makes *horse* and *hoarse* homophonous)" (p. 46) throughout North America. Unlike the studies of the NORTH and FORCE merger in the British Isles, Thomas (2001) uses as evidence for the merger acoustic analyses of the relevant vowels in the speech of individual speakers from all over the Caribbean and North America, presenting the results as F1 and F2 formant plots (see Section 5.7.2 for further discussion).

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[8] Recent research at the University of Edinburgh has recorded the survival of a NORTH-FORCE distinction in a number of present-day varieties of English throughout the British Isles – see McMahon *et al.* (2007) and <www.soundcomparison.com> for further details of this research.

For example, Thomas (2001) presents formant plots for 50 individual speakers in his chapter detailing the distributions of vowels in the speech of "whites from the north" (which includes Canada and the northern United States). Of these 50 speakers, only five maintained a NORTH-FORCE distinction, and all of these speakers were born in the 19th century. Example formant charts for two of his speakers, one with the NORTH-FORCE merger and one without are given in Figure 5.

Figure 5: Formant charts for two white speakers from northern North America.[9]

[9] From Thomas (2001: 65, 66). Highlighting of NORTH and FORCE has been added.

In sum then, the merger of NORTH and FORCE is restricted to a subset of the English-speaking population, albeit a sizeable one. The merger is restricted geographically, and in some areas it is confined to particular speakers in the community. In such cases, the merger of NORTH and FORCE may be only variable or partial within the speech of those individuals.

The majority of accounts of the merger of NORTH and FORCE reviewed above are based on auditory transcription and (presumably) native speaker judgement, although Thomas (2001) is a notable exception. That this should be so is not surprising, since the merger of NORTH and FORCE is a feature of RP English. As such, many linguists (including, for example, Prof. Wells) are in a position to make native speaker judgements as to the status of the merger, since it is a part of their own native dialect. Despite the lack of acoustic confirmation of this merger in many areas, it would, in my opinion, be rather rash to suggest that the merger of NORTH and FORCE in RP (and other English accents of a similar type) is not a merger. That is, the merger of NORTH and FORCE in certain accents and dialects is an accepted fact – despite the lack of acoustic evidence for it.

1.3.3. The MEET-MEAT merger

In StE, words which contained ME /a:/ have developed differently (in RP, they typically have /eɪ/) from words which contained ME /ɛ:/[10] and ME /e:/ which, in RP, typically have /i:/ (see Wells 1982: 140-142, 194-196). The group of words which contained ME /a:/ have been termed the MATE lexical set (after one of its members, *mate*), the group of words which contained ME /ɛ:/ have been termed the MEAT lexical set (after one of its members, *meat*), and the group of words which contained ME /e:/ have been termed the MEET lexical set (after one of its members, *meet*) (see Milroy and Harris 1980, Harris 1985).[11]

Although most instances of ME /ɛ:/ (MEAT) fell together with ME /e:/ (MEET), a small number of words with ME /ɛ:/ (*break*, *drain*, *great*, *steak* and *yea*) now belong to the MATE lexical set (Wells 1982: 196, Labov 1994: 304-306). I discuss the possible

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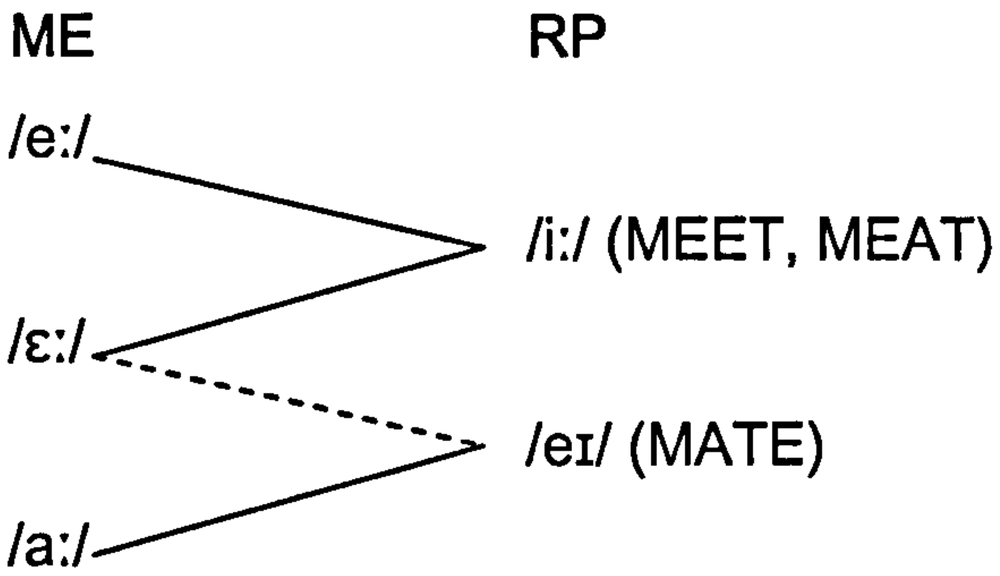
[10] From all sources.

[11] Wells (1982: 140-141) calls the combined MEET and MEAT lexical set "FLEECE".

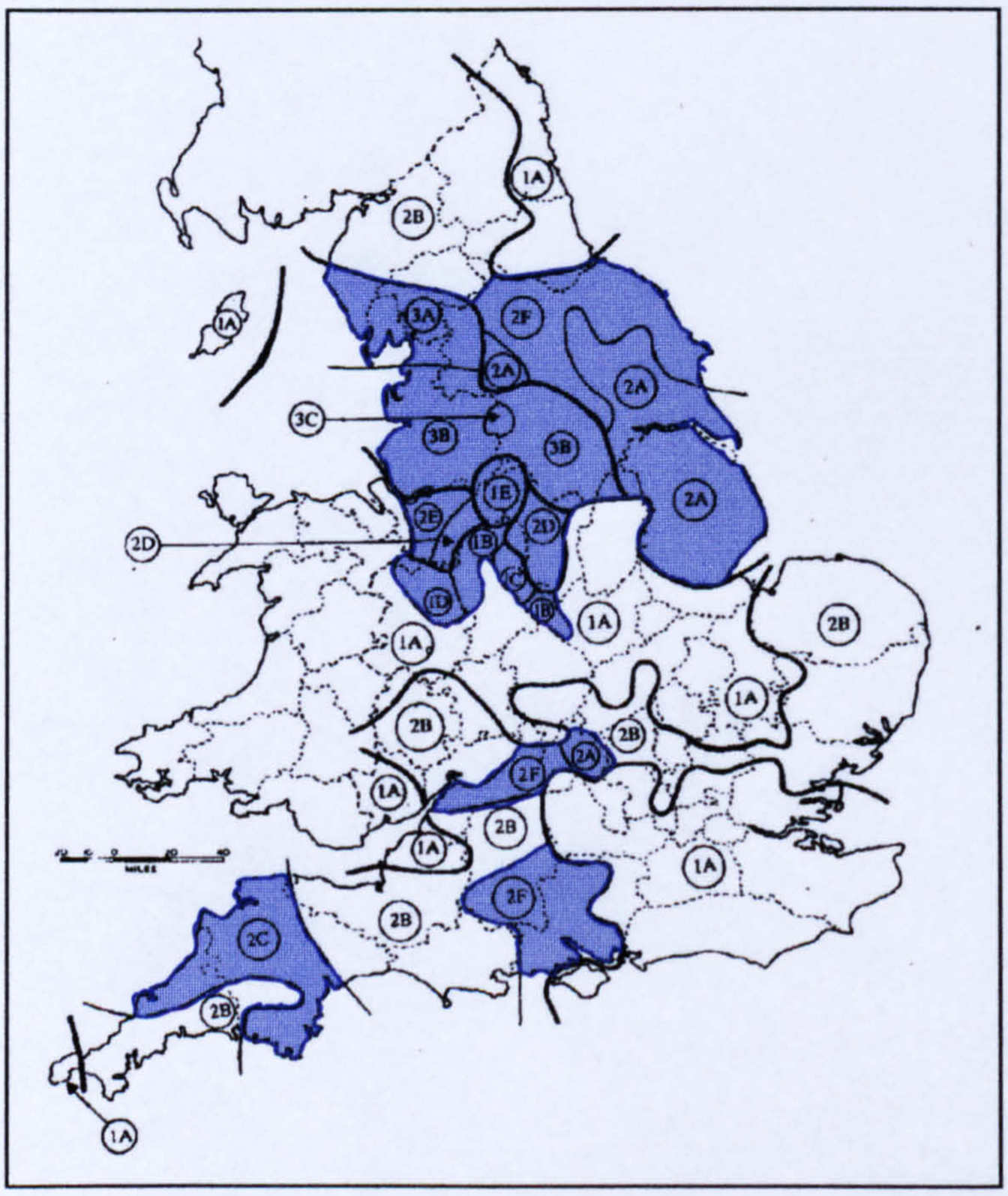
reasons for this in Section 1.4.1 below. These developments may be summarised as follows:



Thus far, the development of these three lexical sets in English looks rather unproblematic: for the most part, MATE developed separately, whilst, MEAT and MEET appear to have merged. The merger of MEAT and MEET was only partial, if almost complete, since a small number of MEAT words merged instead with MATE. In this section, I discuss the merger of MEAT and MEET in more detail; I return to the issue of the development of MATE and the apparent merger of this lexical set with MEAT in Section 1.4.1 below.

Aside from the few exceptions referred to above, the MEET and MATE lexical sets are identical in the speech of the vast majority of speakers of English. Nevertheless, MEET and MATE are not identical, at least not all of the time, in a number of regional dialects of English. Using data from the SED, Anderson (1987: 78, 83-84) shows that MEET and MEAT were not identical in some of the traditional dialects of England in the middle of the 20th century, particularly in Lancashire, Yorkshire and Lincolnshire, but also, to a lesser extent, in the West Midlands and the Southwest (see Figure 6).

Figure 6: Areas of England where MEET and MEAT were not identical in the SED (adapted from Anderson 1987: 90).



Perhaps the most well known example of a dialect of English which does not (necessarily) have merger of MEET and MEAT is Mid-Ulster English (MUE), as described in, for example, Milroy and Harris (1980), Harris (1985) and Labov (1994). As is the case in most other English dialects, words in the MEET lexical set, derived from ME /e:/, contain a high front unrounded vowel, /i/ in MUE.[12] Words in the MEAT lexical set, derived from ME /ɛ:/, also have this vowel, at least variably so, in the speech of most, perhaps all speakers. In addition, however, words in the MEAT lexical set (only) may also have a vowel which is similar or identical to the vowel in the MATE lexical set, for which the symbol /e/ is presently used (see Section 1.4.1 below for further discussion, however). /e/ in MEAT is very much a stigmatised feature of traditional MUE which is never found in standardised MUE (/i/ being the norm) (Harris 1985: 242-243).[13] These developments in MUE are summarised in Figure 7.

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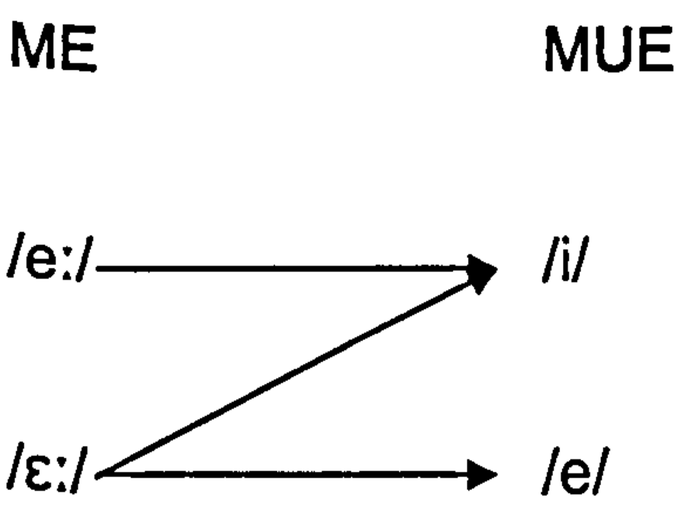
[12] Vowel length is not phonologically distinctive in MUE.

[13] The distinction is variably present in my own speech.

Figure 7: The development of the MEET and MEAT lexical sets in MUE.



It is clear, given that a distinction between MEET and MEAT was characteristic of earlier stages of English, that the distinction between the two lexical sets in MUE is original, and the merger of the two sets is a more recent development. Furthermore, the research by Milroy and Harris (1980) and Harris (1985) suggests that there is a clear phonetic distinction, with no overlap whatsoever, between MEET and MEET-like pronunciations of MEAT on the one hand (as [i]), and MATE and MATE-like pronunciations of MEAT on the other (e.g. [e]). The lexical distribution of variants suggests that the merger of MEET and MEAT in MUE is the result of transfer of MEAT from a MATE-like pronunciation to the MEET target [i].

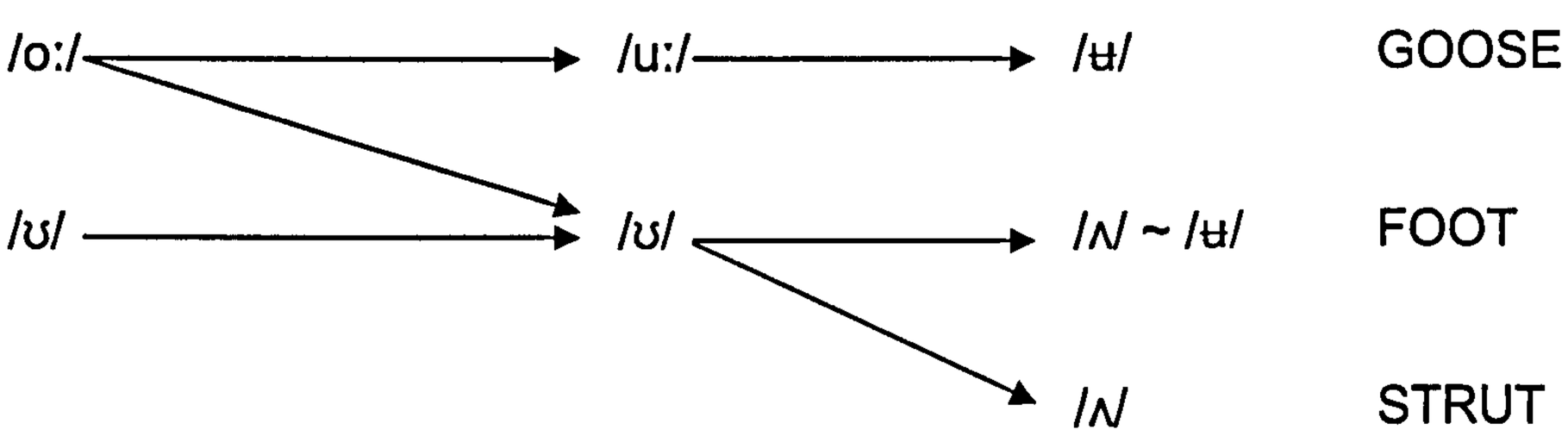
Although MEAT can be phonetically identical to the MEET lexical set, it maintains its independent identity for those speakers who alternate between /i/ and /e/, since MEET words do not alternate in this way. That is, the merger of MEET and MEAT is *variable* for those speakers who still maintain alternate variants with /e/, and there has been no loss of information as to the membership of the two lexical sets.

In summary then, the MEET-MEAT merger is an undeniable feature of the vast majority of speakers of English, but it is not wholly categorical in a number of regional dialects. In particular, the MEET-MEAT merger is only variably present for some speakers of MUE, since MEAT alternates between a MATE-like vowel and the MEET vowel. In addition, the development of the MEET-MEAT merger appears to have been partial, albeit near complete, since a few MEAT words have merged with MATE instead. I return to discussion of the relations between the MEET, MEAT and MATE lexical sets in Section 1.4.1 below.

1.3.4. The FOOT-GOOSE merger [14]

In MUE, words in the STRUT lexical set[15] invariantly contain the vowel /ʌ/,[16] whilst words in the GOOSE lexical set[17] contain /ʉ/, again invariantly. Corresponding to the independent FOOT lexical set in Southern British and American English is a set of words which may have either /ʌ/ or /ʉ/,[18] with /ʌ/ in FOOT being most characteristic of older traditional dialect speakers, whilst /ʉ/ in FOOT is most characteristic of younger, more standardised speakers (Harris 1985: 150-155). As Harris notes, however, many speakers alternate between /ʌ/ and /ʉ/ in FOOT, treating them as a separate lexical set which has no phonetic identity of its own, but which has both the vowel of the STRUT and of the GOOSE lexical sets. Words in STRUT and GOOSE do not alternate in this way. Figure 8 summarises the historical developments which appear to have given rise to this situation.

Figure 8: The development of GOOSE, FOOT and STRUT in MUE.[19]



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[14] The following account of the FOOT-GOOSE merger is based on Harris (1985) and on research by myself in County Tyrone. In addition, the FOOT-GOOSE merger is present, but completely variable, in my own speech.

[15] Derived, for the most part, from ME /ʊ/, with some additional input from ME /o:/ - see Wells (1982: 131-132).

[16] Typically realized as [ɵ̞], [ɞ̞], or [ʌ].

[17] Derived, for the most part, from ME /o:/, with additional input from ME /iu/ and /ɛu/ - see Wells (1982: 147-149).

[18] The membership of this alternating FOOT lexical set in MUE is slightly different to that found in Southern British and American English, most particularly since a number of words (e.g. *book*, *good*, *hood*, *hook*, *room*, *soot*) invariably belong to the GOOSE lexical set in the dialect.

[19] In order to simplify, I ignore the contribution of ME /iu/ and /ɛu/ to GOOSE here.

Note that we cannot interpret this situation as a merger of FOOT and STRUT, since these two lexical sets were originally identical anyway, and it is only through the lexically specific FOOT-STRUT split (see Section 8.2 below) that they became differentiated,[20] and this is supported by the FOOT-STRUT identity being a feature of the most traditional form of MUE. As such, it appears to be the case that speakers of MUE have split FOOT and STRUT (as speakers in many other parts of the English-speaking world have at one time or another in the history of the language), but rather than FOOT words developing an independent phonetic identity, they have merged instead with GOOSE.

This FOOT-GOOSE merger in MUE has been achieved by transfer. That is, the /ʌ/ phoneme is replaced directly by /ʉ/ in a specific set of words, with no intermediate phonetic forms occurring. Since /ʉ/ already exists in MUE (in GOOSE), this is a targeted transfer and, as such, there is no possibility that speakers will somehow get the transfer wrong and end up with FOOT words phonetically very close to GOOSE but not quite the same.

As noted above, many speakers who have /ʉ/ in FOOT and GOOSE may also have /ʌ/ in FOOT only. For speakers such as these, there is a variable merger of FOOT and GOOSE such that they may be phonetically identical some of the time, but not at others. It also seems to be the case that some FOOT words are more prone to merger with GOOSE than others (see MacLaran 1976 and Harris 1985: 150-155), to the degree that certain FOOT words only occur with /ʉ/ whilst others occur with both /ʉ/ and /ʌ/. That is, the FOOT-GOOSE merger in MUE is not only variable, but also partial for some speakers. The variable and partial nature of the FOOT-GOOSE merger in MUE is the result of the means by which it has been achieved (by transfer – again, see Harris 1985: 150-155).

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[20] Note that although many members of the FOOT lexical set derive historically from the same source as the GOOSE lexical set (ME /o:/), others do not (e.g. *bull*, *bush*, *butcher*, *cushion*, *pull*, *push*). That is, a subset of words which derive from ME /o:/ merged with words deriving from ME /u/ (STRUT), and only later did the composite FOOT lexical set, presumably for reasons of dialect contact and standardisation, develop alternate pronunciations with the GOOSE vowel. Hence, the FOOT-GOOSE variable merger in Ulster English *is not* the result of a failure of GOOSE items to categorically merge with STRUT.

As well as being restricted to only a part (albeit a large and growing part) of the Ulster speech community, the merger of FOOT and GOOSE is a rather geographically restricted feature in English more generally. Wells (1982: 402) states that the FOOT-GOOSE merger is "characteristic of all Scottish accents of all regional and social types; but no others, except those of Ulster and northernmost Northumberland, both of which have obvious links with Scotland".[21] Other British, North American and Southern Hemisphere varieties of English, on the other hand, maintain a FOOT-GOOSE distinction (and, outside of the north of England, a three-way STRUT-FOOT-GOOSE distinction). That is, the FOOT-GOOSE merger is restricted to a very small subsection of the English speaking population.

To summarise then, the FOOT-GOOSE merger is found in only a small part of the English-speaking world (Ulster and Scotland), and, in both places, it is not characteristic of all speakers. Even among those speakers who do have it in Ulster, there are many who have it only variably and/or partially so, such that those who do have it all of the time for all of the relevant words are almost certainly surrounded, in the same speech community, by speakers who do not.

1.3.5. The NEAR-SQUARE merger (in New Zealand English)

Wells (1982: 608) records that the vowel in the SQUARE lexical set[22] is, in New Zealand English (NZE), pronounced as [eə] or [ɪə], making it near or identical to the pronunciation of the NEAR lexical set[23] in RP English. Wells (1982: 608) records, however, that the NEAR lexical set in NZE "involves a very close starting point, /iə/", such that the distinction between SQUARE and NEAR is maintained. Despite this, Wells (1982: 608), following Hawkins (1976), notes that "some speakers ... particularly children ... have merged the two front centring diphthongs, so that pairs such as *fair* and *fear*, *bear* and *beer*, *stare* and *steer*, are homophonous, as [fɪə], [bɪə], [stɪə] respectively". Wells calls this merger the 'NEAR-SQUARE Merger', and

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[21] Note that this statement does not apply to traditional Lowland Scots dialects, which have a radically different lexical incidence, making the terms FOOT and GOOSE largely irrelevant to their phonology (see Wells 1982: 397 for an illustration).

[22] The set of words containing the diphthong /ɛə/ in RP English – see Wells (1982: 155-157).

[23] The set of words containing the diphthong /ɪə/ in RP English – Wells (1982: 153-155).

notes that it is also "characteristic of West Indian and some East Anglian accents" (p. 608).

More recent research on NZE (e.g. Maclagan and Gordon 1996 and Gordon and Maclagan 2001) has shown that the incidence of merger of NEAR and SQUARE has increased greatly, so that it is now characteristic of many younger speakers of NZE, although less so of older speakers. Gordon and Maclagan (2001) suggest that this is a merger by drift/approximation, rather than a merger by transfer, with SQUARE gradually drifting towards the phonetic space of NEAR until the two lexical sets are no longer distinct.

Warren and Hay (2005) examine the NEAR-SQUARE merger in NZE in detail, noting that "As this is a change that is currently incomplete in NZE, it raises some interesting questions for aspects of spoken word recognition" (p. 3).[24] More particularly, they suggest (pp. 5-6) that:

> While the change progresses through the speech community, there will be some speakers for whom the merger is complete, and who will primarily use NEAR forms for both NEAR and SQUARE words. Other (in this case older) speakers will still maintain a distinction between NEAR and SQUARE words. Clearly the nature of any variation will therefore be speaker dependent, while across the community as a whole there will be more variation in the realisation of SQUARE forms than of NEAR forms. An interesting question is whether listeners are able to utilise their knowledge of speaker differences in order to help interpret the variation that they hear.

In order to answer this question, Warren and Hay examine the pronunciation and perception of NEAR and SQUARE in two sets of speakers, from Christchurch and Wellington, respectively. Their examination of NEAR and SQUARE consisted of three elements (p. 13), the details of which are given below:

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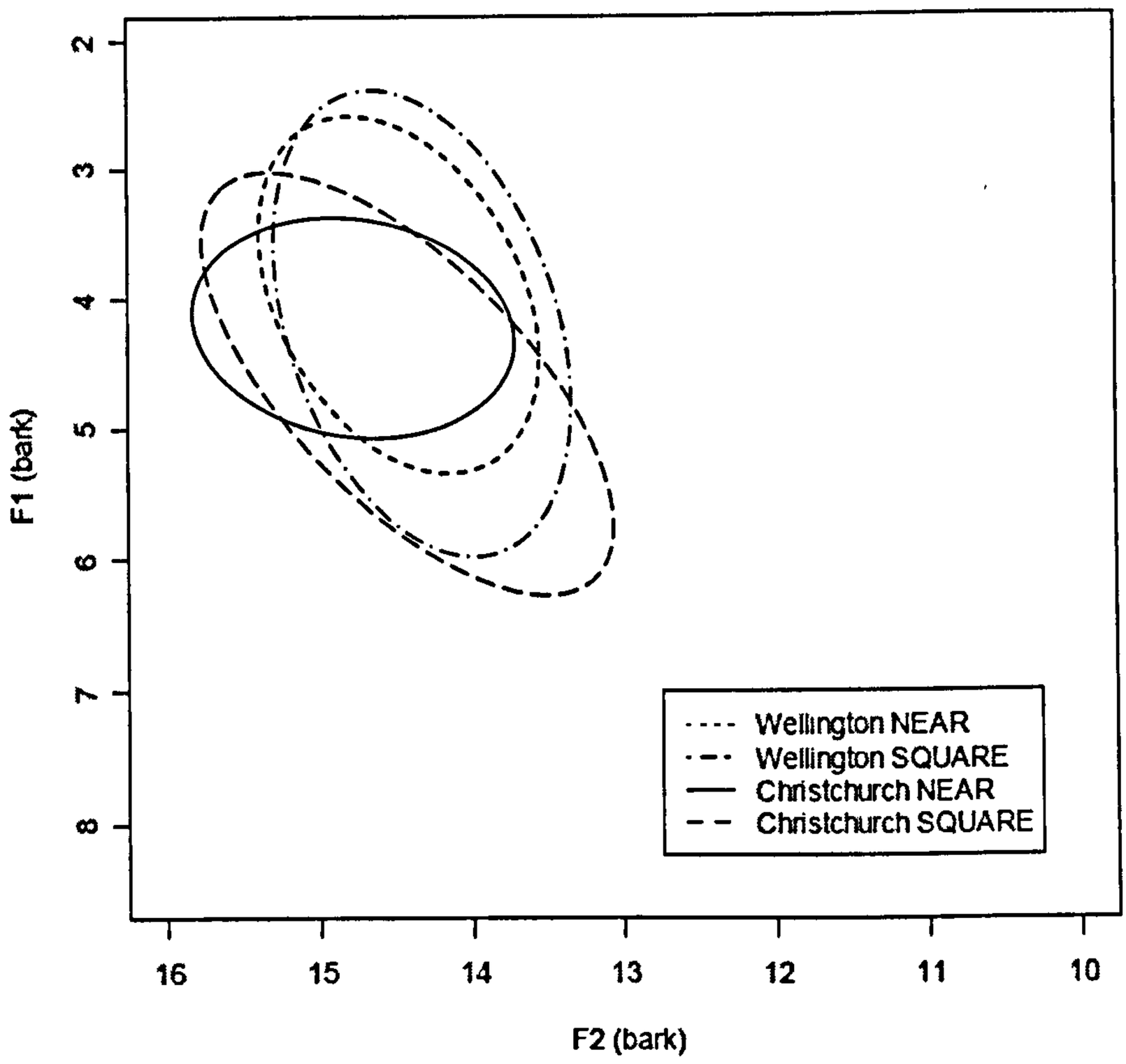
[24] Page numbers refer to the pre-publication PDF rather than the published version, which is available at: <www.ling.canterbury.ac.nz/jen/documents/WarrenHay.pdf>

1) Acoustic analysis of NEAR and SQUARE tokens as read from a wordlist;
2) A binary forced-choice identification task between NEAR and SQUARE tokens;
3) A timed lexical decision task which sought to determine whether there were differences between the results for NEAR and SQUARE on exposure to particular pronunciations (this task was conducted with the Wellington speakers only).

The acoustic analysis involved measurement of the values of formants 1 and 2 (F1 and F2) "at a point near the start of the diphthong" (p. 14).[25] Figure 9, taken from Warren and Hay (2005: 34), shows the distributions of the NEAR and SQUARE vowels for the two groups of informants.

Figure 9: Ellipse plots in F1-F2 space of NEAR and SQUARE vowels produced by Wellington and Christchurch speakers reading the minimal pair list.



[25] See Section 5.7.2 for a discussion of the use of formant measurements for vowel identification, and Warren and Hay (2005: 14-15) for details of the analyses performed.

Figure 9 reveals that the Wellington speakers "show relatively small levels of distinction" (p. 15) between NEAR and SQUARE, but the Christchurch speakers are much more likely to have a considerable difference between the first elements of the NEAR and SQUARE diphthongs on the F1 and F2 dimensions.

In the binary forced-choice task, informants from both groups of speaker were asked to listen to recordings of SQUARE and NEAR words as spoken by native speakers from their area who made a distinction between NEAR and SQUARE, and to decide which of two potential homonyms (e.g. *bear* or *beer*) was heard (see Warren and Hay, 2005: 16-19 for a full description of the procedure and results). Warren and Hay found that "overall scores were very high, showing that despite the ongoing merger of these vowels in NZE, including in their own speech, the participants were able to distinguish the two in this perceptual task" (p. 17). Interestingly, Warren and Hay find that the Wellington informants (who have little or no distinction between NEAR and SQUARE) had lower scores than the Christchurch informants, and that "younger Christchurch participants perform worse than older ones in the identification task, but not by much" (p. 18). This association of higher similarity of NEAR and SQUARE in production with lower scores in the binary forced-choice task leads Warren and Hay to suggest that in NZE, "the ability to hear the difference between NEAR and SQUARE is going away, but it is disappearing at a much slower rate than the merger in production is occurring" (p. 18), and that "listeners' sensitivity to differences between phonemic sets remains even after their production data fails to show consistent differentiation" (pp. 20-21).

The third part of Warren and Hay's investigation, which involved only the Wellington informants, was an auditory lexical decision task.[26] This task sought to determine whether listeners' response times to semantically associated words differ depending upon whether they hear an ambiguous NEAR/SQUARE word with [iə], or an unambiguous SQUARE word with [eə].

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[26] See Rae and Warren (2001) and Warren and Hay (2005: 21-24) for discussion of the methods and results.

For example, when listeners hear the pronunciation [tʃiə], they should, if *cheer* and *chair* are not homophonous, have a quicker response time to the semantically associated word *shout* than to the semantically unassociated word *sit* (i.e. they access *cheer*). If, on the other hand, *cheer* and *chair* are homophonous for them, they should have the same response time to the semantically associated words *shout* and *sit* on hearing [tʃiə] (i.e. they access both *cheer* and *chair*). On hearing the pronunciation [tʃeə], listeners should, if *cheer* and *chair* are not homophonous, have a quicker response time to the semantically associated word *sit* than to the semantically unassociated word *shout* (i.e. they access *chair*). The question arises as to what response speakers who have homophonous *cheer* and *chair* will have, on hearing [tʃeə], to *sit* and *shout*?

Since *cheer* and *chair* are pronounced the same by the Wellington speakers, Warren and Hay predict that "when listeners hear a NEAR form, they retrieve both NEAR and SQUARE words, but that when they hear a SQUARE form they access only the SQUARE word" (p. 22). This is because of the asymmetry between NEAR and SQUARE, such that NEAR and SQUARE may both occur with the NEAR vowel, but only SQUARE may occur with the SQUARE vowel (i.e. the NEAR vowel is ambiguous, but the SQUARE vowel is not). This prediction is supported by the results of the task, since Warren and Hay find (p. 23) that:

> on hearing items with a NEAR vowel, our young Wellington subjects access both NEAR and SQUARE words ... Hearing the SQUARE form leads to access of the SQUARE word (and not the NEAR word), reflecting the fact that the phonetic [eə] form is still heard in the subject's environment.

This "disjuncture between production and perception" (Warren and Hay 2005: 24) is explained as follows (p. 26):

> Since the merger is ongoing within the community at large, it is inevitable that our participants will have encountered both merged and non-merged systems, and that this experience, particularly of the asymmetry of the merger, will influence their interpretation of the inputs they hear. Crucially, though, part of this experience involves developing knowledge (explicit or implicit) of the kinds of speakers who do or do not have a merged system. As a consequence of their experiences, our participants have developed something of a hybrid system, where their own merged production system exists alongside a perceptual system that is sensitive to characteristics of the speaker.

Similar conclusions are drawn by Hay et al. (2006), who also investigate perception of the NEAR-SQUARE merger in NZE. Hay *et al.* (2006: 460) note that:

> While the change is still incomplete, and continues to advance through the speech community, some speakers (in this case the older and/or more conservative speakers) will still maintain a NEAR-SQUARE distinction, while others (mainly younger speakers) will on the whole produce only the NEAR form ... young New Zealanders have not totally lost their sensitivity to SQUARE forms, which makes sense since they will after all hear these from their parents and grandparents.

Hay *et al.* (2006: 474) comment further that:

> All New Zealanders are heavily exposed to other dialects of English, particularly through television and film. All New Zealanders, then, have been exposed to distinct tokens of NEAR and SQUARE words.

According to Hay *et al.* (2006: 481), the result of the exposure of merging speakers to unmerged forms is that merging speakers have separate perceptual distributions[27] for NEAR and SQUARE despite the fact that both lexical sets "are indexed to the same, collapsed, phonemic category". The result of this is that when asked to identify NEAR and SQUARE tokens in their study, Hay *et al.* (2006: 481) find that:

> The merged participants can still do very well at this task (despite the fact that many report they are guessing). This is because, despite the identical phonemic labelling of the lexical items, the phonetic memories still occupy distinct exemplar clouds – that is, they still occupy different word-level distributions.

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[27] Hay *et al.* (2006) use the language of exemplar models of phonology and perception, which I do not go into here; see Pierrehumbert (2001) for details.

What Hay *et al.* appear to be saying here is that despite NEAR and SQUARE being identical in production for some speakers, these speakers maintain a perceptual distinction between them based on their exposure to non-merged variants present in their speech community (including the media). In light of this, one could perhaps question their use of the phrase "the same, collapsed, phonemic category" for these two lexical sets, since this only applies to production and not perception – in what sense can we describe the distinction between NEAR and SQUARE as collapsed if speakers maintain separate "phonetic memories" for NEAR and SQUARE words, even if they never implement this difference in their own speech?

The investigations by Warren and Hay (2005) and Hay *et al.* (2006) provide a wealth of data for an ongoing merger which raises a number of important questions regarding the nature of merger which I return to throughout this thesis. The merger of NEAR and SQUARE may be summarised as follows:

1) The NEAR-SQUARE Merger is found in only a small part of the English-speaking world (the Caribbean, East Anglia and New Zealand);
2) Many speakers of NZE, especially younger ones, make no distinction, in production, between NEAR and SQUARE;
3) Other speakers of NZE do have a distinction between NEAR and SQUARE and, since this merger appears to be progressing by drift/approximation, many speakers have a substantial overlap in their pronunciations of the two lexical sets such that they are variably identical or distinct;
4) On exposure to non-merging pronunciations of NEAR and SQUARE, merging speakers can, at least some of the time, identify which word is being spoken. Despite the perceptual non-identity of NEAR and SQUARE for merging speakers, Hay *et al.* suggest that there has been a phonemic collapse of the distinction. That is, there is a "disjuncture between production and perception" (Warren and Hay 2005: 24) for these merging speakers.

1.3.6. The /ʍ/-/w/ (/hw/-/w/) merger[28]

Historically, as noted above, English distinguished /w/ and /ʍ/ (or /hw/) in initial position, such that *Wales* ≠ *whales* and *wine* ≠ *whine*. Wells (1982: 228) tells us that the distinction between /w/ and /ʍ/ has been lost in:

> most accents of England and Wales, the southern hemisphere and the West Indies, and also some American speech; but not the accents of Scotland or Ireland. The only local accents in England which retain /hw/ are those of Northumberland and nearby.

That is, the merger of /ʍ/ and /w/ is geographically restricted. The development and status of this merger is more complicated than the description given by Wells (1982) indicates, however.

Firstly, as Wells (1982: 228-229) points out, the distinction between /w/ and /ʍ/ is found in the speech of some speakers of RP (which, by its definition, is not geographically restricted), although he suggests that this "is not a 'natural' possibility" in that accent. Rather, he suggests, /ʍ/ in RP is the result of a conscious decision on the part of speakers and educators to reintroduce the distinction, a decision which may lead to hypercorrection, such that /ʍ/ is introduced where it is not historically warranted. I return to this issue in Section 4.4.3 below.

Secondly, it is not the case that every speaker in those areas which are characterised by a /ʍ/-/w/ distinction need have that distinction all or, indeed, any of the time. That is, the merger of /ʍ/ and /w/ may be socially restricted and variable within its geographical range of occurrence. For example, Chirrey (1999: 227) finds that although some speakers in Edinburgh do consistently maintain a distinction between /ʍ/ and /w/, other speakers, both older and younger, "regularly vary between /w/ and /ʍ/ for words that traditionally had /ʍ/". This variable merger of /ʍ/ and /w/ in Scotland is also recorded for Glasgow in Macafee (1983) and, more recently, in Stuart-Smith (1999).[29] Similarly, the "collapse" of the /ʍ/-/w/ distinction is recorded in Ulster English (Harris 1985: 60), although it is unclear what that might

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[28] The choice between /ʍ/ and /hw/ depends upon the particular phonological analysis used.

[29] Lawson (1998) finds that a direct change from /ʍ/ to /w/ may not be the best way of interpreting this merger. Rather, phonetically intermediate forms seem to occur, in Glasgow at least.

entail; although I am from County Tyrone in Ulster, I do not, and never have (as far as I can tell) had any trace of a /ʍ/-/w/ distinction, whereas both of my parents appear to have a consistent /ʍ/-/w/ distinction. Labov *et al.* (2006: 49) also find that /ʍ/ and /w/ are merging, at least variably so, throughout the USA .

The data in Table 1 illustrate another example of a situation somewhere between complete survival and complete merger of the /ʍ/-/w/ distinction. These data, taken from Rydland (1998), are from the village of Hartley in Northumberland, England, and were collected in the 1930s as part of the *Orton Corpus* (see Section 2.3.1 for further details).

Table 1: Data for words with historical /hw/ in Hartley, Northumberland.

Initial	Words
[hw]	*whack, whae, what, wheat, wheezle, whemmel, where, whin, whine, whinge, whip, whirl, whisht, whistle, white*
[w]	*whack, whae, what, whaup, wheat, wheel, whelk, whelp, whemmel, where, wherry, whick, whickens, while, whin, whine, whinge, whinny, whip, whirl, whisht, whiskers, white, Whit, Whitley, why*

The data for Hartley from the Orton Corpus reveals that although [hw] does survive, an alternative form with [w] also exists in almost every word in which [hw] is recorded. In only two cases (*wheezle* and *whistle*) is [hw] recorded without [w] as an alternative. Conversely, it is often the case that only [w] occurs, with no instance of [hw] recorded (e.g. in *wheel*, *while* and *whiskers*). That is, there was a potential merger of /w/ and /ʍ/ (/hw/) in Hartley in the 1930s, but it was variable. Since this is historical data, we have no way of knowing whether those words which are only recorded with [hw] could also have [w], or whether those words which are only recorded with [w] could also have [hw]. It is possible that they could have done, but the alternative variants were not recorded. It is also possible, however, that the alternative variants were not recorded because they did not exist and, if this is the case, we have here an instance of partial merger, whereby only some of the available items have merged, whilst others have not. The difficulty of determining whether we are dealing with a variable or partial merger (or both) must always be

borne in mind when dealing with this kind of historical data – I return to this issue in Section 3.1.

It appears, then, that the merger of /ʍ/ and /w/, an indisputable feature of the speech of millions of speakers of English, is nevertheless geographically restricted. In addition, the /ʍ/-/w/ distinction is only variably and, perhaps, partially retained by some speakers, and it appears that within some communities the merger of the two categories is more characteristic of certain social groups than others.

1.3.7. The /w/ - /v/ merger in English

Trudgill *et al.* (2003) discuss the status and apparent reversal of the merger of /w/ and /v/ in English, a merger which is usually associated with the southeast of England in the 18th and 19th centuries (see Ellis 1889: 132, Wright 1905: 227, Wakelin 1972: 95-96, 1984: 79, Trudgill 1999). They note, however, that it is also characteristic of a considerable number of less well-known Englishes spoken in the islands of the Atlantic and Pacific Oceans.[30] Trudgill *et al.* (2003: 34) suggest that, although the merger of /w/ and /v/ in many of the Atlantic and Pacific varieties is potentially explicable by influence from substrate and contact languages, "the presence of this merger in so many different varieties of English in so many different parts of the world … is too much of a coincidence to be totally explicable in terms of a substratum effect in all cases, and that it is therefore indicative of an earlier merger in England".

Trudgill *et al.* suggest that the apparent merger of /w/ and /v/ in southeast England appears to have involved the replacement of /v/ by /w/ in syllable onset position. As such, the opposition between the two phonemes was lost, since [w] in syllable onset position was in complementary distribution with [v] in coda position (where [w] never occurs in English). This gave rise to pronunciations such as [w]*illage* and [w]*ery* for [v]*illage* and [v]*ery*.

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[30] Trudgill *et al.* (2003) note the presence of the merger in the following locations: Bermuda, Bahamas, Montserrat, St. Vincent, Bay Islands, Tristan da Cunha, St. Helena, Bonin Islands, Pitcairn, Norfolk Island, and Palmerston.

This pattern is complicated somewhat by the existence of what Trudgill *et al.* (2003: 34) call an "apparent two-way transfer pattern", whereby the change of initial /v/ to /w/ appears to have been accompanied by the change of initial /w/ to /v/. As an example of this pattern, Trudgill *et al.* (2003: 35) quote the following passage from Dickens' *The Pickwick Papers*, chapter 34 (1837; emphasis added):

> I had a reg'lar new fit o' clothes that mornin', gen'l'men of the jury, said Sam, and that was a *wery* partickler and uncommon circumstance *vith* me in those days ... If they wos a pair o' patent double million magnifyin' gas microscopes of hextra power, p'raps I might be able to see through a flight o' stairs and a deal door; but bein' only eyes, you see, my *wision's* limited.

Trudgill *et al.* (2003: 35) note, however, that:

> A two-way transfer /v/ > /w/ and /w/ > /v/ is a very mysterious change from a historical linguistic point of view. It is a phenomenon which most historical phonologists would consider extremely unlikely if not totally impossible. Two simultaneous changes /w/ > /v/ and /v/ > /w/ must surely be out of the question.

In order to explain the well-attested change of onset /v/ to /w/ and the less well-attested change of onset /w/ to /v/, Trudgill *et al.* (2003: 35-36) suggest three scenarios of development. These are:

1) That the change of onset /v/ to /w/ did take place, and that instances of onset /w/ becoming /v/ "are the result of spasmodic hypercorrection leading to non-systematic substitutions in the opposite direction". They note, however, that the consistency with which Dickens and others indicate the change of /w/ to /v/ suggests that this was not just a "spasmodic" change.

2) The merger of /w/ and /v/ was not a merger, but was, instead a near-merger (see Section 1.4 below) "which led the writers ... to employ interchangeable spellings".

3) There was a complete merger of /w/ and /v/ in the southeast of England, but on some phonetic form intermediate between them. Since this sound was neither [w] nor [v], Trudgill *et al.* suggest that speakers without this merger

> (such as Dickens) would have interpreted it as [w] when it replaced /v/ and [v] when it replaced /w/, giving rise to the pattern illustrated in *The Pickwick Papers*. They suggest that the most likely phonetic value for this intermediate form was [β] (a voiced bilabial fricative) or [β̞] (a voiced bilabial approximant).

Interestingly, Trudgill *et al.* find evidence for the pronunciation [β] for both [w] and [v] in a number of less well known Englishes: Bermuda, the Cayman Islands, the Bahamas and in Gullah (spoken on the coast and coastal islands of South Carolina, Georgia and north Florida). Furthermore, analysis of recordings of a number of other less well known Englishes by Trudgill *et al.* (2003) reveals that [β̞] for both /w/ and /v/ is found in Pitcairn, Tristan da Cunha, St. Helena, Bequia in the Caribbean Grenadines, Saba in the Dutch Antilles, and in Anguilla in the Leeward Antilles. Trudgill *et al.* (2003: 39) note that it is "vital that we should state unequivocally that we are entirely confident that we are not hearing a near-merger here", since "The consonants involved in the speech of our Anguillian informants are visibly and audibly identical as between the two lexical sets". Trudgill *et al.* (2003: 40) conclude that:

> these different communities, scattered as they are in different widely separated parts of the world, and sharing an unusual articulation found in only a very small percentage of the world's languages, inherited this articulation from a common source, namely the dialectal English of the southeast of England.

The evidence reviewed by Trudgill *et al.* suggests, then, that there was a merger of /w/ and /v/ in the southeast of England in the 17th, 18th and 19th centuries, and that "This merger was carried, perhaps in the 17th century, to other parts of the world, mainly the early colonies such as those of the Caribbean, in some of which it still remains" (p. 41). Since they find that "no native English speaker anywhere in England now fails to contrast /w/ and /v/" (Trudgill *et al.* 2003: 25-26), they conclude (p. 40) that, because the merger of /w/ and /v/ was genuine, "there was also a genuine reversal of the merger". Trudgill *et al.* (2003: 41) suggest that this reversal occurred "as a result of contact with middle-class accents and accents from further north and west in England which did not have the merger". According to Trudgill *et al.* (2003: 41), who compare the reversal of the same merger in Montserrat, this reversal proceeded first by replacement of [β̞] by [w] and [v], which were used "allophonically

rather than contrastively", and it was this stage in the reversal that accounts for the use of [w] for [v] recorded by Ellis (1889), Wright (1905), Wakelin (1972, 1984) and Trudgill (1999). As speakers sorted out the two lexical sets, instances of hypercorrect [v] for [w] resulted, such as those noted in Wakelin (1972: 96) ([v] in *watch* in Somerset and *wives* in Kent in the SED).

Thus Trudgill *et al.* suggest that there was a merger of /w/ and /v/ in the southeast of England, and that it has been reversed, due to contact with non-merging varieties of English. In suggesting such an explanation, Trudgill *et al.* (2003: 41) explicitly state that they are not averse to apparent reversals of merger being explained by appeal to the notion of near-merger, but rather that they find no evidence that near-merger was a factor in this case.

1.4. Near-mergers

Labov (1994: 354) suggests that when speakers are asked, in order to determine whether or not a merger has taken place, to pronounce minimal pairs, and when they are asked whether these pairs are pronounced the same or differently (he calls this a 'minimal pair test'), four results are theoretically possible. Labov tabulates these four possible results as follows:

Table 2: Results of minimal pair tests (Labov 1994: 354).

		Spoken	
		same	different
Judged	same	*a*	*b*
	different	*c*	*d*

Of these four possibilities, *a* and *d* are the least controversial: it is not unexpected that speakers who pronounce two words the same will judge them to be pronounced the same and, conversely, speakers who pronounce two words differently will judge them to be pronounced differently. Labov (1994: 357) suggests that possibility *c* also occurs when spelling influences the response of speakers. He gives the example of *ladder* and *latter* which, for many speakers in North America, are pronounced the same, but may be claimed to be different because of their spellings.

Labov (1994: 357) states that, prior to 1972, "it was generally assumed" that "If a native speaker cannot discriminate between two sounds, then these sounds will be in free variation in his or her speech". That is, possibility *b* in Table 2 above was assumed not to occur. As discussed in Section 1.2.1 above, the gradual drift or approximation of the phonetic spaces of two phonemes until they become non-distinct is one means by which merger can develop. As noted there, however, merger of this type involves a complication: it may be difficult to determine the exact point at which the two phonemes have actually merged, since the merger takes place by degrees. This necessarily involves a stage of overlap in the phonetic spaces of the two phonemes without strict identity before the merger takes place. In these last stages of the merger, it might well appear, to the casual observer, that the two phonemes have merged, since they often share the same, or very nearly the same, phonetic space, despite the fact that they are not identical. In such a case, is it possible that native speakers might also have difficulty judging whether two sounds are the same or not, even though they pronounce them subtly differently? If this were possible, then we would have an example of situation *b* in Table 2.

This 'near-merger' situation was first illustrated by Labov, Yaeger and Steiner (1972) in New York English, in their examination of the vowels /oh/ and /ohr/,[31] as found in, for example, the words *sauce* and *source* respectively. Labov (1994: 357) notes of this 'merger' that, since /r/ is vocalised to schwa in some types of New York English and since the vowel in *sauce* is also pronounced with a schwa inglide, "it was expected that *source* and *sauce* would be indistinguishable unless the /r/ was pronounced as a consonant". Furthermore, Labov (1994: 357) notes that "No subject and no investigator had ever suggested that *source* and *sauce* might be opposed by vowel colour".

In their acoustic examination of these two vowels in New York English, Labov *et al.* (1972) find that they are, in fact, subtly different in their phonetic distributions. Figure 10, taken from Labov (1994: 358) illustrates the typical distribution of *sauce* (white ellipse) and *source* (shaded ellipse) in New York as well as the distribution of *sauce* and *source* tokens for a "lower middle class Jewish speaker" (Labov 1994: 358) in

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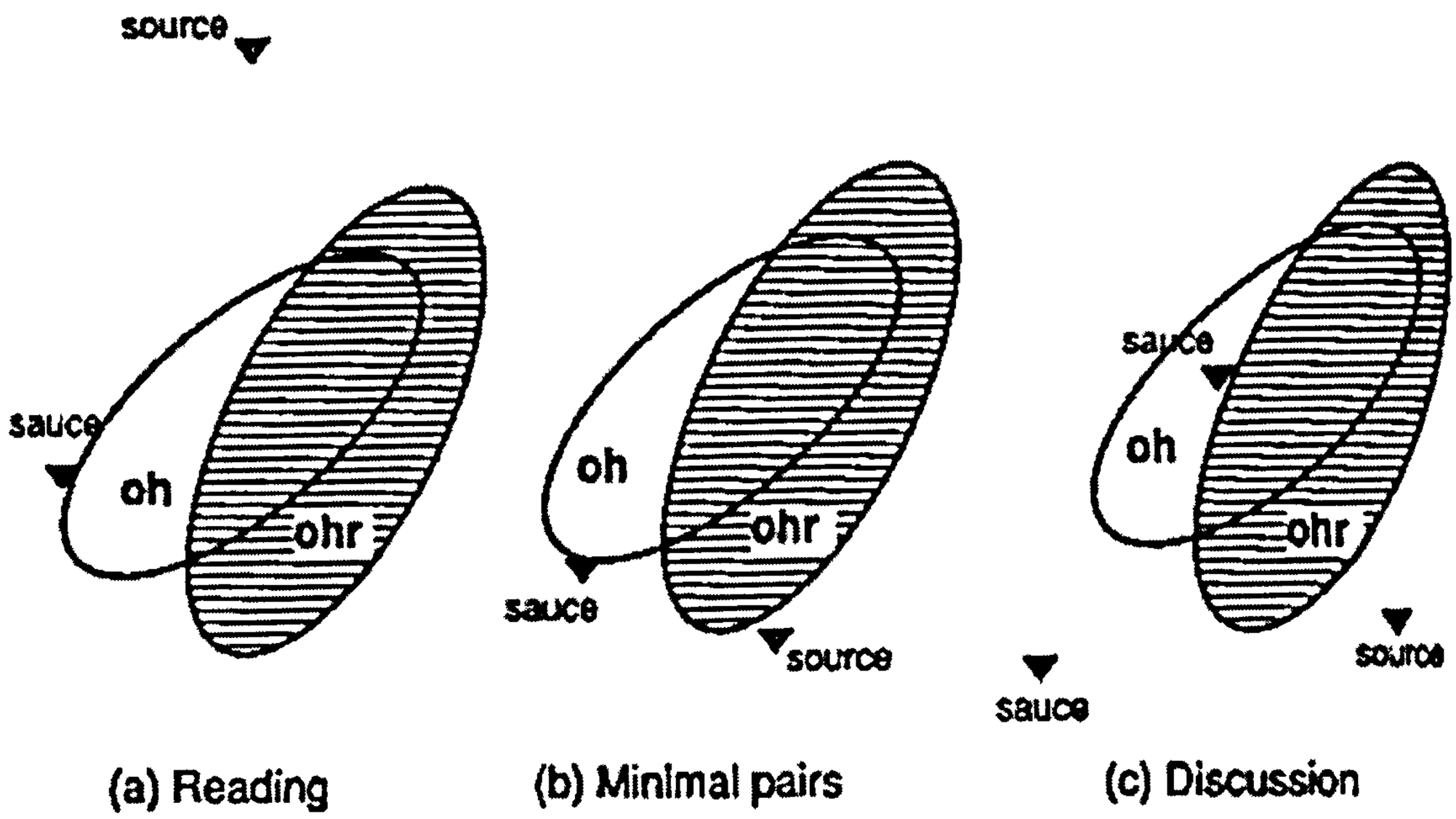
[31] Labov's phonological symbols for what are often symbolised /ɔ:/ and /ɔ:r/.

three speech styles (the phonetic locations of tokens are indicated by black triangles).

Figure 10: The distributions of the SAUCE and SOURCE vowels in New York and in the speech of a lower middle-class Jewish speaker.[32]



Labov (1994: 359) summarises the findings of Labov *et al.* (1972) regarding this near-merger in six points, which I repeat *verbatim* here:

1) The opposing phonemes are differentiated by a smaller than normal phonetic distance.
2) This difference is most often an F2 difference, instead of a combination of F1 and F2.
3) There is considerable individual variation within the community: some individuals show a near-merger, others a complete merger, and still others a distinction.
4) Speakers who make a consistent difference in spontaneous speech often reduce this difference in more monitored styles.

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[32] Labov's figure does not include scales, but it is clear from his discussion that the X axis represents F2 values in reverse order and the Y axis represents F1 values in reverse order. See Section 5.7.2 for details of this kind of representation.

5) Speakers judge the sounds to be the same in minimal pairs tests, and fail commutation tests.[33]
6) Phoneticians from other areas are better able to hear the difference than the native speakers.

Thus Labov *et al.* (1972) found evidence that it is possible for speakers to produce a distinction but to be unable to perceive it. It is important to note, however, that although near-mergers of this sort may well represent a stage on the way to complete merger (by drift/approximation), it is not inevitable that the merger will occur. In some cases it appears that near-mergers have been remarkably stable over a considerable period of time. In the following two sections, I discuss two apparent mergers which may, in actual fact, have been longstanding near-mergers.

1.4.1. The MEAT-MATE near-merger

In Section 1.3.3 above, I discussed the merger of the MEET and MEAT lexical sets in the vast majority of English accents and dialects, but noted that in some varieties of English, in particular MUE, MEET and MEAT are at least variably distinct, with MEAT having an alternate, MATE-like pronunciation. Additionally, it was noted that a small number of historical MEAT words (*break*, *drain*, *great*, *steak* and *yea*) now belong, somewhat unexpectedly, to the MATE lexical set.

Thus far, the development of the MEET, MEAT and MATE lexical sets in modern English can be viewed as a merger of MEAT and MEET on the one had, as opposed to a separate development of MATE on the other, a development which is still occurring in some regional dialects such as MUE. When we look at the history of these lexical sets in English in more detail, however, the development from a three-way MEET ≠ MEAT ≠ MATE contrast in ME to a two-way MEET = MEAT ≠ MATE contrast in modern (Standard) English is considerably more complicated.

Labov (1994: 296), following Halle (1962), discusses the development of these three lexical sets in English (as well as using the terms MEET, MEAT and MATE, he uses

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[33] See Section 1.4.2 for discussion of commutation tests.

the historical phonological symbols ē, ēā and ā respectively), and summarises their rather problematic behaviour as follows:

> it appears that the three classes were distinct in Middle English, as ē, ā, and ēā; that in the course of the 16th century, ēā became identified with ā; and that somehow by the 17th century ēā was disengaged from ā and merged with ē.

Labov (1994: 296) summarises this series of developments as follows:

Table 3: The apparent development of MEET, MEAT and MATE.

Type	*ME class*	*ME value*	*16th century*	*17th century*
meet	ē	[e:]	[e:]	[i:]
meat	ēā	[æ:, ɛ:]	[ɛ:]	[i:]
mate	ā	[a:]	[ɛ:]	[e:]
		"System I"	"System II"	"System III"

Although this summary is something of an oversimplification, its general pattern is supported by evidence from spelling and from the comments of authors at the time. Labov (1994: 299) notes that in the 16th century, Hart (1569), Mulcaster (1582) and Whythorne[34] all attest System I (MEET≠MEAT≠MATE), Laneham (1575), Bullokar (1580), Bellot (1580) and Delamothe (1592) give evidence for System II (MEET≠MEAT=MATE), whilst Machyn (1550) and Shakespeare (1593) appear to give early evidence for System III. Labov (1994: 299) states, however, that "In the 17th century, grammarians no longer reported Systems I or II", and that "By the end of the century, the ēā words not before /r/ had almost all been assigned to the ē class".

That is, there appears to have been a merger of MEAT and MATE in the 16th century, but the two lexical sets then unmerged, with MEAT merging with MEET in the 17th century instead. Labov (1994: 298) suggests that this apparent reversal of the MEAT-MATE merger between the 16th and 17th centuries "remains inexplicable", the crucial question being how, given that they appear to have become the same in the 16th century, did speakers of English identify which words in the unified MEAT-MATE

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[34] No date or source given.

lexical set belonged to MEAT and which belonged to MATE so that they were able to separate the merged group correctly and merge MEAT (only) with MEET instead?

A number of explanations for this apparently contradictory series of developments have been given (see Labov 1994: 297-306 for discussion). Halle (1962) and Chomsky and Halle (1968) assume that speakers were able to retrieve the original lexical oppositions since they were never lost in the underlying phonological representations of these words. Alternations such as *sane* ~ *sanity* and *clean* ~ *cleanliness* are claimed to provide speakers with the means of positing different underlying forms for these lexical sets. Labov (1994: 297-298) argues convincingly, however, that such alternations were neither sufficient in number or regularity to allow speakers to maintain an underlying distinction between all of the members of these three lexical sets, and it is indeed difficult to imagine what strategies speakers might use to maintain separate underlying forms for the pair of words *meat* and *mate*, neither of which evidence any vocalic alternations reflecting their history.

An alternative explanation, argued for by Wyld (1936) and Kökeritz (1953), is that the situation described in Table 3 is correct but that rather than speakers mysteriously picking apart the merger of MEAT and MATE, the merger disappeared as a result of contact with other dialects which did not have it. In the words of Wyld (1936: 211):

> our modern usage with [*ī*] in *heat*, *meat*, &c., is not in the nature of a sound change as some writers seem to suggest, but is merely the result of an abandonment of one type of pronunciation and the adoption of another, a phenomenon which, as we know, is of the commonest occurrence in the history of Received Standard Colloquial English.

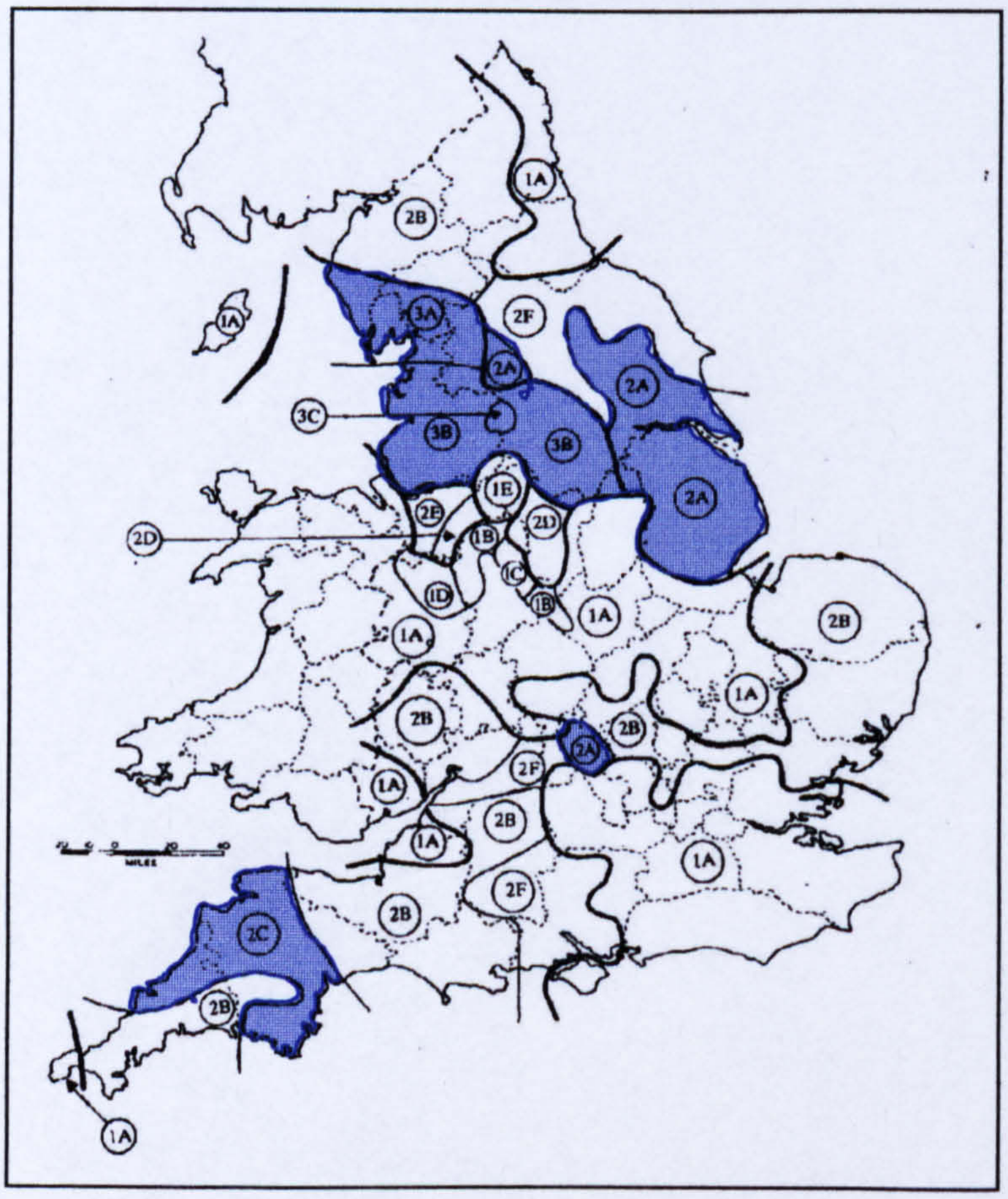
Labov (1994: 300) interprets this as meaning that System III was "a southeastern importation, arriving with speakers from Kent and Essex, which gradually won out over the older London dialect".

The explanation suggested by Wyld and Kökeritz appears to be supported by the existence of the small number of MEAT words (*break*, *drain*, *great*, *steak* and *yea*) which now belong to the MATE lexical set. If, as they suggest, the identical MEAT and MATE lexical sets became differentiated by contact with dialects which did not have the merger, it seems reasonable to suggest that the re-separation of MEAT and

MATE might not have been perfect, such that there was some lexical crossover between the two sets. Wyld (1936: 212) describes these words as "simply survivals" of the older merger of the two historical classes. That is, speakers were able to reverse the merger of MEAT and MATE because of dialect contact, but they did not do so perfectly.

A third suggested explanation for the apparent reversal of the MEAT-MATE merger between the 16th and 17th centuries is found in Luick (1921), Jespersen (1949), Dobson (1968) and Labov (1975, 1994) – that the merger of MEAT and MATE never took place in the first place and, as such, it is not necessary to explain how speakers successfully picked it apart.

Figure 11: Locations in the SED where MEET≠MEAT≠MATE.



That a distinction might indeed have existed between MEAT and MATE in the Early Modern period is not *a priori* unlikely, given the uncontroversial survival of the historic three-way distinction between ME /a:/, /ɛ:/ and /e:/ in a number of traditional English dialects in the 20th century. Anderson (1987), in his analysis of the data from the SED, finds that just such a contrast is characteristic of two (main) areas of England.

Leaving aside the complication of the distinction between ME /ɛː$_1$/ and /ɛː$_2$/ (see Anderson 1987: 78, 82, 89), a three-way distinction is recorded in the SED in a broad swathe of northern England, from southern Cumberland, through Lancashire and Yorkshire, into Lincolnshire, and in most of Devon and parts of Cornwall in the southwest of England (see Figure 11, adapted from Anderson 1987: 90).

An example of such a three-way distinction is found in SED location L7 (Swaby in Lincolnshire), where ME /aː/, /ɛː/ and /eː/ are represented by /ɛə/, /ɪə/ and /iː/ respectively (see Anderson 1987: 85). The data from the SED are particularly interesting since they not only reveal that the three-way distinction between ME /aː/, /ɛː/ and /eː/ did exist in mid-20th century English (in a phonetically obvious way), but also suggest the kind of phonetic means by which this three-way distinction may have been maintained more generally.

Although the hypothesis that MEAT and MATE were never merged in the Early Modern period is supported by data from 20th century English dialects and removes the difficulty of reversal of merger, its proponents must, nevertheless, find some means of explaining the kind of evidence surveyed by Labov (1994: 298-299), which suggests, in part at least, that there was a merger of MEAT and MATE in Early Modern English. Labov (1975, 1994) attempts to explain this by suggesting that although MEAT and MATE were distinct in Early Modern English, this distinction was of a much more phonetically subtle type than, for example, that found in Lincolnshire, to the extent that the apparent MEAT-MATE 'merger' was, in fact, a near-merger. Interpreting an apparent merger as a near-merger not only allows us to explain why the two phonemes may be represented in the same way in spelling and in rhyme, but also how they can develop differently from each other so that they become obviously distinct once again, since they were never wholly phonetically (or phonologically) identical in the first place.

In Labov (1975), it was suggested that the apparent reversal of the MEAT-MATE merger in the Early Modern period could be explained as the consequences of it being a near-merger rather than a merger. At that time, Labov's suggestion was entirely conjectural, since there was no evidence to suggest that the distinction between MEAT and MATE could be maintained in such a way (as opposed to the

phonetically obvious differentiation of the two lexical sets in dialects such as those of Lincolnshire referred to above). However, this hypothesis appears to have received confirmation from a study of Belfast Vernacular English (BVE) by Milroy and Harris (1980; also discussed in detail in Harris 1985), where precisely such a near-merger of MEAT and MATE seems to exist.

It is a well-known, stereotyped, feature of Irish English that MEAT words are pronounced with a MATE-like vowel, and this is a feature which is often represented in spelling and rhyme. Harris (1985: 242) notes Sheridan's comments (1781: 142) concerning speakers of Irish English:

> Thus in the combination ea, they pronounce the words tea, sea, please, as if they were spelt tay, say, plays; instead of tee, see, pleese.

Milroy and Harris (1980: 201) quote the following more recent example from a song written by Bernard Keenan in 1966 (in Hammond 1978: 48):

> *The Roost is next and for a rest you can take a seat*
> *Before proceeding further to the good oul' Golden Gate.*

Milroy and Harris (1980) and Harris (1985) report the results of an analysis of the MEAT and MATE lexical sets in BVE, a variety of MUE, as spoken during the late 1970s (see Harris 1985: 348). As discussed previously in Section 1.3.3, many speakers of MUE can have either the same vowel as MEET (/i/) or a MATE-like vowel in MEAT. Harris (1985: 243) points out that, since in Belfast the "non-standard mid alternants of the MEAT class tend to be deeply submerged in the vernacular, being restricted to extremely informal and intimate settings", it was not possible to access the MATE-like pronunciations of MEAT by means of wordlists or other formal elicitation techniques (only /i/ was provided by informants in such circumstances). This is an important feature of the phonology of the MEAT lexical set in BVE (and other Ulster varieties) – for many, perhaps even all speakers, the MATE-like variants of MEAT are entirely optional, and those speakers who do have them also have a variable merger of MEAT with MEET. Harris (1985: 243) notes that when the researchers tried to elicit MATE-like pronunciations of MEAT by asking the informants to provide specifically "broad" pronunciations, the informants produced

pronunciations of MEAT identical to MATE. He notes, however, that "We treated this interpretation with some scepticism" (p. 243) since casual observation led them to believe that the MATE-like pronunciations of MEAT in natural conversation were close but not identical to MATE.[35]

In order to investigate this suspicion, Milroy and Harris analysed recordings of "spontaneous speech in informal contexts" (Harris 1985: 243). Their analysis of MEAT and MATE was auditory (see Section 5.7.1), since spectrograms of the relevant tokens "were of low quality and not good enough to establish whether or not a consistent distinction was maintained" (Milroy and Harris 1980: 202). This "low quality" was a consequence of the informal nature of the interviews, since interviewing in formal contexts (e.g. in a recording studio) led to no production of MATE-like pronunciations of MEAT. Of the 50-odd speakers interviewed in their survey of BVE, only eight (all male) produced sufficient MATE-like tokens of MEAT to make analysis worthwhile.

The pronunciation of MEAT and MATE was examined "in the environment of a following -t, -l, -n, -g and voiced fricative" (Milroy and Harris 1980: 203) and, crucially, they did not consider MEET-like pronunciations of MEAT in their analysis, despite the fact that MATE-like pronunciations of MEAT "do not occur on our tapes much more than about once per hour on average. The [i] alternant is much more frequently used" (Milroy and Harris 1980: 202). Hence the precise number of MEET-like pronunciations of MEAT are not given, whereas we are told (by Harris 1985: 244) that 60 MATE-like tokens of MEAT and 99 MATE tokens were analysed. Milroy and Harris analyse the tokens of MEAT and MATE in two ways: by the height of the vowel or first part of the diphthong, and by the presence or absence of a schwa off-glide. Their results were as follows (original symbols from Milroy and Harris 1980 retained):

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[35] Recall Labov's finding that "Speakers who make a consistent difference in spontaneous speech often reduce this difference in more monitored styles" (Labov 1994: 359).

Table 4: The distribution of MEAT and MATE by vowel height.

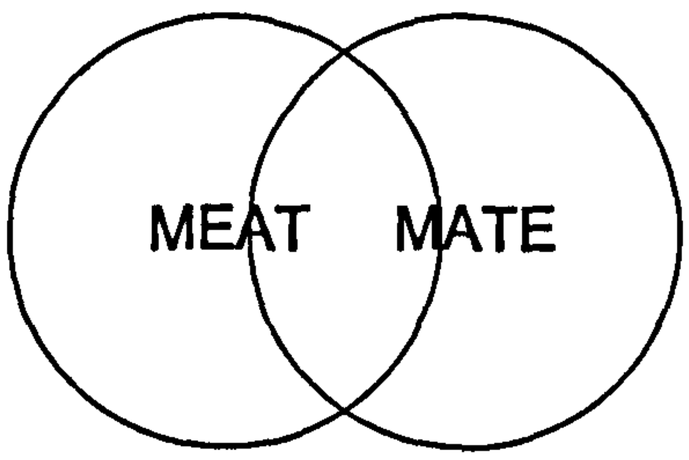
		MEAT	MATE
1.	[ɪə]	0	33
2.	[e] [eə]	20	60
3.	[ę] [ęə]	38	6
4.	[ɛ]	2	0
Total		60	99

Table 5: The distribution of MEAT and MATE by presence or absence of an off-glide.

	MEAT		MATE	
	Glide	No glide	Glide	No glide
1.	0	0	33	0
2.	18	2	54	6
3.	18	20	4	2
4.	0	2	0	0
Glide total	36		91	
No glide total	24		8	

Milroy and Harris find that both in terms of height and presence/absence of an off-glide, there is a statistically significant difference between the pronunciation of MEAT and MATE in their corpus, even though the phonetic distributions of the two lexical sets overlap to a considerable extent. This situation may be illustrated as follows:

Figure 12: The relationship between the MEAT and MATE lexical sets in BVE.



These results appear to confirm Milroy and Harris's suspicions that the two lexical sets are indeed pronounced differently in informal speech and that the merger of the two lexical sets has previously been falsely reported in the variety. That this has been

possible is due to the extremely close (though different) pronunciation of the two lexical sets.

Thus Milroy and Harris's research appears to confirm Labov's suspicion that it is possible for MEAT and MATE to be in a relation of near-merger rather than merger. Nevertheless, there are a number of problems with interpreting Milroy and Harris's research that must be borne in mind before we can assume that the pattern found there can be generalised to other dialects of English.

Firstly, and perhaps most crucially, MEAT and MATE in BVE are not identical, regardless of whether certain MATE-like pronunciations of MEAT are the same or different than MATE, since all MEAT words can and do occur with the MEET vowel /i/, whilst MATE words never do. That is, MEAT and MATE are only variably similar or identical and, as such, maintain a separate identity for many speakers of MUE. In removing these /i/ variants of MEAT from the equation, Milroy and Harris are removing part of the evidence for whether these two lexical sets are merged or not in BVE. The omission of these /i/ variants could potentially have serious consequences for our interpretation of the MEAT-MATE relationship – is it possible, for example, that the non-identity of MEAT and MATE at the phonological level (because of the /i/ variants of MEAT) could enable the two lexical sets to develop differently at the phonetic level, perhaps allowing the pronunciation of MATE-like MEAT and of MATE to move in different directions? That is, is it possible that some pronunciations of MATE have the same relationship to the other pronunciations of MATE as the /i/ variants of MEAT do to the other (MATE-like) variants of MEAT? Such a situation can be illustrated as follows:

New MEAT pronunciations:	[i]
Traditional MEAT and MATE pronunciations:	[e(ə)], [ę(ə)]
New MATE pronunciations:	[ɪə]

If this series of developments is possible, then the removal of the newer [i] variants from MEAT has the effect of making the traditional variants of MEAT less like MATE if we don't also remove [ɪə] from MATE. The question is, are Milroy and Harris correct in assuming that the variants of MEAT are heterogeneous whilst the variants of

MATE are homogeneous? Although we cannot tell from their data, the fact that a large number of MEAT tokens are excluded from the analysis whilst no MATE tokens are is potentially problematic.

Secondly, Milroy and Harris do not give us any details of the precise distribution of MEAT and MATE in the speech of individual speakers. Since their figures (as presented in Table 4 and Table 5 above) are composites covering eight speakers, we do not know whether the patterns they have identified are equally characteristic of each speaker, or whether different speakers prefer different variants of MEAT and MATE. That is, it is possible that Milroy and Harris's composite figures, whilst giving us a useful overview of the pronunciation of MEAT and MATE in their sample, might hide patterns of similarity or difference between MEAT and MATE in the speech of individuals. As such, we cannot be sure that no speakers in their sample have consistently different MEAT and MATE, or whether some might, in fact, have identical pronunciations of MEAT and MATE.

In summary then, the MEAT-MATE 'merger' in BVE is only variably present in the speech community (some speakers have only [i] in MEAT) and in the speech of those speakers who have it (all speakers can have [i] in MEAT but not in MATE). Even for those speakers who do appear to have a merger of MEAT and MATE some of the time, the two lexical sets are not phonetically identical, since MEAT favours low mid pronunciations with fewer off-glides, whilst MATE favours high mid pronunciations, often followed by a schwa off-glide. Assuming that all variants of MATE are equally traditional, and that all of the speakers in Milroy and Harris's sub-sample treat the two lexical sets in the same way, this means that even after the MEET-like pronunciations of MEAT ([i]) have been removed, MEAT and MATE are in a relationship of near-merger rather than merger. As such, the two lexical sets, whilst sometimes phonetically identical (because of the significant degree of overlap in their phonetic distributions), are phonologically distinct and can be treated differently by speakers of BVE.

It appears to be the case, then, that the merger of MEAT and MATE in Belfast English has turned out (if Milroy and Harris are correct in their assumptions) to be a near-merger, despite evidence from unconventional spellings and rhymes indicating

that they are the same.[36] This confirms Labov's suspicions that it is possible for these two lexical sets to have remained non-identical whilst at the same time being similar enough to allow them to be spelt alike and for previous commentators to consider them to be identical. This suggests to Labov that the merger of MEAT and MATE in the Early Modern period, which has apparently undergone reversal, was also a near-merger. As such, the evidence from spelling and rhyme from the Early Modern period is indicative of the very close, but subtly different, phonetic relationship between the two lexical sets, in the same way that rhymes and identical spellings are used to indicate the near-merger in MUE.

Although Labov's hypothesis, that there was a near-merger rather than a merger of MEAT and MATE in Early Modern English, explains the apparent reversal of these two lexical sets along the correct etymological lines, it does not explain the behaviour of the exceptional words *break*, *drain*, *great*, *steak* and *yea*. Since the hypothesis of near-merger assumes that MEAT and MATE were never identical, such that speakers could continue to develop them independently, these words might constitute counter-evidence to it.

Labov (1994: 304) points out that "With or without a merger with ā, the very existence of these exceptions has posed a difficult challenge for the traditional Neogrammarian view of the regularity of sound change". He continues:

> If the shift of ēā to high position was the product of irregular dialect mixture, why did it work so regularly for all words but these five? On the other hand, if sound change is basically regular, why do so many sound changes show residua like these ... The five residual words are too many to fit the model of regular sound change, and too few to be explained by random mixture.

Labov (1994: 304-306) explains this apparently anomalous situation by suggesting that the five words are not, in fact, exceptions to a general sound change. Rather, he suggests, they are only apparently exceptional, since other reasons for their divergent development exist. Firstly, he excludes *yea* from consideration, since its

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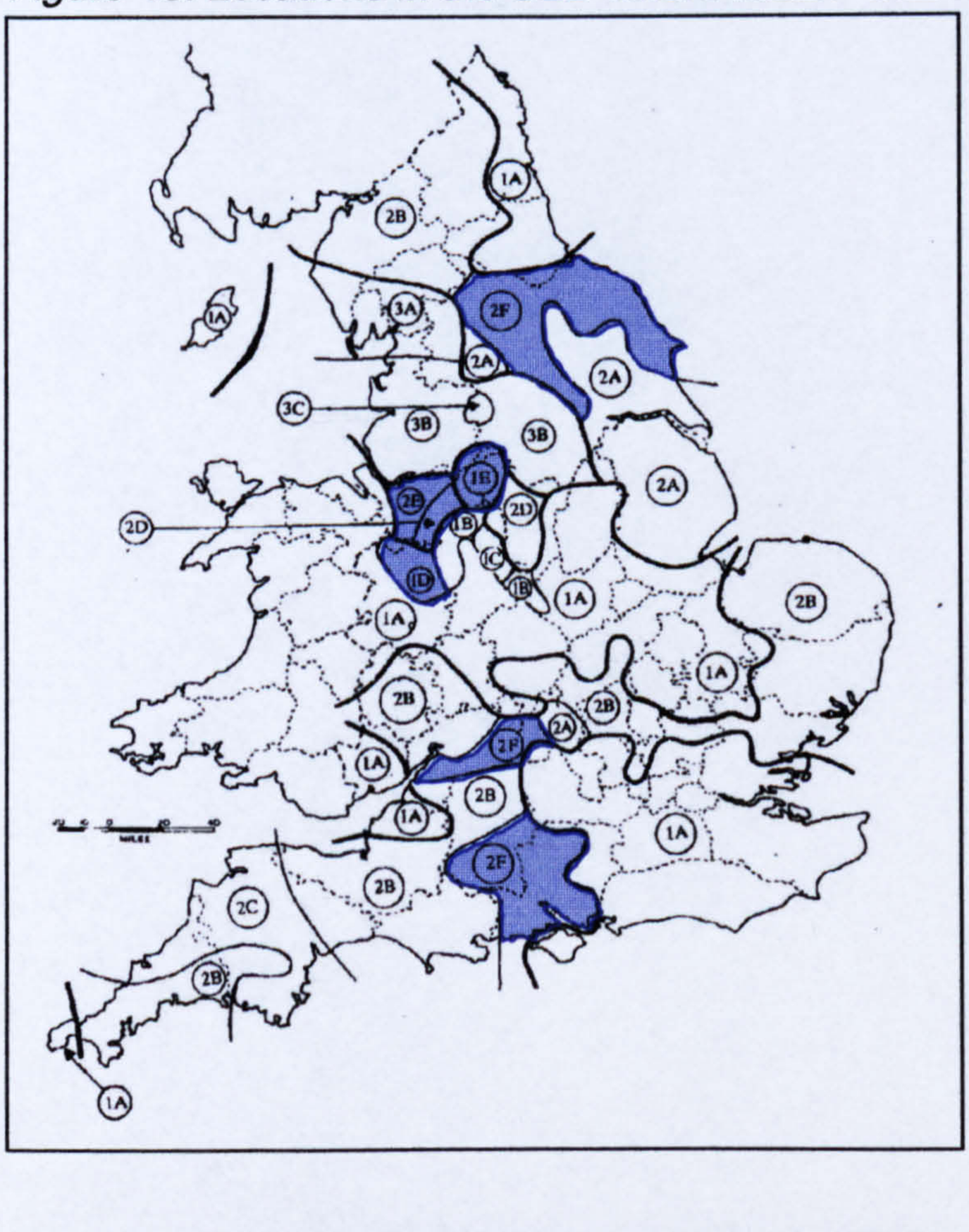
[36] The MATE-like pronunciations of MEAT in my own speech (from County Tyrone) are very similar but not identical to MATE either, at least in some phonological contexts.

development was affected by the development of *nay*. Secondly, he excludes *steak* from the set of words, since its vowel is derived from ON /ei/, which typically contributes to the MATE lexical set in English (as in *bait*, *raise* and *they*). It is simply a case of an unetymological spelling which gives *steak* the appearance of being an irregular MEAT word. Thirdly, the three remaining words (*break*, *drain* and *great*) all begin with a sequence of voiced stop followed by /r/, and Labov (1994: 305-306) states that no other word with certain ME /ɛ:/ beginning with such a consonant cluster exists, despite assertions to the contrary by, for example, Jespersen (1949). As such, the behaviour of the vowel in *break*, *drain* and *great* is completely regular, albeit rare. This leads Labov (1994: 306) to conclude that "If **ēā** did merge with **ā**, the reversal was clean and complete".

Figure 13: Locations in the SED where MEET≠MEAT=MATE.



Although Milroy and Harris's analysis of MEAT and MATE in Belfast provides evidence for the existence of a near-merger, rather than a merger, of the two lexical sets, and although Labov argues convincingly that the merger of MEAT and MATE in Early Modern English *might* have been a near-merger, we cannot be certain that the two phenomena *were* of the same type. The kind of analysis made in Belfast by

Milroy and Harris cannot, of course, be made for Early Modern English and, hence, the amount of evidence for the status of the two instances of MEAT-MATE 'merger', separated by several hundred years and several hundred miles, is different. It is perhaps worth pointing out that the SED did record instances of MEET≠MEAT=MATE (marked in blue in Figure 13) in addition to instances of MEET≠MEAT≠MATE and MEET=MEAT≠MATE, as Figure 13, adapted from Anderson (1987: 90), illustrates.

1.4.2. The LINE-LOIN near-merger

Labov (1994: 306-309, 371-384) analyses the apparent merger and subsequent reversal of merger of the /aɪ/ and /ɔɪ/ diphthongs in English (for which he uses the keywords LINE and LOIN, and the phonemic symbols /ay/ and /oy/, respectively). It appears, from the testimony of writers at the time, that at the end of the 17th century and through the 18th century these two vowels merged in some varieties of English. Labov (1994: 307-308) notes that, amongst others, Coles (1674), Cooper (1687), Aicken (1693) and Jones (1701) evidence the merger of LINE and LOIN, and that, furthermore, there was "free variation between /ay/ and /oy/" (Labov 1994: 307) in the rhymes of such poets as Dryden, Butler and Pope. Labov (1994: 308) gives as an example the following couplet from Pope's *An Essay on Criticism* (1711):

> *And praise the easy vigour of a line*
> *Where Denham's strength and Waller's sweetness join.*

Despite the apparent merger of these two phonemes in English, Labov (1994: 308) points out that "By the end of the 18th century, this merger had become a major social stereotype" which was commented upon negatively by Rudd (1755), Kenrick (1773) and Nares (1784). Labov records that, by the end of the 18th century, almost no instances of the LINE-LOIN merger are to be found.

Although the LINE-LOIN merger seems to have disappeared from English by the end of the 18th century, Labov points out that two LOIN words, *boil* and *join*, appear to have crossed over into the LINE lexical set, at least in dialect speech, to which can be added a number of LINE words which joined LOIN in StE, i.e. *boil* ('tumour'), *groin*, *hoist*, and *joist* (Onions 1966).

On the basis of the testimony of writers in the 16th and 17th century and the existence of these crossover words, the fact of the merger of these two lexical sets has been accepted by such scholars as Luick (1903), Wyld (1936), Jespersen (1949), and Kökeritz (1953). In order to explain the lack of merger of LINE and LOIN in modern StE (excepting the few crossover words), these scholars have assumed that the obvious difference in the spellings of these two sets of words has enabled speakers of English to reverse the merger, albeit incompletely.

Labov (1994: 308), on the other hand, suggests that "there are many reasons to doubt that it [spelling] could have been the means by which such a clear separation was achieved". In particular, Labov (1994: 308-309) points out that the merger appears to have been reversed in regional and lower status dialects as well as in StE, a fact which suggests to him that spelling alone cannot have led to the apparent reversal of the merger. As was the case with the apparent merger of MEAT and MATE, Labov suggests that the reason speakers were able to reverse the LINE-LOIN merger was that the two lexical sets were never merged in the first place, but instead were in a relationship of near-merger, phonetically so close that words from the two sets could be spelt in the same way and rhymed, whilst still remaining subtly different. And as was the case with the MEAT-MATE 'merger', Labov (1994) uses data from a modern dialect of English which appears still to have a merger of LINE and LOIN to show that what has previously been interpreted as a case of merger is, on closer inspection, a case of near-merger.

Labov (1994: 377) suggests that a "modern continuation of the merger" can be found in the mid 20th century dialect of Essex in southeast England. Labov finds that the SED records a clear distinction between LINE and LOIN in Essex in locations 1 to 8, a "smaller distinction" (e.g. [ɔ̈ɪ] vs. [ɔɪ]) in locations 6, 7, 12 and 15, and no distinction in the remaining nine locations (LINE and LOIN are both represented by [ɔɪ]). Examination of a tape-recording of one of the SED informants from one of the merging locations suggested to Labov that what had been recorded as a merger by the SED transcribers was in fact a near-merger, since "Spectrograms for the few tokens of /ay/ on the tape did not appear to be in the same area of phonological space as /oy/. Instead they were shifted towards the center" (Labov 1994: 380). In order to confirm this initial finding, Labov visited one of the most consistently merging

SED locations in Essex (Tillingham) in 1971 to make further recordings of dialect speakers from the area.

Labov's acoustic analysis of the LINE and LOIN tokens from these interviews revealed that none of the three speakers recorded has a merger of the two lexical sets, since they all made a small but consistent distinction between them (see Labov 1994: 381-382 for the F1/F2 plots). Despite this, two of the informants, when asked whether potential homophones were pronounced the same or differently (a minimal pair test) responded that they were the same, whilst the other informant felt that they were different. That is, two of the informants judged that the two lexical sets were pronounced the same whilst at the same time pronouncing them consistently differently – (im)possibility *b* in Table 2 above.

Furthermore, Labov conducted commutation tests on these three speakers on a return visit in 1972. These tests involved playing the informants potential homophones of LINE and LOIN, excerpted from the recordings made in the previous year, that were minimally different acoustically, in order to discover whether they could determine which word was being spoken on any given occasion. Labov (1994: 383) notes that "None of the three subjects passed the commutation test" (i.e. the informants were unable to determine which pronunciations belonged to LINE words and which belonged to LOIN words). Nevertheless, all three informants began, on reflection, to feel that there was a small distinction between the pronunciation of LINE and LOIN in their speech; Labov (1994: 384) quotes one of the informants as stating:

> "Loin of lamb," you go like that, [lo̜ɪn], "loin of lamb," 'n' if you want the [lo̜ɪn], the line, line or anything like that, you go like "Put the linen line [lo̜ɪn, lo̜ɪn]."

Despite this, Labov (1994: 384) comments of this informant that "she was not able to use the acoustic differences ... to identify words accurately, contrary to her expectation".

Labov suggests that since the reported merger of LINE and LOIN in Essex turns out, on closer examination, to be a near-merger (with almost no overlap in the pronunciations of the two lexical sets), it is reasonable to suggest that the apparent merger of LINE and LOIN in the 17th and 18th centuries was also a near-merger. If

this was the case, Labov reasons, speakers of English would have had no difficulty in achieving "clear separation" (1994: 308) of the two lexical sets.

Although Labov's analysis of LINE and LOIN in Essex provides very good evidence for the existence of a near-merger of the two lexical sets, a number of problems remain in his extrapolation of this state of affairs into the Early Modern period. Firstly, the apparent merger of LINE and LOIN in Essex is in the phonetic space of LOIN (e.g. [ɔɪ]), whilst the apparent merger of LINE and LOIN in the 17th and 18th centuries appears to have been on the phonetic space of LINE (see the discussion in Labov 1994: 307-308, and spellings such as *bile* for *boil*, *jine* for *join*). That is, it is not definitely the case that the apparent merger of LINE and LOIN in Early Modern English and in Essex in the 20th century are the same phenomenon. Secondly, Labov's hypothesis that the LINE-LOIN merger in Early Modern English was a near-merger does not account for the crossover words (e.g. *boil*, *groin*, *join*) which ended up in the 'wrong' lexical set in English dialects or in StE. If the two lexical sets were not the same in Early Modern English, an alternative explanation must be provided for these crossovers.

1.5. Summary

This survey of mergers and near-mergers goes some way to providing a context for the questions asked at the beginning of this chapter, although definitive answers to them (in as much as these are possible) must await the discussion and data analysis of the following chapters. One important point that arises from the survey of mergers and merger-like phenomena in this chapter is that they are not all the same. Although this might seem like an obvious point, it has important consequences for our understanding of what a merger is, and whether it can be reversed. It is clear that analyses of different kinds of merger require different approaches; for example, historical mergers cannot be analysed in the same way as ongoing mergers, and one of the central aims of the next four chapters is to determine what kind of analysis is suitable for the 'NURSE-NORTH Merger'.

Although an answer to the question *What is a merger?* cannot be given at this stage, I summarise, in Table 6, the different kinds of merger and merger-like phenomena

discussed in this chapter in order to provide a frame of reference for subsequent discussion. Table 6 suggests that there is, if you like, a hierarchy of mergers, from those which are very definitely mergers (the complete, language-wide mergers) to those which we might not wish to consider to be mergers at all (variable mergers and near-mergers). In between these two extremes lie a range of phenomena which share their properties to a lesser or greater degree. It is the purpose of this thesis not only to determine where in this range the 'NURSE-NORTH Merger' lies, but also to determine which (if any) of these phenomena the term 'merger' can be applied to and, hence, to define what it is we mean by the terms 'merger' and 'reversal of merger'.

Table 6: Summary of the different kinds of mergers and merger-like phenomena discussed in Chapter 1.

Type of merger	Examples	Comments
Complete, language-wide mergers	Proto-Indo-European /k/ and /k'/, OE /hn/ and /h/	Mergers of this sort are typically of considerable antiquity
Geographically widespread mergers	NORTH-FORCE, /ʍ/-/w/	Characteristic of the vast majority of the speakers of English
Geographically restricted mergers	NEAR-SQUARE, FOOT-GOOSE, /w/-/v/	Restricted to small parts of the English speaking world (the first to New Zealand, the Caribbean and East Anglia, the second to Ulster and Scotland)
Socially restricted mergers	COT-CAUGHT, NEAR-SQUARE, /ʍ/-/w/	In all cases present in the speech of some members of the community and not in the speech of others, at least in parts of their geographical range
Mergers in production but not perception	The NEAR-SQUARE merger in New Zealand	Speakers who produce identical NEAR and SQUARE tokens do, nevertheless retain knowledge of the distinction
Partial mergers	/ʍ/-/w/ in Hartley, Northumberland, OE /hn/ and /h/	In some such cases, it can be difficult to determine whether the change is complete or ongoing, particular where no phonological conditioning is involved
Variable mergers	The FOOT-GOOSE and MEAT-MEET mergers in Ulster	For example, many speakers have alternative pronunciations of FOOT which are identical to STRUT; this is not possible for GOOSE words
Near mergers	The MEAT-MATE near-merger in BVE, the LINE-LOIN near-merger in Essex, THOUGHT-SOURCE in New York	The vowels in the two lexical sets are very similar and may even be the same on some occasions, but there is a significant, if small, difference in their phonetic distributions

Chapter 2: The 'NURSE-NORTH Merger'

2.1. Introduction

The Geordie hurts his knee and he goes to the doctor's. The doctor has a look at the knee and says,

"Aye, you've got a nasty knee there, lad".

So, after giving Geordie the treatment, bandaging him up, he says to Geordie,

"Now, do you think you can walk ([wɔ:k])*?"*

Geordie looks at him and says

"Work ([wɔ:k])*?"*

He says

"I can hardly walk ([wɑ:k])*!"*

Viereck (1966: 95) (emphasis mine)

This well-known Tyneside joke captures the essence of the phenomenon under investigation in this thesis: the apparent identity, in the 'Geordie' dialect of Tyneside, of the vowel in words like *work* with the vowel in StE *walk*. As noted at the beginning of Chapter 1, Wells (1982: 374-5) explains the situation in TE as follows:

> In the broadest Geordie the lexical set NURSE is merged with NORTH, /ɔ:/: *work* [wɔ:k], *first* [fɔ:st], *shirt* [ʃɔ:t] (= *short*). What is elsewhere a central vowel has undergone backing through the influence of /r/ [ɹ] which once followed ... Thus [wɔ:k], which in most accents of English can only be *walk*, is *work* in broad Geordie, while *walk* has the unambiguous form [wa:k].

This phenomenon, the 'NURSE-NORTH Merger', is a well-known, perhaps even stereotypical, feature of the dialects of the northeast of England. It is found not only in Tyneside, but also throughout Northumberland and north Durham. Beal (2000: 350) records representations of the 'NURSE-NORTH Merger' in such popular publications as *Larn Yersel' Geordie* (Dobson 1969) and the comic *Viz* (Donald 1998). Similarly, Watt (1998a: 276) points out that words pronounced with [ɜ:] in StE are often spelt with <or> in popular dictionaries of northeast dialect.

In this chapter, I examine the meaning of the term 'NURSE-NORTH Merger' in light of the discussion in Chapter 1. In Section 2.2, I investigate what is meant by the keywords NURSE and NORTH, since the precise meaning of these keywords has important consequences for the meaning and history of the 'NURSE-NORTH Merger' in TE. In Section 2.3, I review the two main data sources used in the analysis of the 'NURSE-NORTH Merger' as found in the traditional dialects of the northeast of England: the Orton Corpus (henceforth OC, Rydland 1998) and the SED (Orton *et al.* 1962-71). This review has a number of purposes. Firstly, it seeks to establish the empirical basis upon which claims of a merger of NURSE and NORTH have been made, so that we can determine what evidence there is for the merger. Secondly, an analysis of the methodology of our sources for the 'NURSE-NORTH Merger' will shed light on what these dialectologists meant when they indicated that there was a merger of NURSE and NORTH. As was indicated in the previous chapter, the meaning of the term merger varies according to the aims, methods and theoretical preconceptions of the researcher. Additionally, this review of the sources for the 'NURSE-NORTH Merger' will tell us something about the sociolinguistic context within which the merger existed. As the discussion in Chapter 1 makes apparent, we cannot understand the meaning of merger without first understanding the sociolinguistic context in which it occurs. Finally, I examine the historical and geographical attestation of the 'NURSE-NORTH Merger' in Sections 2.4 and 2.5, and, in so doing, set the scene for a historical analysis of the merger in Chapter 3.

2.2. The 'NURSE-NORTH Merger'

The term 'NURSE-NORTH Merger'[1] is used by Watt (1998a), Watt (1998b) and Beal (2000) for the phenomenon introduced above. This term is clearly derived from the statement in Wells (1982: 374) concerning the merger of the vowels in the NURSE and NORTH lexical sets. I continue to use it here, but will surround it by 'scare' quotes, since the precise nature of the phenomenon remains to be seen.

To understand what this merger is, it is first necessary to know what Wells means by NURSE and NORTH. As was noted in Chapter 1, Wells (1982) establishes 27

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[1] Sometimes with ~ between NURSE and NORTH.

keywords, "each of which ... stands for a large number of words which behave the same way in respect of the incidence of vowels in different accents" (pp. 119-120) in order to make sense of the variety of pronunciations and lexical incidence in the accents of English. These groups of words are called "standard lexical sets" (p. 122), and are used as a tool for comparing the lexical incidence of phonemes in different accents of English, with RP and GenAm acting as the base reference points of lexical distribution. So, for example, the FLEECE lexical set is that set of words which have /i:/ in both RP and GenAm, and the FORCE lexical set is that set of words which have /or/ in GenAm but /ɔ:/ in RP.[2] If the membership of each of the 27 lexical sets defined by Wells is known, then the lexical incidence of phonemes in any other accent or dialect of English can be described in relation to this distribution. In Sections 2.2.1 and 2.2.2, I examine Wells's NURSE and NORTH lexical sets in detail.

2.2.1. The NURSE lexical set

Wells (1982: 137) defines the NURSE lexical set as follows:

> The standard lexical set NURSE is defined as comprising those words whose citation form contains the stressed vowel /ɜ:/ in RP and /ɜr/ = [ɜ˞] in Gen Am. The two accents agree substantially in the lexical incidence of this vowel.

Wells (p. 139) provides a list of example words belonging to the NURSE lexical set, which is given in Appendix 2. Wells (1982: 200) tells us that the NURSE vowel is, by and large, the product of merger of three previously distinct sequences of vowel + /r/: /ɪr/, /ɛr/ and /ʊr/ in ME.[3] He calls this the "(First) NURSE Merger", a change which "seems to have started in northern and eastern dialects of English in the fifteenth

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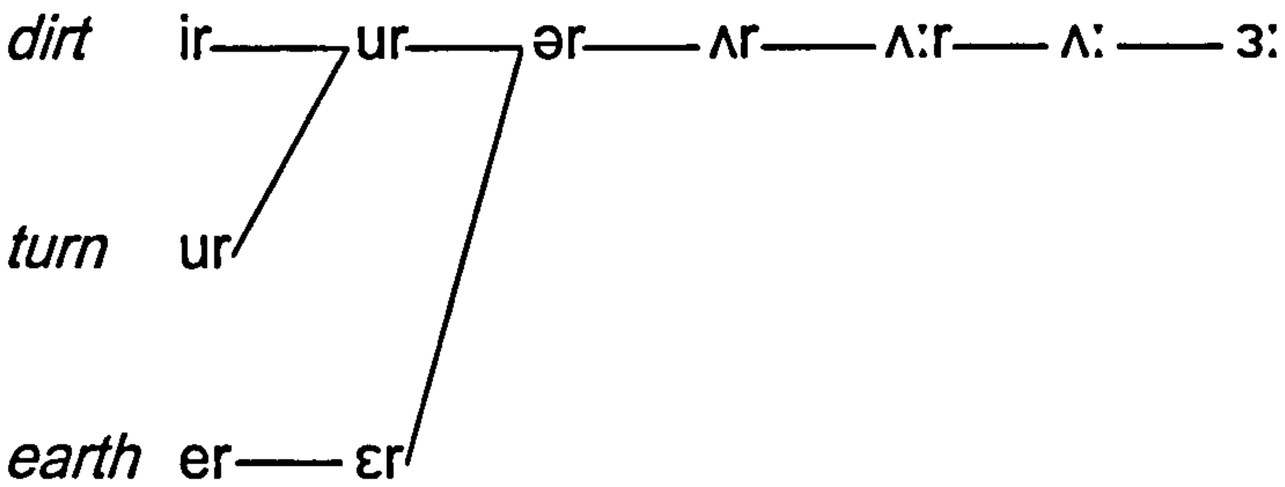
[2] Some words with /ɔ:/ in RP belong to other lexical sets, namely, NORTH and THOUGHT, which have, according to Wells, /ɔr/ and /ɔ/ in GenAm respectively.

[3] Linguists vary as to which symbols they use for the ME short vowels. The short high front unrounded vowel may be symbolised i or ɪ, the short high back rounded vowel as u or ʊ, the short mid front unrounded vowel as e or ɛ, and the short mid back rounded vowel as o, ɔ or ɒ. When discussing the work of other linguists, I follow their usage. My own usage in this thesis is ɪ, ʊ, ɛ and ɒ, not because this is necessarily historically correct, but because it makes them maximally distinct from the corresponding long vowels and draws parallels with their modern development.

century" (Wells 1982: 199-200). Lass (1999: 113) suggests that this merger was complete in England by 1800, and summarises the sequence of development as follows:[4]

Figure 14: The development of ME /ɪr/, /ʊr/ and /ɛr/.[5]



Wells (1982: 138, 200) records that, although this "NURSE Merger" occurred in most accents and dialects of English, it did not occur, or only did so partially, in Scotland and Ireland. For example, a potential three-way contrast (at least) is still found in Scottish Standard English (SSE), between words such as *heard* [ɛr], *stirred* [ɪr] and *bird* [ʌr]. Clearly, the degree to which these source sequences merge or survive in a particular accent or dialect of English has important consequences for the definition of the lexical sets of that particular variety. As Watt and Allen (2003: 269) rightly point out:

> The distribution of vowel qualities across the lexicon in TE should therefore not be assumed to adhere to the patterns found even in neighbouring accents, let alone British Received Pronunciation, and still less so in the English accents of other parts of the world.

I return to the historical development of the NURSE lexical set, and the consequences this has for our understanding of the 'NURSE-NORTH Merger', in Section 2.6 and in Chapter 3.

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[4] Lass gives the example lexical items *dirt*, *turn* and *earth*.

[5] Lass uses the symbols /ir/, /ur/ and /er/.

2.2.2. The NORTH and FORCE lexical set

Wells (1982: 159) defines the NORTH lexical set as:

> comprising those words whose citation form contains the stressed vowel /ɔ:/ in RP and the sequence /ɔr/ in GenAm, or rather in that variety of GenAm which retains the opposition between /ɔr/ and /or/. This covers only a minority of words with RP /ɔ:/; others belong in THOUGHT ... or FORCE ... perhaps also in CURE ... or CLOTH.

As was discussed in Chapter 1, Section 1.3.2, the lack of a NORTH-FORCE distinction is characteristic of many dialects of English, particularly those in England. Since TE does not have a NORTH-FORCE distinction either, it is implied in Wells's description of the merger of NURSE and NORTH that the FORCE lexical set is also involved. As shall be discussed in Chapter 3, an understanding of the FORCE lexical set is also crucial for a full understanding of the nature and history of the 'NURSE-NORTH Merger' and, as such, I discuss FORCE along with NORTH in this section. Wells (1982: 160) defines the FORCE lexical set:

> as comprising those words whose citation form contains the stressed vowel /ɔ:/ in current mainstream RP and the sequence /or/ in GenAm, or rather in that variety of GenAm which retains the opposition between /ɔr/ and /or/. These qualifications are necessary because in both standard accents the FORCE words, historically distinct from NORTH words, have now become or are now in the process of becoming merged with them.

Wells (1982: 160, 162) provides lists of example words in the NORTH and FORCE lexical sets, which are repeated in Appendix 2. He tells us (p. 159) that the NORTH lexical set derives, by and large, from the ME sequence /ɔr/.[6] As the spellings of some NORTH words indicate, however, the ME sequence /war/ also contributed to the NORTH lexical set. Wells (1982: 161) tells us that FORCE typically derives from ME /ɔ:r/, with some additional input from ME /o:r/ and /u:r/. As a result of what Wells (1982: 235) calls the "First FORCE Merger", many varieties of English, including RP, lost the distinction between NORTH and FORCE.

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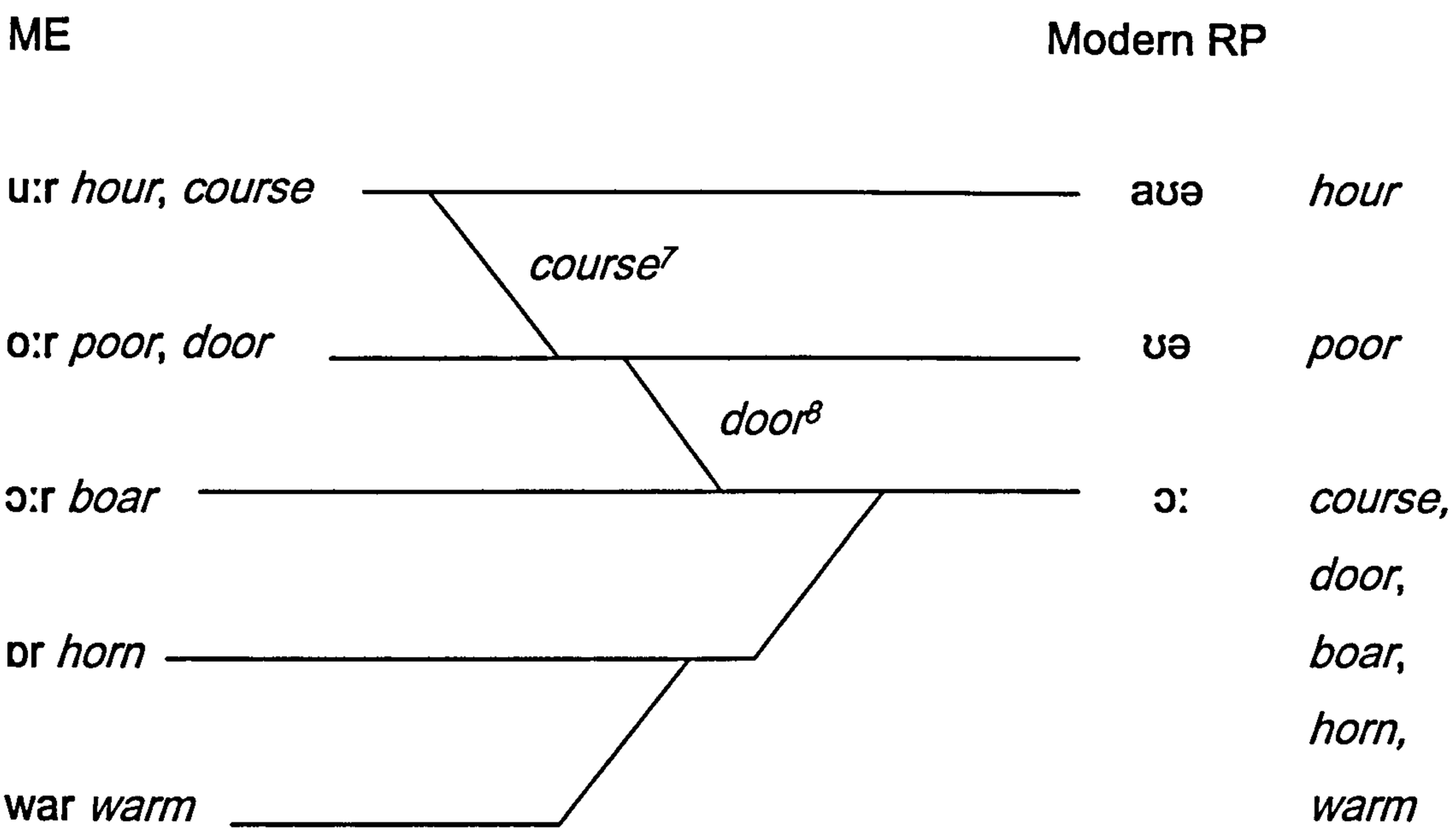
[6] Wells uses the symbol /ɔ/ for the ME short mid back rounded vowel. See footnote 3 above.

Figure 15: The development of the NORTH and FORCE lexical sets.



The changes which gave rise to the combined NORTH-FORCE lexical set in many varieties of English are summarised in Figure 4 in Chapter 1, which I repeat here with words deriving from ME /u:r/ included. As was noted in Chapter 1, this figure is adapted from Lass (1999: 111-112), who describes this rather complex set of developments as "messy".

Given the complex nature of these developments, there is considerable potential for divergence in regional English varieties, including TE. The extent to which some or all of the changes illustrated in Figure 15 occurred in any one variety will have important consequences for the definition of the lexical sets in that variety. I return to the historical development of the NORTH and FORCE lexical sets, and the consequences this has for our understanding of the 'NURSE-NORTH Merger', in Chapter 3.

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[7] The split in ME /u:r/ was unconditioned.

[8] The split in ME /o:r/ was unconditioned.

2.3. Historical and traditional dialect data for the 'NURSE-NORTH Merger'

Based on a review of a limited range of data from a number of sources (Jones 1911, O'Connor 1947, Viereck 1966, Hughes and Trudgill 1979 and Wells 1982), Watt (1998a: 275) claims that:

> The evidence for a merger of the NURSE and NORTH sets in twentieth century TE is as good as that used to demonstrate mergers elsewhere in English and other languages.

None of these sources contains a great deal of information on the pronunciation of NURSE and NORTH, or the lexical distribution of the vowel(s) concerned. Watt (p.c.) suggests that although the evidence for the 'NURSE-NORTH Merger' is as good as for any other, that does not mean that the evidence is, in fact, particularly persuasive. The implication is that descriptions of this merger have been based on rather slender evidence.

In this section, I review the two main data sources used in this analysis of the 'NURSE-NORTH Merger': the Orton Corpus (OC, Rydland 1998) and the SED (Orton *et al.* 1962-71).[9] Both of these sources contain a large body of data relevant to the 'NURSE-NORTH Merger' from a range of locations in the northeast of England.[10] As mentioned in Section 2.1, this review of the data sources seeks to establish the empirical basis upon which claims of a merger of NURSE and NORTH have been made, to clarify what traditional dialectologists meant when they indicated that there was a merger of NURSE and NORTH, and to reveal the sociolinguistic context within which the merger existed.

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[9] Of the other sources referred to throughout this thesis, Viereck (1966) ought to be of particular interest since it contains traditional dialect data from an urban Tyneside location (Gateshead). This source is not reviewed in detail here, however, as it is discussed and analysed fully in Watt (1998a), and does not, in fact, contain very much data pertaining to the 'NURSE-NORTH Merger' – see Appendix 3 for details.

[10] Rydland (2002c) suggests that there are close to 5000 tokens of NURSE and NORTH in the OC and SED.

2.3.1. The chief data sources

The OC, published as Rydland (1998), was collected by and under the auspices of Harold Orton between 1928 and 1939. It consists of phonetic transcriptions of (mainly everyday, non-dialectal) words from thirty-five localities in the historical counties of Durham and Northumberland. The localities are given in Table 7 along with the three letter codes used to identify them in Rydland (1998).[11] The OC provides a wealth of phonetic data for the traditional dialects of the northeast of England (particularly Northumberland) from before the Second World War, and, in terms of the 'NURSE-NORTH Merger', it is by far the greatest source of information available to us. The methodology and accuracy of the OC are discussed in subsequent sections.

Table 7: Locations in the OC.

Location	County	Code	Glanton	Northumberland	GLN
Acomb	Northumberland	ACM	Harbottle	Northumberland	HBT
Allenheads	Northumberland	ALH	Hartley	Northumberland	HTL
Ancroft	Northumberland	ANC	Humshaugh	Northumberland	HUM
Bamburgh	Northumberland	BAM	Longhorsley	Northumberland	LHO
Belford	Northumberland	BLF	Matfen	Northumberland	MTF
Bellingham	Northumberland	BLH	Newbiggin-by-the-Sea	Northumberland	NBI
Berwick	Northumberland	BRW	Newbrough	Northumberland	NBR
Bowmont Water	Northumberland	BWA	Newburn	Northumberland	NBU
Cambo	Northumberland	CAM	Newcastle	Northumberland	NCL
Capheaton	Northumberland	CAP	Ovingham	Northumberland	OVH
Coanwood	Northumberland	CNW	Rochester	Northumberland	RCH
Cornhill	Northumberland	COR	Rothbury	Northumberland	RTH
Coxhoe	Durham	COX	Seahouses	Northumberland	SHS
Cullercoats	Northumberland	CUL	Seaton Delaval	Northumberland	STD
Falstone	Northumberland	FLS	Stanhope	Durham	STH
Fenton	Northumberland	FNT	Wark	Northumberland	WAR
Ford	Northumberland	FRD	Wooler	Northumberland	WLR

The SED was also conducted, in the 1950s, under the auspices of Harold Orton. It consists of phonetic transcriptions of answers to a lengthy questionnaire (see Orton 1962 and Section 2.3.4.2 below for details), and includes nine locations in

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[11] See also the map in Appendix 1. These convenient three-letter codes are also used in this thesis. Since data for some of the OC locations (ACM, ANC, BWA, CAM, COR, FNT, FRD, HUM, LHO, RCH AND WAR) are very sparse, almost nothing can be said about the 'NURSE-NORTH Merger' there; as such, I do not consider them further.

Northumberland and six in Durham. The locations are listed in Table 8, along with the codes used to identify them in the SED.

Table 8: Locations in the SED.

Locations	County	Code
Lowick	Northumberland	Nb1
Embleton	Northumberland	Nb2
Thropton	Northumberland	Nb3
Ellington	Northumberland	Nb4
Wark	Northumberland	Nb5
Earsdon	Northumberland	Nb6
Haltwhistle	Northumberland	Nb7
Heddon-on-the-Wall	Northumberland	Nb8
Allendale	Northumberland	Nb9
Washington	Durham	Du1
Ebchester	Durham	Du2
Wearhead	Durham	Du3
Witton-le-Wear	Durham	Du4
Bishop Middleham	Durham	Du5
Eggleston	Durham	Du6

The SED also contains a wealth of data on the phonology of the dialects of the northeast of England, including numerous transcriptions of NURSE and NORTH words for each location, and is second only to the OC in importance for our understanding of the 'NURSE-NORTH Merger' in the traditional dialects of the northeast. The methodology and accuracy of the SED are also discussed in subsequent sections.

2.3.2. Aims of traditional dialectology

The majority of modern dialect studies, such as those reported in Foulkes and Docherty (1999), follow Labov (1966: 3) in conducting "an investigation of language within the social context of the community in which it is spoken." Labov (1966: 8-9) suggests further that "only a socially realistic description can show a consistent and coherent structure for the speech of this community", and it this principle which underlies the study of, for example, West Wirral English by Newbrook (1999). Newbrook (1999: 90) reports that his data is drawn from interviews with "68 randomly

selected informants (42 male, 26 female) aged 11-80. The sample covered the entire social class range in the area".

It is wrong to assume that the same methods and purposes underlie traditional dialectological research, however. As Milroy and Gordon (2003: 12) point out:

> It is important to appreciate that the field methods of traditional dialectology were not devised to survey patterns of contemporary language use as an end in itself, but to offer a means of answering questions about the earlier history of the language within the philological tradition of the nineteenth century.

Traditional English dialectology, in common with traditional dialectology of other parts of the world, had a number of related aims. The most important of these were:

1) elucidation of the history of the language
2) an understanding of the nature of sound change
3) the analysis of the geographic distribution of dialect forms
4) the recording of dialects for posterity before they disappeared

Both the OC and the SED were entirely traditional in aim and methodology, and given his central role in both the OC and the SED, the views of Harold Orton on all of these issues will be examined in some detail.

2.3.2.1. Elucidation of the history of the language

The importance of regional dialects for the elucidation of the history of the English language is a common theme in traditional English dialectology. Wright (1892: v-vi) tells us that:

> My chief object in writing the following Grammar has been to furnish specialists in English philology with an accurate account of the Phonology and Accidence of one of the most interesting of the Yorkshire dialects ... the present grammar will, I trust, help to throw some light upon Old English vowel qualities, besides showing how dialects still keep apart many vowel sounds which have fallen together in the literary language.

Indeed, Wright (1905: iii) states that "it is in the elucidation of the literary language that the chief value of a dialect grammar lies". This historical orientation of traditional dialectology is shared by the OC and the SED. Orton (1929: 130) suggests that words should be recorded which illustrate "the historical problems of the particular dialect concerned", whilst the organisation of the phonological component in terms of ME phonology in Orton *et al.* (1978) illustrates the centrality of the historical dimension in the SED.

2.3.2.2. An understanding of the nature of sound change

The elucidation of the history of any language relies on an understanding of the nature of sound change. Traditional dialectology had, at its core, the tension between two radically different views on the nature of language change: the Neogrammarian theory of exceptionless sound change (as most famously expressed by Osthoff and Brugmann 1878), and the seemingly contradictory hypothesis, put forward by Jaberg (1908) and Gilliéron (1912), that "every word has its own history".[12] Petyt (1980: 55) notes that the Neogrammarians believed this exceptionless regularity of sound change "would show up better in the dialects than in a standard language, which may have been subject to a mixture of influences". Joseph Wright, who produced "the first really scientific historical grammar of an English dialect" (Dieth 1946: 75), was certainly of this opinion, having been "trained in the Neo-grammarian School in Germany" (Dieth 1946: 76). Of the dialect of Windhill, Wright (1892: v) states that:

> I could not always decide with certainty whether the seeming irregularities had arisen within the dialect itself, or whether the words in question had been introduced from the literary language at various periods, or were merely borrowings from some neighbouring dialect.

The search for regular developments and the explanation of irregularities by appeal to dialect mixing and influence from the standard language were certainly shared by Harold Orton (see for example Orton 1933). At the same time, however, the hypothesis that "every word has its own history" was expressed by Eugen Dieth, cofounder of the SED, who suggested that "in principle each word obeys its own law.

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[12] Attributed by Janda and Joseph (2003: 115) to both Jaberg (1908) and Gilliéron (1912).

This was bound to shake the young-grammarian theory of the inviolability of the sound laws" (Dieth 1946: 89).[13] This sentiment is shared by Orton *et al.* (1978), and it is clear that the historically-orientated OC and SED were viewed, in part at least, as a means of testing and/or confirming these competing hypotheses.

2.3.2.3. The analysis of the geographic distribution of dialect forms

Osthoff and Brugmann (1878: 203), in their statement of the hypothesis that sound changes in a language "admit no exception", include one important caveat: "the direction of the sound shift is always the same for all the members of a linguistic community except where a split into dialects occurs". The implication is that each dialect has its own set of changes which "admit no exception" within that dialect. This implication raises a number of questions, however. Perhaps most pertinent are: what constitutes a dialect; and are dialects discrete entities, separated and defined by sets of regular sound changes?

One method of answering these questions is to determine the distribution of linguistic variants geographically. If the Neogrammarian hypothesis is correct, then distinct regional dialects should be readily apparent. Petyt (1980: 55) suggests that it was this hypothesis which inspired Georg Wenker to conduct his survey of German dialects. However, dialect geography very quickly revealed that this was not the case, leading dialectologists such as Jaberg, Gilliéron and Wrede to question the Neogrammarian hypothesis. Rather than the regular, exceptionless patterns of distribution predicted by the Neogrammarian hypothesis, they were confronted with a mass of isoglosses which frequently varied in location for words which should have behaved identically. Even where the correspondences were regular, or nearly so, dialect geography often failed to reveal sharp boundaries between dialects, leading Gauchat (1904), for example, to question whether dialect boundaries existed at all.

This geographical dimension and the questions that surround it have been central to traditional English dialectology. For example, Ellis (1889) sought to establish the geographical bounds of the English dialects, establishing four major dialect areas

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[13] "Young-grammarian" is equivalent to Neogrammarian.

and 41 "dialect districts" in Britain.[14] The geographical orientation of the OC is clear from the choice of locations surveyed, and is central to the SED. Dieth (1946) discusses the need for a geographical survey of English dialects, whilst Orton (1962: 14) states unequivocally that "The ultimate aim of the Dialect Survey ... is the compilation of a linguistic atlas of England". This central geographical dimension of the SED culminated in the publication of the Linguistic Atlas of England (Orton *et al.* 1978).

2.3.2.4. Recording the dialects for posterity before they disappeared

Wright (1905: vii) stated that:

> There can be no doubt that pure dialect speech is rapidly disappearing even in country districts, owing to the spread of education, and to modern facilities for intercommunication. The writing of this grammar was begun none too soon, for had it been delayed another twenty years I believe it would by then be quite impossible to get together sufficient pure dialect material to enable any one to give even a mere outline of the phonology of our dialects as they existed at the close of the nineteenth century.

This concern for salvaging the traditional English dialects before they disappeared forever is very clearly shared by the OC and the SED; Orton (1930: 18) suggests that the vernaculars of Northumberland "have deteriorated considerably", whilst Dieth (1946: 83) concedes that "There is no denying the rapid deterioration of the old, traditional dialects, no matter where we turn". The perceived gravity of this situation is perhaps most vividly portrayed by Ellis (1992: 7), who recalls that:

> Harold Orton often told us that it was the eleventh hour, that dialect was rapidly disappearing, and that this [the Survey of English Dialects] was a last-minute exercise to scoop out the last remaining vestige of dialect before it died out under the pressures of modern movement and communication.

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[14] Ellis (1889) identified one further dialect district in Ireland.

2.3.3. External influence

All of these aims of traditional dialectology were hindered by one major factor, however: external influence on the dialects, whether from the standard language or from other dialects. The effect of external influence on regional dialects was, and continues to be, a central theme in dialectology. For example, Trudgill (1999: 134) seeks to answer whether it is possible "to distinguish between changes which appear to be internal to the system itself and changes which are in some way the result of influence from other external varieties". He calls these changes *endogenous* and *exogenous* respectively, and suggests that both types of change have been active in Norwich English between 1968 and 1983.[15]

Kerswill (2003: 223) suggests that two factors, "*geographical diffusion*, by which features spread out from a populous and economically and culturally dominant centre", and "*levelling* ... the reduction or attrition of marked variants" are responsible for "the loss of localised features in urban and rural varieties of English in Britain, to be replaced with features found over a wider region." Kerswill cites evidence from a number of sociolinguistic studies which show that features characteristic of wider geographical areas, such as those discussed by Trudgill (1999), are spreading throughout the British Isles (see, for example, Foulkes and Docherty 1999, Llamas 2000 and 2001b, Stewart-Smith and Tweedie 2000, Watt 2000 and 2002, and Watt and Milroy 1999).

Trudgill (1999: 136-7) suggests that one of the most important effects of external influence is "dedialectalisation" by lexical redistribution of the phonemes of the dialect:

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[15] Among the exogenous changes identified by Trudgill (1999) are H-dropping, TH-fronting and the increased use of labio-dental /r/.

> It is a widespread occurrence in dedialectalisation that influence from standard, prestigious or metropolitan varieties does not immediately affect the phonological systems as such of lower-status or more peripheral areas. Rather, the phonological system remains intact, at least initially, while lexical items are transferred from one set to another in order to more closely match the distribution of lexical items in the external variety. There is much evidence in Norwich English that the influence of London and RP has taken this form.

Central to all of these recent studies of dialect levelling, then, is the replacement of highly marked local phonological patterns with patterns which are not traditionally characteristic of the area concerned, but which have a much wider geographical currency, and which often, although not exclusively, have their origins in the southeast of England or other varieties of StE.

Traditional dialectologists such as Ellis, Wright and Orton were acutely aware of external influence on the phonological systems of the dialects concerned. The following comment, in Orton (1929: 128), illustrates:

> The current vernaculars in this county [Northumberland] are not necessarily pure. It is indeed beyond question that they have been corrupted to a large extent by extraneous influences, and that they have absorbed a great deal from Standard English in the course of the last four or five centuries.

It is usually the case that these "extraneous influences" are identified with RP (also Received Speech, Standard English), although the importance of a local version of StE, which mediates between regional dialects and RP, is also recognised (see, for example, Ellis 1889: 3-4, Wright 1905: vii, Orton 1933: xv-xviii, and Wakelin 1972: 6). "Extraneous" influence, leading to the disruption of localised phonological patterns, is not only attributed to RP, however. Orton (1933: xiii-xv), for instance, considers the impact of immigrant workmen from all over the British Isles on the dialect of Byers Green, suggesting that this explains "(in part, at least) why the present dialect shows so many signs of external influence" (p. xv).

Although the terminology has changed, (terms such as "pure" and "corrupted" are anathema to modern dialectologists), and although the term RP (or RS) was frequently used as a cover term for non-localised speech varieties with RP-like

patterns of phonological distribution, the hypothesis in traditional dialectology that regional dialects have been subject to external influence is, to all intents and purposes, the same as that made by Kerswill and Trudgill. The valid point made by Foulkes and Docherty (1999: 11) that it is often non-standard supralocal varieties of English which are most important in external influence and dialect levelling does not take away from the fact that the result of this influence is the eradication of highly distinctive localised phonetic and phonological patterns.

External influence disrupts and obscures the internal development of the sound system of a dialect. For traditional dialectologists seeking to establish the degree to which sound changes in the dialect were, in fact, regular, this was problematic. As noted in Section 2.3.2.2 above, Wright (1905: v) found that his attempt to determine the regular phonological developments in the dialect of Windhill were confounded by borrowings from other dialects, including the "literary language". Similarly, sound patterns of external, often StE origin, which obscured the original internal changes, meant that the relationship between the dialect forms and earlier forms of the language (e.g. ME and OE) was indirect. In the same way that Wright (1905: viii) found the dialects spoken around London "practically worthless for philological purposes", Orton (1930: 18) notes of the dialects of Northumberland that:

> It would be incorrect to suppose that the forms of speech nowadays heard in this northern outpost of England are anything like a faithful reflex of the regional dialects that existed some centuries ago.

Likewise, influence from StE and other dialects could lead to the obscuring of dialect boundaries. With regard to StE influence on the phonology of regional dialects, Wakelin (1972: 105) suggests that "Such loans naturally tend to obscure original boundaries and so make dialect maps more difficult to interpret". A successful interpretation of the internal phonological developments in a particular area would depend upon the extent to which external influence on regional dialects could be identified.

Finally, it is the natural corollary of extensive importation of external features into regional dialects that traditional dialect features, and indeed the traditional dialects themselves, are disappearing. It was the perceived rapidity of this change under

external pressure that led traditional dialectologists such as Joseph Wright and Harold Orton to predict the disappearance of the traditional English dialects.

Since external influence complicated their main aims (elucidation of the history of the language, understanding the nature of sound change, determining the geographical distribution of forms, and recording the traditional dialects for posterity), traditional dialectologists sought, like Trudgill (1999: 134), "to distinguish between changes which appear to be internal to the system itself and changes which are in some way the result of influence from other external varieties." Orton (1929: 128) suggests that the "Ability to sift the genuine native elements from the hybrid forms of speech now employed is one of the essential qualifications of twentieth century dialectologists". Given their theoretical predilections, traditional dialectologists like Wright and Orton were interested in the endogenous rather than the exogenous developments. This view clearly underpins Orton's work on the OC and the SED. For example, Orton (1929 and 1930) refers to the endogenous element of the dialects of the northeast of England as "genuine" and "native", and characterises as "pure" dialects that are free from external influence. In contradistinction to this, Orton refers to exogenous elements as "alien", and characterises dialects which have been the subject of external influence as "corrupted", "hybrid" and "impure".

This distinction between endogenous and exogenous elements, and the priority given to the endogenous phonological patterns (as a result of the theoretical aims of traditional dialectologists), has important consequences for the methodology of traditional dialectology and the interpretation of the data that was collected using it. Firstly, the methodology of traditional dialectology was designed to minimise the amount of external influence in the data, so that the most archaic, highly localised internal dialectal developments would be recorded. In this thesis, I follow Kortmann and Upton (2004) in describing the kind of dialect recorded in traditional dialect studies as "traditional dialect". I discuss the methods used to uncover this traditional dialect in the OC and SED in Section 2.3.4. Secondly, the extent to which phonological patterns of external origin are apparent in the traditional dialect data is suggestive of the extent to which the informants were exposed to non-localised varieties. I discuss this important implication in Section 2.3.6.

2.3.4. Methodology of the OC and the SED

Traditional dialectologists adopted a combination of methodological techniques in order to achieve their aims and to minimise the influence of external varieties. In this section, I discuss these techniques, as employed in the OC and SED. The crucial consequences of these techniques for our interpretation of the traditional dialect data and of features such as the 'NURSE-NORTH Merger' are taken up in Sections 2.3.6 and 2.6.

2.3.4.1. Ensuring that most local forms are recorded (1): Selection of informants

Perhaps the most well-known feature of the methodology of traditional dialectology is the selection of informants (see, for example, Chambers and Trudgill 1980: 33-35). In order to record the most localised internal historical developments, both the OC and the SED went to great lengths to procure suitable informants, in terms of their geographical location, gender, age and occupation.

Given the geographical orientation of traditional dialectology, informants were required to be natives of the localities concerned. Despite one or two potential exceptions, this was the case for the OC (see Rydland 1998: 12), whilst the SED eschewed speakers who had been absent from the locality for any significant length of time (Orton 1962: 15). Although traditional dialect surveys are frequently rural in orientation (see, for example, Orton 1962: 14, 15, Chambers and Trudgill 1980: 33-35, and Petyt 1980: 91-2), the OC includes urban locations (Newcastle, NCL, and Berwick, BRW) and locations which lie very close to these urban centres (e.g. CUL, NBU and STD). In Northumberland and Durham, the SED did not survey any urban locations, but locations Nb6 (Earsdon), Nb8 (Heddon) and Du1 (Washington) were all on the fringes of the Tyne and Wear urban area (and indeed now lie within the Tyne and Wear conurbation).

Orton (1962: 15) suggests that "in this country men speak vernacular more frequently, more consistently, and more genuinely than women", and hence male informants were preferred. Rydland (1998: 13) calculates that only 12.5% of SED informants were female. This preference for male informants is also obvious in the OC, although Rydland (1998: 13) notes that "women were by no means avoided",

constituting 23% of informants for whom this information was recorded. Moreover, since traditional dialect surveys have been preoccupied with recording the most archaic forms of speech in the community, the informants sampled were usually old. Orton (1962: 15) tells us that the SED informants were, by and large, over 60. A similar situation obtained for the OC, according to Rydland (1998: 12-13), although here there appears to have been a wider variance, with the youngest informants still in their twenties.

Orton (1962: 14) tells us that the ideal SED informant was "or had formerly been, employed in farming". The informants for Northumberland and Durham were, by and large, agricultural workers, although informants included blacksmiths, miners (particularly common in Durham), and a tailor. As well as farmers and shepherds, the list of occupations of informants for the OC (Rydland 1998: 13-15) includes blacksmith, butcher, fisherman, grocer, labourer, mechanic, miner, solicitor's clerk, and watchmaker. Although most of the OC and SED informants were engaged in manual occupations, they were not all employed in farming by any means.

2.3.4.2. Ensuring that most local forms are recorded (2): Methods of data collection

Although audio recordings were collected in conjunction with both the OC and the SED (see Orton 1929, 1930 and 1962), these audio recordings did not form the basis of the data in the two surveys. Rydland (1998: 1) tells us that despite the existence of recordings, the OC data was derived from on-the-spot phonetic transcription during the course of face-to-face interviews:

> The method of collection was the 'direct question' method: the collectors used prepared wordlists ... which were often based on Wright 1905, and elicited the local pronunciations by questions and prompting.

In this way, traditional dialect pronunciations of particular words could be ascertained, and the presence or absence of any given pronunciation determined. The following extract, from the Orton Discs,[16] is, perhaps, illustrative of this procedure:

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[16] Fenwick 1, CN11; interviewer Harold Orton, informant Mr. J. Mills.

H.O.: *Did you ever hear the word 'colt'? How was the word 'colt' pronounced? 'Colt'.*

J.M.: *Coat?*

H.O.: *No, a 'colt', young horse.*

J.M.: *A* [ko:lt].

H.O.: *A* [ko:lt] *?*

J.M.: [ko:lt].

H.O.: *Never* [kɔ̈ʊt] *? Never*

J.M.: [kœ̈ʊt].

H.O.: [kœ̈ʊt] *?*

J.M.: [kœ̈ʊt].

H.O.: *Is that right?*

J.M.: *Aye.*

This method ensures that particular lexical items and pronunciations which might otherwise never surface in conversation are elicited. In this way, the OC interviewers were not necessarily assessing the everyday usage of informants, but their knowledge of particular pronunciations. This method has been criticised, for example by Pickford (1956), but is considered effective by Rydland (1982) and Mather and Speitel (1986).

In order to avoid this problem, the SED employed indirect questions to elicit the required forms. Questions of the type *What do you call the man who looks after the animals that give us wool?* (Question I.2.1) are carefully framed so as not to suggest an answer, even less so a pronunciation, to the informant. The SED questionnaire was designed to reflect "the ordinary daily life and environment of the English country man to whom it was addressed" (Orton *et al.* 1978: 3), and consisted of phonological, morphological, syntactic and lexical questions which were chosen to illustrate the divergence of the traditional English dialects from each other and from the standard language. Despite the claim in Orton (1962: 14) that "Never is the informant asked to translate any word, phrase or sentence into his vernacular", it appears that prompting was, in fact, used, at least some of the time, as a means of eliciting particular pronunciations. Orton (1962: 25) details procedures for indicating forms elicited in

this way, and the following extract, from the SED recording for Du6 (Eggleston),[17] illustrates just such a procedure:

S.E.: *And then what do you call it when it's been cured?*
J.A.: [be:kən].
S.E.: *Uh huh. Just that? Never anything like* [bjakən]*?*
J.A.: *No, not here.*
S.E.: *Never* [biəkən]*?*
J.A.: [bẹ:kən]*, aye.*

The use of such elicitation techniques in the OC and SED ensured that the most archaic and localised form of the dialect, as free from external influences as possible, was that which was most likely to be recorded.

2.3.4.3. Ensuring that most local forms are recorded (3): Data recorded and data excluded; bi-dialectal informants

Wright (1905: vii) claimed that:

> The working classes speak quite differently among themselves, than when speaking to strangers or educated people, and it is no easy matter for an outsider to induce them to speak pure dialect, unless the outsider happens to be a dialect speaker himself.

As an example of this, Wright (1905: vii) related the following incident which took place "the other day in a Westmorland village":

> A man said to me: **ðə rǭdz ə dāti**, and I said to him: **duənt jə sē up iər ət t'riadz əz muki?** With a bright smile on his face he replied: **wi diu**, and forthwith he began to speak the dialect in its pure form.

This was also a problem for Ellis (see Ellis 1889: 3-4), and for the OC and SED. Orton (1962: 15) tells us that

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[17] Interviewer Stanley Ellis, informant J.A.; recording accessed at Collect Britain (British Library), <www.collectbritain.co.uk/collections/dialects>.

> Bilingual speakers could not be shunned: as a result of our educational system, the inhabitants of the English country-side can readily adjust their natural speech to the social situation in which they may find themselves.

Table 9 lists comments to this effect for the OC and SED informants; it can be seen that bi-dialectalism was a common feature among the informants for these two surveys.

The fact that some speakers of traditional dialect who have more than one variety of English at their disposal speak one way amongst friends and acquaintances and another in the interview situation is the same difficulty faced by all dialectologists who seek to gain "access to the vernacular" (Milroy 1987: 24) – the very purpose and presence of the dialectologist affect the linguistic behaviour of the informants (the Observer's Paradox – see Labov 1972: 209).

Table 9: Bi-dialectal informants in Northumberland and Durham (OC and SED).

Location	Informant	Comment
OC BAM	7	"'does not normally use dialect'" (p. 13)
OC HBT	3	"speaks 'a mixture of dialect and modified R.S.'" (p. 14)
OC HBT	6	"not a habitual dialect speaker" (p. 14)
OC HBT	8	"has 'a hybrid form of speech'" (p. 14)
OC HBT	9	"'does not normally speak' dialect" (p. 14)
OC NBR	1, 4	"used 'a Northern type of Modified R.S. tinged with Newbrough speech sounds'" (p. 15)
OC RTH	2	"'speaks modified R.S. except when angry'" (p. 15)
OC RTH	4	"speaks local dialect 'in the company of his equals'" (p. 15)
OC RTH	6	"'normally speaks Mod[ified] R.S., but can speak ... dialect quite well'" (p. 15)
SED Nb4	R.L.	"Bilingual" (p. 12)
SED Nb6	A.H.	"Dial. very broad with intimates" (p. 13)
SED Nb9	J.M.	"Dial. usually refined, but can be broad" (p. 14)
SED Du2	M.	"Dial. not broad" (p. 17)
SED Du6	J.A.	"Dial. broad, but bilingual" (p. 18)
SED Du6	T.A.	"Dial. usually avoided; a reading man, who has broadcast on Teesdale lead-mining" (p. 18)

Given that traditional dialectologists were primarily concerned with the recording of the most archaic localised developments, however, meant that some means of

overcoming this problem were needed. Presented with bi-dialectal speakers, traditional dialectologists have attempted to exclude, as far as is possible, the standardised alternative from their surveys. It is implicit throughout the SED that the data given by bi-dialectal speakers represent their local dialect usage rather than their more standardised speech, and that informants were often aware that only a certain kind of English was required of them.

Even more drastically, traditional dialectologists might decide for themselves which part of the elicited data counts as traditional dialect and which does not. For example, Orton (1933) consistently records the vowel [œ̄] in NORTH words in Byers Green, even though he admits that this sound is obsolescent, with [ɔ̄] usually being used in its place (Orton 1933: 42). In recording only [œ̄] in NORTH words, Orton is deciding which pronunciation counts as traditional, and is ignoring the fact that traditional dialect speakers use the variant [ɔ̄] some of the time. Orton (1929: 129) and (1930: 24) makes it explicit that this procedure was used in the compilation of the Orton Discs, and it seems likely that the same methodological principle underlies at least some of the OC data, although the degree of phonetic variation found in the data for some locations (see Section 2.3.5) might suggest that this was not always the case.

2.3.5. Methods and accuracy of transcription

Although most of the OC data was collected by Orton himself, a substantial proportion of it was collected by other fieldworkers (Rydland 1998: 9-11). The data were transcribed in the IPA (or a variant of it) during the course of the interviews. It is not known whether particular lexical items were transcribed on the spot, or whether the transcriber asked for repetitions to clarify the pronunciation. The extract from Fenwick given in Section 2.3.4.2 above suggests that this did occur, at least some of the time.

Although the data for Byers Green presented in Orton (1933) is given in a broad phonetic, nearly phonemic transcription, with almost no minor phonetic variation shown (so that, for example, all NURSE words are transcribed uniformly with [ə:]), it appears that the majority of data for the OC was not normalised in this way. So, for example, NURSE words are transcribed at NCL with [ɔ̣:], [ɔ̣˙] and [ɔ:], with some words having more than one variant. At some locations (e.g. CUL and NBI) a huge

amount of phonetic variation is recorded (see Appendix 3), giving multiple phonetic variants of particular words (e.g. [ɔː], [ɔˑ], [ɔ̣ː], [ɔʁ], [ɔ̣ʁ], [ɔ̣ː], [ɔːʁ], [ɔʁə], [ɔˑʁə], [ɔːʁə], [ɔːʁᵘ], [ɔ̣ʁə], [ɔ̣ʁᵘ], [ɔʁʊ], [ɔʁᵘ], [ɔ̈ː], [ɔ̈ː], [ɔ̈ˑ], [ɔ̈ʁə], [ɔ̣̈ʁə] and [oˑə] in NURSE words at CUL).

All of the SED interviews and phonetic transcriptions for Northumberland and Durham were carried out by Stanley Ellis. Orton (1962: 18) tells us that the SED fieldworkers "tried hard to write down as accurately as possible what they heard" in IPA during the course of the interviews. Although this phonetic transcription "was carried out impressionistically", the fieldworkers were instructed not to normalise their transcriptions, but to "regard each response as an individual phonetic problem". By Orton's own admission, this method of transcription gave rise to a number of phonetic variants of any given word, quite different to the normalised, almost phonemic transcription that he himself employed in Orton (1933).

Although the OC and SED data do not appear to have been normalised to the same extent as the data in Orton (1933), they are not unproblematic. Firstly, phonetic transcriptions done on the spot are bound to be less accurate than phonetic transcriptions based on audio recordings, where the tokens can be played repeatedly. Although it is possible for interviewers using the direct questioning method to ask the informant to repeat a particular pronunciation, there is no guarantee that this will result in the same pronunciation being used each time by the informant (see the example from SED Du6 given in Section 2.3.4.2 above). Secondly, the formality of both the direct questioning method and the indirect questioning method may cause the informants to produce unnatural pronunciations. Orton (1962: 19) suggests that intonation could not be transcribed by the SED fieldworkers due to the "artificial conditions of the interview", and that the length of vowels might be influenced by "the abnormal emphasis given by informants in answering questions by a single word".

Since both the OC and the SED share all of these potential problems with every other traditional dialect study of comparable date, it is unlikely that they are any more or less accurate than any other. Rydland (1998: 31) states that "As far as can be determined, the phonetic transcriptions of the OC are generally trustworthy and of

good quality". He notes, however, that in some instances the phonetic transcriptions in the corpus are "inconsistent and less than accurate".[18] Rydland suggests, however, that the OC transcriptions are, in fact, more accurate than those in the SED (see Rydland 1995).

2.3.6. Summary

The discussion in Sections 2.3.1 to 2.3.5 above has sought to determine what traditional dialectology, as typified by the OC and the SED, is, and what it is not. Traditional dialectology is, in these instances at least, a study of varieties of English which are restricted geographically and socially, and which may only represent part of the linguistic repertoire of the informants. These varieties, recorded in an impressionistic phonetic transcription, are highly localised and archaic, and are characterised by low frequencies of patterns derived from exogenous influence. But this no accident: the aims of traditional dialectology require that this should be so, and the methodology of traditional dialectology was designed to produce exactly this result.

What a traditional dialect survey such as the OC and the SED is not is "an investigation of language within the social context of the community in which it is spoken" (Labov 1966: 3). Traditional dialectology is silent on the speech practices of the wider community, although inferences can be drawn as to the sociolinguistic setting of the traditional dialects from the methodology employed.

As such, the data supplied by traditional dialect surveys such as the OC and the SED is not representative of the speech of the community as a whole, nor was it ever intended to be. The requirements of informant selection, described in Section 2.3.4.1 above, meant that the data recorded is only characteristic of a small proportion of the English speaking population.

Although Ellis (1976: 94-95) suggests that the SED fieldworkers "were almost always using as their informants all of those in a given locality who conformed to the criteria",

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[18] See Rydland (1998: 26, 31) for discussion.

the numbers of informants were low – on average between two and three informants per location in Northumberland and Durham. It appears that the number of informants for the OC locations was somewhat higher, although it was usually less than ten.[19]

Similarly, the requirements of linguistic selection, described in Sections 2.3.4.1, 2.3.4.2 and 2.3.4.3 above, suggest that the data recorded is potentially not representative of the speech of the informants themselves.

The lengths that traditional dialectologists went to in order to access the required data strongly suggests that the vast majority of the population did not speak the kind of dialect recorded in these surveys. But to apply the criticisms of Pickford (1956) to surveys like the SED, as Petyt (1980: 110-116) does, is to misinterpret the *raison d'être* of such traditional surveys. The problem lies not with the traditional dialect data itself, but rather with how we use and interpret those data. In analysing the data from the OC and SED data, we should not consider ourselves as "making the best use of bad data" (Labov 1994: 11), but rather as making the best use of data which may or may not be ideally suited to our own particular purposes. In examining traditional dialect data, then, we must always be aware that patterns which have been consistently recorded need not be consistently present either in the community or in the speech of the informants themselves. I return to the consequences of this for our understanding of the 'NURSE-NORTH Merger' in the conclusion to this chapter.

There is a further important consequence of the methodology of traditional dialectology. As noted above, the speech of the informants of the OC and the SED is highly unlikely to have been characteristic of the wider community. Given that these speakers were specifically selected because their speech was least influenced by external varieties of English, it follows that other members of the community spoke varieties of English which were characterised by higher levels of non-local features. Similarly, since only particular kinds of speech (i.e. those showing least evidence of external influence) were recorded from the informants for the OC and SED, it follows

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[19] Although modern sociolinguistic surveys of English dialects do record a much larger number of speakers, the numbers of speakers in each 'cell' is often quite low. For example, in Watt and Milroy (1999) there are only four older male working-class speakers, a figure which is comparable to the number used in traditional dialect surveys.

that for some speakers, particularly those labelled as "bi-dialectal", other, less localised, pronunciations were possible. That is, it is very likely indeed that less localised patterns of speech were possible for informants for whom only highly localised pronunciations are recorded. The aims and methodology of traditional dialectology suggest, then, that non-localised forms of English might have existed alongside the traditional dialects recorded in surveys like the OC and the SED. But there is, in fact, concrete evidence that this was indeed the case. This evidence comes from the appearance, in the traditional dialect data, of decidedly non-local phonological patterns.

Probably every undergraduate who has taken a course in the history of the English language is (or at least should be!) aware that OE /ɑ:/ developed differently in Scotland and the north of England than it did in the Midlands and south. The fronting of OE /ɑ:/ to /a:/, which merged with /a:/ from Open Syllable Lengthening (OSL) of earlier /a/, ultimately giving rise to a front vowel or diphthong (e.g. /e:/ or /iə/), is perhaps the defining feature of Scots and traditional northern English dialects. In the Midlands and south, OE /ɑ:/ rounded and raised, merging with the OSL of /ɒ/ in ME /ɔ:/. Hence we get Scots and northern dialect forms such as *hame* and *stane* corresponding to *home* and *stone*, which are of Midlands and southern English origin.[20] If we examine data from northern dialects, however, we are frequently confronted with pronunciations which do not seem to reflect this northern change of the OE vowel /ɑ:/ to /e:/ or /iə/. So, for example, the following pronunciations of *stone* are found in Northumberland in the OC alongside the expected pronunciations with an [iə]-type diphthong:

> ANC stø:n; BAM stø:n; BLF stø:n, stö:n; BLH stø:n; BRW stoən; BWA stø:n; CAP stø:n; COR sto:n; CUL stö:ən; FRD stø:n; HBT stø:n; HTL stø:n; MTF stø:n; NBI stø:n, stø·ən; NBU stø:n; OVH stø:n; RTH stø:n; SHS stø:n; WLR stø:n

The vowel in these forms, usually [ø:], is also the local reflex of ME /ɔ:/[21] derived from the OSL of /ɒ/. This identity of the development of OE /ɑ:/ and ME /ɔ:/ from OSL is, however, the defining feature of Midlands and southern English dialects, not northern

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[20] See Lass (1992: 46-8) for discussion of this change.

[21] When not before /r/.

dialects. How then do we account for these alternative pronunciations in the north of England?

It is clear from the discussion in Section 2.3.3 above that these forms would, in traditional dialectology, be considered borrowings or replacements derived from more standard varieties of English. Such a hypothesis can indeed explain the pronunciations of *stone* given above, since the lexical distribution of these pronunciations is the same in the northeast of England as it is in StE; [ø:] only occurs in words which had OE /ɑ:/, never in words which had ME /a:/ derived from OSL. Wakelin (1984: 71) notes that "early attempts to conform more closely to RP have resulted in a distinctive and persistent /ø:/ phoneme in Northumberland, north Durham and Tyne and Wear".

It is precisely this kind of development which Wright (1905: vii) records in his conversation with the man from Westmorland, **riadz** representing the northern endogenous development of OE /ɑ:/, and **rǭdz** representing the importation from StE. And it was this kind of pronunciation that Orton (1929: 128) had in mind when he referred to the dialects of the northeast of England as having been "corrupted to a large extent by extraneous influences".

Orton's use of the phrase "to a large extent" suggests that examples of external influence, as in the case with the development of OE /ɑ:/, might, in fact, be common. A perusal of the data in the OC throws up a number of likely candidates: [u:] as a reflex of ME /o:/ in words like *boot* and *noon* (*c.f.* localised variants [ĩe] and [iə]), [ad] in words like *bladder* and *ladder* (*c.f.* the localised variant [ɛð]), [ɛ] for ME /ɛ:/ in words like *breath* (*c.f.* the localised variant [i:]), [ø:l] in words like *cold* and *old* (*cf.* the localised variants [kæ:d] and [æ:d]), and [ɪ] after /w/ in words like *whip*, *wind* and *window* (*c.f.* the localised variant [ʊ]). It seems that, despite the methodological arsenal employed by traditional dialectologists described above, the traditional dialects of Northumberland and Durham are replete with phonological patterns which derive from external influence. A similar perusal of the data in Ellis (1889) and Wright (1905) suggests that this has been the situation since at least the middle of the 19th century.

Although a detailed analysis of the data may well be able to distinguish those changes which are the result of internal change from those which are brought about by external influence, these phonological patterns of external origin do, in the words of Orton (1930: 20), "constitute a very definite characteristic" of the traditional dialects of the northeast of England. As such, any analysis of the historical phonology of the traditional dialects of Northumberland and Durham must take account of exogenous changes as well as endogenous ones. I suggest, in Chapter 3, that such external influence has, in fact, played a key role in the development of the 'NURSE-NORTH Merger'.

Since these data do, after all, evidence some degree of external influence, it follows that the speech of the vast majority of speakers in the community was characterised by even greater degrees of external influence. So, for example, if OC and SED informants were specially selected because they were the kind of speakers who pronounced *stone* as [stiən] rather than [stø:n], or even as [sto:n], then it is likely that pronunciations such as [stø:n] or [sto:n] were much more widespread in the community. That is, non-localised phonological patterns were, almost certainly, common in the speech of the local community at large, and formed part of the linguistic landscape within which the informants for the OC and SED existed. This state of affairs should be borne in mind throughout the discussion in the rest of this thesis.

2.4. The antiquity of the 'NURSE-NORTH Merger'

Watt (1998a: 275) states that:

> The antiquity of the merger is not known, though Beal (1985: 42), following Orton (1930), suggests it is comparatively recent, as she ties it to the loss of post-vocalic rhoticity in TE.

Watt notes that examples of the 'NURSE-NORTH Merger' are apparent in Jones (1911), and suggests that the feature "developed somewhat earlier than this, while rhoticity may still have been a feature of the variety".[22]

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[22] Watt further mentions apparent examples of the 'NURSE-NORTH Merger' in 19th century Cleveland English. I discuss the relevance of these in Chapter 3, Section 3.4. In this section, and in Section 2.5, I

Ellis (1889) provides the earliest phonetic evidence for the merger. Ellis's data for the dialects of Tyneside and Northumberland show that the 'NURSE-NORTH Merger', in one form or another, was a consistent feature of these dialects towards the end of the 19th century. For example, Ellis transcribes the following words in 'Pitmatic' (Ellis's name for the dialect spoken in the coalfields of southeast Northumberland) with (o*r*) (approximately IPA [ɔʁ]):[23]

> *birth*, *church*, *first*, *further*, *heard*, *mirth*, *oar*, *sword*, *thir*, *thirteen*, *Thursday*, *word*, *world*, *worse*, *worth*

In fact, Ellis's methodology allows us to push the date of attestation of the 'NURSE-NORTH Merger' even further back. Ellis's data was gathered some years prior to the date of publication; for example, Ellis's Pitmatic data was collected in 1877 by the Rev. Hugh Taylor, "who had been acquainted with the dialect 40 years" (Ellis 1889: 674). Since Ellis was particularly interested in recording the most archaic localised pronunciations, it follows that the dialect features recorded by Ellis were not new, but had been part of the dialect for some, perhaps considerable, time. Ellis's data, then, suggest that the 'NURSE-NORTH Merger' was a feature of the traditional dialect of the northeast of England from at least the middle of the 19th century.

There is evidence, however, for the 'NURSE-NORTH Merger' as a feature of the traditional dialects of northeast England even earlier than this. This evidence is found in the extensive dialect literature of the region from the 19th century (see Beal 2000 for discussion). This literature, in the form of poetry, song and, occasionally, prose, often employs a distinct orthography for the representation of dialect from the northeast (chiefly Tyneside). This orthography, coupled with evidence from rhymes, gives us an intriguing insight into the phonology of these dialects throughout the 19th century. Data of this sort are not, of course, without problems: spellings may not accurately represent the phonetics or phonology of the dialect, and rhymes may not be true rhymes (as suggested, for example, by Labov 1994: 303). Although a detailed analysis of these data is beyond the scope of this thesis, the examples

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refer to the 'NURSE-NORTH Merger' without further qualification. The precise nature of this merger will be discussed further in Section 2.6 and Chapter 3.

[23] See Eustace (1969) for an IPA interpretation of Ellis's palaeotype.

below appear, nevertheless, to provide evidence that the 'NURSE-NORTH Merger' was present in the traditional dialects of the northeast of England from at least the beginning of the 19th century.

The earliest evidence for the 'NURSE-NORTH Merger' in TE for which a date can be determined occurs in the song *The Newcastle Signs*, which appears in Thompson (1823). This song, by Cecil Pitt, is dated 1806, and contains the following rhyme (the song is written in standard orthography, emphasis mine throughout):

> *The Three Kings and Unicorn, Bull's Head, and Horse,*
> *Would prove, that the farther they went they'd fare worse.*

Another song appearing in Thompson (1823), *Bob Cranky's Leum'nation Neet* (John Shield, 1814), is written in dialect orthography, and contains the following rhyme:

> *Yet aw work like a Turk,*
> *Byeth wi' pick, knife, an' fork,*[24]

We cannot, of course, be certain that this is a true rhyme, but in the context of an apparent merger of NURSE and NORTH in this dialect, this rhyme is suggestive. Other songs from Thompson (1823) provide spelling evidence for the existence of the 'NURSE-NORTH Merger' at the beginning of the 19th century. For example, 'first' appears as *forst* in *The Glister* (author and date unknown).

Further evidence for the 'NURSE-NORTH Merger' in the early 19th century occurs in the works of the famous Tyneside poet, Thomas Wilson (1773-1858). In *Stanzas on the Intended New Line of Road from Potticar-Lane to Leyburn-Hole*, from 1824,[25] the word 'turn' is spelt *torn*, and in *The Oiling of Dicky's Wig*, from 1826,[26] the words 'church' and 'journey' appear as *chorch* and *jorney*. Equally indicative of the

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[24] In standard orthography, *Bob Cranky's Illumination Night. Yet I work like a Turk, Both with pick, knife, and fork.*

[25] Wilson (1872: xiii).

[26] Wilson (1872: xiii).

presence of the 'NURSE-NORTH Merger', the following stanza contains a rhyme of a NURSE word with a NORTH word:

"It's easy, airy, broad, and dry,
"The paradise o' horses:
"They bliss you now as they gan by –
"Before, you had their curses.

Similar rhymes also occur in Wilson's most famous work, *Pitman's Pay*, for example:

"Thow knaws for weeks aw've gyen away
"At twee o'clock o' Monday mornin',
"And niver seen the leet o' day
"Until the Sabbath day's returnin'.[27]
("Pitman's Pay", Part 2, first appearing in *Mitchell's Magazine*, 1828)

"This ower, wi' sharp and shinin' gear
"They now begin their narrow workin';
"Whilst others, eager for their beer,
"Are busy the greyhens uncorkin'.[28]
("Pitman's Pay", Part 3, first appearing in *Mitchell's Magazine*, 1830)

Evidence of this sort can be found in dialect literature throughout the 19th century, in the songs of such well-known figures as Edward Corvan, George Ridley and Joseph Robson. Rhymes involving NURSE and NORTH words are common, and there is an increased use of <or> spellings for NURSE words. In Corvan *et al.* (1862), for example, the following NURSE words are spelt with <or>:

berth, *dursn't*, *earnest*, *earth*, *first*, *journeyed*, *thirsty*, *thirty*, *Turk*, *turn*

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[27] In standard orthography: *Thou knows for weeks I've gone away, At two o'clock on Monday morning, And never seen the light of day Until the Sabbath day's returning.*
[28] In standard orthography: *This over, with sharp and shining gear They now begin their narrow working; Whilst others, eager for their beer, Are busy the greyhens uncorking.*

Although the evidence from dialect literature cannot be taken as proof, it does suggest that the 'NURSE-NORTH Merger' is of some antiquity in TE. Given that many of the 19th century writers of Tyneside dialect literature were born in the 18th century (both Thomas Thompson and Thomas Wilson in 1773), it is entirely possible that the date of the 'NURSE-NORTH Merger' lies as far back as the second half of the 18th century, if not before.

2.5. The geography of the 'NURSE-NORTH Merger'

The data sources reviewed in Section 2.3 above reveal that the 'NURSE-NORTH Merger' is characteristic of most of the historic county of Northumberland, including Tyneside north of the River Tyne, and of a part of northern County Durham, including Tyneside south of the River Tyne. All of the relevant data can be found in Appendix 3. In Northumberland, the only areas which either lack the 'NURSE-NORTH Merger' or which have it only partially or variably are in the extreme north, in Berwick, and the extreme southwest, in South Tynedale and, perhaps, Allendale. The data for Berwick from Ellis (1889) and the OC show that NURSE words partially or variably contain [ʌ], a sound never found in NORTH words. Mather and Speitel (1986) record only /ʌ/ in NURSE words, as opposed to /o/ in NORTH words, in Berwick and Spittal. Although the OC records the 'NURSE-NORTH Merger' in Coanwood at the northern end of South Tynedale, the small amount of information for Knaresdale in Ellis (1889) indicates that it did not exist a few miles further south. The situation in Allendale appears to be more complicated, with the OC recording the 'NURSE-NORTH Merger' at Allenheads, but with the SED recording partial or variable 'NURSE-NORTH Merger' in Allendale (see Section 3.2.5 for further discussion).

In County Durham, the picture is equally complicated. Whilst a form of the 'NURSE-NORTH Merger' is recorded in the OC at Coxhoe in central Durham, the SED records only occasional instances of what may be traces of the 'NURSE-NORTH Merger' in Bishop Middleham, only a few miles south, and in Witton-le-Wear and Eggleston in the southwest of the county. Orton (1933) appears to suggest that there was no significant merger of NURSE and NORTH in Byers Green, which lies in the same area. In Weardale in western Durham, the SED records partial or variable merger at Wearhead, whilst the OC records no merger of NURSE and NORTH at

Stanhope. It is only in northern locations in County Durham, such as Gateshead, Ebchester and Washington, that 'NURSE-NORTH Merger' is consistently recorded in the traditional dialect sources.

Table 10: The status of the 'NURSE-NORTH Merger' in Northumberland and Durham.

'Merger'	Location	Source
Present	Southeast Northumberland (Pitmatic), South Shields, Wark (North Tynedale), Warkworth	Ellis (1889)
	South Northumberland, Southeast Northumberland, Southwest Northumberland	Wright (1905)
	Allenheads, Bamburgh, Belford, Bellingham, Capheaton, Coanwood, Coxhoe, Cullercoats, Falstone, Glanton, Harbottle, Hartley, Matfen, Newbiggin-by-the-Sea, Newbrough, Newburn, Newcastle, Ovingham, Rothbury, Seahouses, Seaton Delaval, Wooler	OC
	Embleton, Thropton, Ellington, Wark, Earsdon, Haltwhistle, Heddon-on-the-Wall, Washington, Ebchester	SED
	Gateshead	Viereck (1966)
Partial/variable	Berwick, St. John's (Weardale)	Ellis (1889)
	Berwick	OC
	Allendale, Wearhead	SED
Absent	Byers Green	Orton (1933)
	Stanhope	OC
	Witton-le-Wear, Bishop Middleham, Eggleston	SED

In areas adjacent to Northumberland and Durham, no merger of NURSE and NORTH is recorded, with one possible exception discussed below. North of the border, in Scotland, ME /ɪr/, /ʊr/ and /ɛr/ remain distinct, as was noted in Section 2.2.1 above, but Wettstein (1942), Zai (1942) and Mather and Speitel (1986) record merger of NORTH and FORCE throughout much of southern Scotland. Like StE, ME /ɪr/, /ʊr/ and some instances of ME /ɛr/ have merged in Cumberland and Westmorland (both now part of Cumbria), but remain distinct from ME /ɒr/ and /ɔ:r/ (see, for example, Ellis 1889, Hirst 1906, Brilioth 1913, Reaney 1927 and Rydland 1982).

Further south, the situation is more complicated. Although there is no merger of NURSE and NORTH throughout most of England, a number of sources indicate that

something similar to the 'NURSE-NORTH Merger' does occur, particularly in parts of Yorkshire, Lancashire and Lincolnshire (see Klein 1914, Cowling 1915, Oxley 1940, Tidholm 1979, Rydland 1982, Maidment 1992, and the relevant parts of the SED). I examine the similarity of this phenomenon to the 'NURSE-NORTH Merger' in the northeast of England, and its potential significance, in Section 3.4.

Figure 16: The location of the 'NURSE-NORTH Merger'.

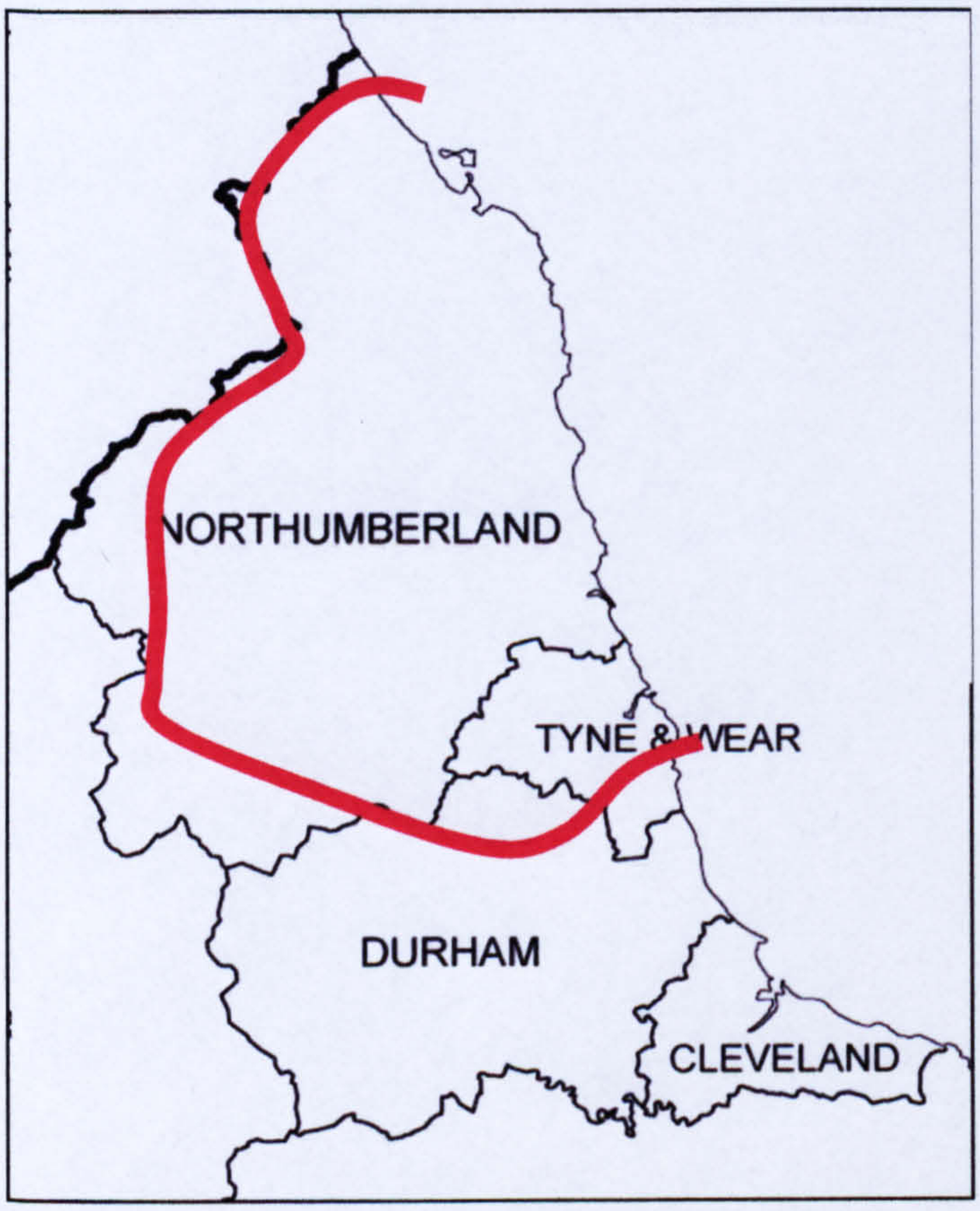

Figure 16 indicates the geographical distribution of the 'NURSE-NORTH Merger',[29] whilst Table 10 gives details of where the merger has been recorded, and where it has not.

[29] The 'NURSE-NORTH Merger' is also recorded in Coxhoe in County Durham (see Rydland 1998 and Appendix 1). The base map is reproduced from Ordnance Survey map data by permission of the Ordnance Survey © Crown copyright 2001.

2.6. Summary

In this chapter, I introduced the subject of this thesis, the 'NURSE-NORTH Merger' in TE. One of the central aims of this thesis is to define what, exactly, this merger is. The final answer to this question, in as much as one can be given, must await the data analysis and discussion in the remainder of this thesis. In this chapter, I have sought to establish the nature of perhaps the most substantial body of evidence for the merger: the evidence from traditional dialect surveys.

In Chapter 1, I suggested that the term merger has been applied to a range of different phenomena, and the evidence reviewed to date suggests that it is an oversimplification to consider merger and non-merger as diametrically opposed. Rather, I suggest, there is something like a continuum from mergers which are characteristic of all speakers of a language all of the time to mergers which are only variably characteristic of a small number of speakers of a language. This gradience may be measured in three ways: (1) who the merger is characteristic of; (2) how consistently those speakers merge; and (3) how restricted the merger is lexically. Additionally, the degree of confidence with which a merger is postulated depends upon the quality of phonetic and phonological evidence which exists for the merger. In order to determine the status of the 'NURSE-NORTH Merger', as evidenced in the traditional dialect data, it must be measured against each of these criteria.

As regards the third of these criteria, the analysis of the NURSE, NORTH and FORCE lexical sets in Section 2.2 suggests that the membership of these lexical sets may well be different in dialects of the northeast of England than it is in StE. Before any definition of the 'NURSE-NORTH Merger' can be given, we must know what is meant by NURSE, NORTH and FORCE, and hence the lexical distribution of the merger, in these dialects. This investigation forms the core of Chapter 3.

Like the majority of mergers discussed in Chapter 1, the 'NURSE-NORTH Merger' is geographically restricted. Unlike mergers such as the NORTH-FORCE merger, however, it is not a widespread merger, being restricted to Northumberland, Tyneside and north Durham. Nor is the 'NURSE-NORTH Merger' characteristic of standard varieties of English, in the way the NORTH-FORCE Merger is.

The review of the traditional dialect sources in Section 2.3 suggests that the data for the 'NURSE-NORTH Merger' are not necessarily representative of the speech community. The 'NURSE-NORTH Merger' is only attested in the speech of a select few older working-class (usually male) speakers, and the OC and SED are completely silent on the status of this merger in the speech of other members of the community. We cannot assume that the merger was characteristic of the speech community as a whole. Given the discussion in Section 2.3.6, it seems likely that most speakers in the community had much higher levels of non-local forms in their speech, and it seems probable that non-identical pronunciations of NURSE and NORTH were common. That is, speakers with the 'NURSE-NORTH Merger' may well have been surrounded by speakers who did not have it, and hence the merger was only variably present in the community. The evidence from non-local phonological patterns in the traditional dialects (such as [ø:] for OE /ɑ:/) implies that this is indeed the case, and that it has been throughout the history of these dialects. As Johnson (1980: Abstract) suggests, co-occurrence of localised and non-localised forms is possible from "the time when the donor and receptor (local) dialects diverge in development".

Furthermore, the discussion of the empirical basis for the 'NURSE-NORTH Merger' in Section 2.3 suggests that the 'NURSE-NORTH Merger' need not have been categorical within the speech of the OC and SED informants themselves. Although these speakers were consistent enough in their use of the merger to provide the data as we see it in the OC and SED, it is possible, although we have no way of knowing for sure, that the informants only supplied and/or the fieldworkers only recorded merged pronunciations. We cannot assume that the merger was characteristic of the speech of informants as a whole. It seems likely, given the discussion in Section 2.3.6, that at least some of the informants had higher levels of non-local forms in their speech than are recorded in the traditional dialect data, and it seems probable that non-identical pronunciations of NURSE and NORTH were common. That is, speakers with the 'NURSE-NORTH Merger' may, in fact, only have had variable merger of NURSE and NORTH themselves. Again the evidence from non-local phonological patterns in the traditional dialects (e.g. [ø:] for OE /ɑ:/) implies that this is indeed the case, and that it has been throughout the history of these dialects.

As far as the 'NURSE-NORTH Merger' is concerned, we cannot know for certain that what has been transcribed as a merger in the OC and the SED was indeed a phonetic or phonological merger. It is possible, although the weight of the evidence speaks against it, that the transcribers of the OC and the SED data got it wrong. Since the phonetic analysis was usually done on the spot, and did not seek to determine the intuitions of speakers on the status of the merger, it is impossible to say for certain that there was a merger of NURSE and NORTH.

If the phonetic transcriptions in the OC and the SED are accepted as accurate, all that the data tell us is that for some speakers the NURSE and NORTH lexical sets were pronounced alike some of the time. That being the case, the 'NURSE-NORTH Merger' is a merger which is characteristic of a small, geographically restricted, unrepresentative proportion of the English-speaking population. It is quite possible that this merger is only variably present in the speech of some or all of the informants in the OC and SED.

If the phonetic transcriptions in the OC and the SED are not accepted as accurate, we cannot even say this much. If this is the case, all that the OC and SED data tell us is that as far as the transcribers of the data were concerned, the NURSE and NORTH lexical sets were pronounced alike some of the time by some speakers.

This preliminary definition of the 'NURSE-NORTH Merger' will be subject to revision in subsequent chapters in light of further data.

Chapter 3: The History of the 'NURSE-NORTH Merger'

3.1. Introduction

It was suggested in Chapter 2 that the meaning of the term 'NURSE-NORTH Merger' can only be understood when the membership of NURSE, NORTH and FORCE is known. Since Wells's NURSE, NORTH and FORCE lexical sets are the product of a series of historical developments, which may or may not have been shared by the dialects of the northeast of England, it is only through a historical analysis of these lexical sets in the Northeast that a proper understanding can be gained of what is meant by the term 'NURSE-NORTH Merger'.

Chapter 2, Section 2.5 revealed that the 'NURSE-NORTH Merger' in TE is, in fact, part of a geographically more widespread phenomenon found throughout most of Northumberland and north Durham. Although the focus of this thesis is on the merger in TE, it is impossible to understand its origin and nature without examining the merger in this wider context. As such, data from the OC and the SED from locations throughout Northumberland and Durham is considered in this chapter in addition to that from in and around Tyneside. It will readily be seen that the situation in TE is not unique but rather is part of a wider development in the northeast. In the following discussion, I use the abbreviation NbTE (Northumberland and Tyneside English) to signify the dialects of Northumberland, Tyneside and north Durham. Since all of the dialect data analysed here were collected before the reorganisation of the English counties in 1974, Tyneside was divided between Northumberland and Durham and, consequently, the term Northumberland includes Tyneside north of the River Tyne, whilst the term Durham includes Tyneside south of the River Tyne.

This chapter is organised as follows. Firstly, I discuss the reflexes in the traditional dialect data of the source ME sequences for the NURSE and NORTH lexical sets, and attempt to establish the chain of developments which gave rise to the 'NURSE-NORTH Merger'. Secondly, I examine the role of the Northumbrian Burr in these

developments. Thirdly, I discuss a suggestion made by Harold Orton concerning the interplay of internal change and external influence in the development of the merger, which depends upon the discussion in Chapter 2, Section 2.3.3. I conclude this analysis of the history of the 'NURSE-NORTH Merger' with an examination of a suggestion that the merger in TE has its origins, in part at least, in the influence of Irish English brought to Tyneside by immigrants from Ireland in the 19th century.

Throughout this analysis of the history of the 'NURSE-NORTH Merger', it is necessary to bear in mind the implications of the methodology of traditional dialectology discussed in Chapter 2. The fact that a merger is consistently reported in NbTE does not mean that every speaker in the region, or indeed every informant who provided data, had merger of NURSE and NORTH. It will be found, in fact, that the analysis of the history of the 'NURSE-NORTH Merger' supports the hypothesis in Chapter 2 that traditional dialect speakers existed within a wider, heterogeneous sociolinguistic context, and that this wider context has had profound effects upon the development of the NURSE and NORTH lexical sets in the northeast of England.

One further point needs to be made regarding the nature of the OC and SED data for NURSE and NORTH. Since it is historical written data, it is static, and this has important consequences for our understanding of what the lexical distribution of the merger is. The data reviewed below reveal that, in many cases, the source historical lexical sets are frequently represented by more than one major phonological variant in the traditional dialects of the northeast of England. So, for example, ME /ɪr/ is represented by both [ɔ:] and [eɵ] at some locations. At any one particular location, some words which had ME /ɪr/ are only represented by [ɔ:], whilst in others, words which had ME /ɪr/ are only represented by [eɵ]. In still other cases, words which had ME /ɪr/ may be represented by both [ɔ:] and [eɵ]. Owing to the static nature of the data, it is impossible to tell, in such cases, whether those ME /ɪr/ words which have only been recorded with [ɔ:] may also have [eɵ]. Similarly, it is impossible to tell whether those ME /ɪr/ words which have only been recorded with [eɵ] may also have [ɔ:]. That is, we cannot know whether we are dealing with a case of partial, lexically specific merger of ME /ɪr/ with other NURSE words in [ɔ:], or whether we are dealing with a case of variable merger of ME /ɪr/ with other NURSE words in [ɔ:], which is not lexically specific. Indeed, some combination of these two alternatives is possible. In this chapter, I label such scenarios as 'partial/variable merger'.

3.2. The history of the ME sources of NURSE and NORTH in NbTE

In this section, I examine the reflexes in NbTE of the source ME sequences for the NURSE and NORTH lexical sets, and attempt to establish the chain of developments which gave rise to the 'NURSE-NORTH Merger'. As was discussed in Chapter 2, some locations in Northumberland and Durham do not seem to have had the 'NURSE-NORTH Merger', or at most only seem to have done so partially or variably. Of these locations, STH from the OC, and Nb9, Du3, Du 4, Du5 and Du6 from the SED, are discussed separately following the analysis of the other locations. The data for BRW is sparse, and is not discussed here (see Chapter 2, Section 2.5 for a summary).[1]

Although the ME source of many words is reflected in their spelling (e.g. <ir> tends to be used in words which derived from ME /ɪr/, and <ur> in words which derived from ME /ʊr/), the correlation is not exact (e.g. *worst* probably had ME /ɛr/, although a phonological doublet with /ɪr/ may also have existed – see Orton 1933: 28-29 and Rydland 1982: 175). Information as to which words contained which ME sequences has been drawn from a wide range of sources, including Wright (1892), Orton (1933), Wyld (1936), Kökeritz, (1953), Dobson (1957), Luick (1964), and Rydland (1982).

Two phonetic symbols which appear in the OC data, [ɐ] and [ɐ̹], require comment. Rydland (1998: 25) notes of [ɐ] that it "denotes a vowel that is roughly equivalent to a centralised cardinal [ɔ] ... but still different from [ɔ̈] ... Its exact value is not altogether clear". Rydland (1998: 25) states of [ɐ̹] that it "denotes a rounded vowel similar to [ɐ], but somewhat advanced and lowered ... and with less marked rounding". In the OC data, [ɐ] and [ɐ̹] alternate: [ɐ] appearing word finally, and [ɐ̹] appearing before a consonant. Rydland (1998: 26) voices some doubt on the reality of the [ɐ]/[ɐ̹] alternation and, as such, the two symbols can probably be taken as interchangeable. In this chapter, I use [ɐ] throughout the discussion as a convenient cover symbol for the two pronunciations, except when quoting data directly from the OC.

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[1] See the map in Appendix 1 for geographical locations.

I suggested in Chapter 2 that the membership of the NURSE, NORTH and FORCE lexical sets in NbTE might well be different than in StE. A number of subsets of the NURSE, NORTH and FORCE lexical sets in StE do, in fact, appear to have acted quite differently in NbTE. Perhaps the most obvious of these contains words derived from OE /ɑ:r/, e.g. *more* and *sore*. These typically have an [eɒ]-type diphthong in the dialects of the northeast of England, reflecting the well known coalescence of OE /ɑ:/ with the result of ME Open Syllable Lengthening (OSL) of /a/, referred to in Section 2.3.3 (see also Section 6.2.5). Pronunciations of this type are excluded from this analysis. Similarly, I exclude words with ME /war/ (some derived from earlier /wɛr/), which now form part of the NORTH lexical set in StE (see Sections 2.2.2 and 6.2.4), since they consistently retain an unrounded vowel and, as such, form part of the START lexical set in NbTE. Other minor historical survivals are also excluded from the analysis, including the developments of ME /o:r/, e.g. in *door*, *floor*, *poor* and /u:r/, e.g. in *course*, *pour* (see Section 3.2.3. below), and ME /ɔur/, e.g. in *four*, which usually remain distinct in these dialects.

3.2.1. ME /ʊr/ and /ɒr/

The data in Appendix 3 reveal that both ME /ʊr/ and /ɒr/ are uniformly represented by an [ɔ:]-type vowel in most of Northumberland and north Durham. I use the term '[ɔ:]-type vowel' as the label for a variety of pronunciations, such as [ɔ:], [ɔ̣:], [ɔᵚ:], [ɔ], etc., which appear to be non-contrastive variants of one phoneme (or sequence of phonemes) in the dialects concerned. The precise phonetics of this [ɔ:]-type vowel, which vary between and within locations, can be retrieved from Appendix 3. The data in Appendix 3 reveal no phonetic difference whatsoever in the vowels of words derived from these two ME sources, and it is this identity between the developments of ME /ʊr/ and /ɒr/ that lies at the heart of the 'NURSE-NORTH Merger'.

3.2.2. ME /ɪr/

The most common derivative of ME /ɪr/, found in all locations in the core 'NURSE-NORTH Merger' area, is an [ɔ:]-type vowel. This is indistinguishable from the reflexes of ME /ɒr/ and /ʊr/ discussed above, and hence ME /ɪr/ also contributed towards the 'NURSE-NORTH Merger' in these dialects. However, an alternative reflex of ME /ɪr/,

an [eɞ]-type diphthong,[2] is also common in these dialects. In some locations, this variant is absent or is restricted to one or two dialect words such as *girdle* or *kirn*. In other areas, it is a common, or even the dominant, variant. Table 11 summarises the distribution of [eɞ]-type diphthongs in the OC and SED.

It is clear from Table 11 that an [eɞ]-type diphthong in words derived from ME /ɪr/ is least typical of Durham and southeast Northumberland, including Tyneside. Conversely, it is most typical of rural northern and western Northumberland. I return to the potential significance of this distribution in Section 3.6 below.

Table 11: The distribution of [eɞ]-type diphthongs in words derived from ME /ɪr/ in the OC and SED.

Status of [eɞ]	Locations from the OC and the SED
Absent	COX, FLS, NCL; Nb6, Nb8, Du1
Restricted to a few dialect words	CNW, CUL, HTL, MTF, NBI, NBU, OVH, RTH, STD; Nb2, Nb4, Nb5, Du2
Common or dominant	ALH, BAM, BLF, BLH, CAP, GLN, HBT, NBR, SHS, WLR; Nb1, Nb3, Nb7

Although the static nature of the traditional dialect data makes it difficult to be certain, it is probable that the [eɞ]-type pronunciation frequently alternated with [ɔ:] in those dialects which had it. As Appendix 3 illustrates, many words recorded with the [eɞ]-type diphthong are also recorded with [ɔ:] at the same location. It was suggested in Chapter 1 that alternation of this sort distinguishes lexical sets which are variably merged. That being the case, the merger of ME /ɪr/ with ME /ɒr/ and /ʊr/ may only have been variable at these locations.

3.2.3. ME /ɔ:r/ (FORCE)

The most common derivative of ME /ɔ:r/, found in all locations in the core 'NURSE-NORTH Merger' area, is an [ɔ:]-type vowel. This is indistinguishable from the reflexes of ME /ɒr/ and /ʊr/ discussed above, and hence ME /ɔ:r/ also contributed towards the 'NURSE-NORTH Merger' in these dialects. Survivals of the NORTH-FORCE

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[2] I use the term '[eɞ]-type diphthong' as a cover symbol for a range of pronunciations, such as [eɐ], [eɘ], [ɛɔˠ], etc. See Appendix 3 for details of which particular pronunciations occur in which location.

distinction are, nevertheless, common in the dialects of the northeast of England, with FORCE being represented by an [uɐ]-type diphthong.[3] At a number of locations, the [uɐ]-type diphthong is found in only one or two words derived from ME /ɔ:r/, and in other cases, the [uɐ]-type diphthong survives only in words which had ME /o:r/ (e.g. *door*, *floor* and *poor*) or /u:r/ (*course* and *pour*). As noted in Section 3.2 above, these are excluded from the analysis. Table 12 summarises the distribution of the [uɐ]-type diphthong in OC and the SED.

Table 12: The distribution of [uɐ]-type diphthongs in FORCE in the OC and SED.

Status of [uɐ]	Locations from the OC and the SED
Absent or restricted to a few words, usually with ME /o:r/ or /u:r/	BAM, GLN, HTL, NBU, NCL, RTH, STD, SHS; Nb1, Nb2, Nb4, Nb6, Nb8, Du1, Du2
Common or dominant	ALH, BLF, BLH, CAP, CNW, COX, FLS, HBT, MTF, NBI, NBR, OVH; Nb3, Nb5, Nb7

Table 12 reveals two areas where the NORTH-FORCE distinction has largely disappeared – north Northumberland and the area surrounding Tyneside. The lack of a NORTH-FORCE distinction in north Northumberland is surprising, given the survival of a distinction between ME /ɪr/ and /ʊr/ in the area. It is perhaps no coincidence, however, that the NORTH-FORCE distinction has also been lost north of the Scottish-English border (see Wettstein 1942 and Zai 1942).

As is the case with the [eɐ]-type diphthong discussed in Section 3.2.2 above, it is probable that the [uɐ]-type pronunciation frequently alternated with [ɔ:] in those dialects which had it, although again the static nature of the traditional dialect data makes it difficult to be certain. Appendix 3 reveals that many words recorded with the [uɐ]-type diphthong are also recorded with [ɔ:] at the same location. Again this kind of alternation would serve to distinguish words derived from ME /ɔ:r/ from other words which only have [ɔ:], so that the merger of ME /ɔ:r/ with ME /ɒr/ and /ʊr/ (and /ɪr/) may only have been variable at these locations.

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[3] I use the term '[uɐ]-type diphthong' as a cover symbol for a range of pronunciations, such as [uɐ], [uɒ], [uɔˠ], [uˑə], etc. See Appendix 3 for details of where particular pronunciations occur.

3.2.4. ME /ɛr/

It is an established, if curious, fact that ME /ɛr/ shows a split development in StE, to /ɑ:/ and /ɜ:/ (see Dobson 1957: 558-564 and Lass 1999: 109). Lass (1999: 109) suggests that ME /ɛ/ lowered to /a/ before /r/, but that some words:

> have 'reverted' to ME /er/ ... whether through spelling-pronunciations or borrowing from a coexisting lineage. The general tendency is to keep reflexes of /a/ in Germanic words (*heart*, *star*) and to reintroduce /e/ in loans (*mercy*, *serve*).

In modern StE, those words which "reverted" to ME /ɛr/ developed the monophthong /ɜ:/, and became part of the NURSE lexical set (see Section 2.2.1 above). Those which retained ME /ar/ developed the vowel /ɑ:/ in modern StE, and became part of the START lexical set.[4]

The situation in NbTE is even more complex. In addition to the development of an [iə]-type diphthong in a few words (presumably due to exceptional lengthening of ME /ɛr/),[5] which I ignore here, ME /ɛr/ has three outcomes in the 'NURSE-NORTH Merging' dialects of the northeast of England: an [eə]-type diphthong, an [ɑ:]-type vowel, and an [ɔ:]-type vowel.

The [eə]-type diphthong occurs throughout the northeast of England, but is considerably less frequent in southeast Northumberland and Durham; no instances of it are recorded at CNW, COX, NCL, OVH and STD in the OC, or at Nb6, Nb8 or Du1 in the SED. [eə] may occur in words derived from ME /ɛr/ which have either /ɑ:/ or /ɜ:/ in StE.

The [ɑ:]-type vowel,[6] identical to the vowel in words derived from ME /ar/, is the most common reflex of ME /ɛr/ in these dialects, being found in all locations. It occurs in words derived from ME /ɛr/ which have either /ɑ:/ or /ɜ:/ in StE.

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[4] See Wells (1982: 157-159) for details.

[5] E.g. *hearse* and *pert*; ME /ɛ:r/ also gives this reflex in these dialects.

[6] I use [ɑ:] as a cover symbol for a variety of pronunciations, e.g. [ɑ:], [ä:], [aᵚ:], etc.

The variant [ɔ:] is identical to the vowel found in these dialects in words with ME /ɒr/ and /ʊr/. It is particularly common in the words *work* (n.), *worse* and *worst*. In the case of *work* (n.), this is probably due in part to confusion with the verb *work*, which has an [ɔ:]-type vowel in all of these dialects. In the case of *worse* and *worst*, the [ɔ:]-type pronunciations may well be due, in part at least, to ME forms with /ɪr/ > /ʊr/ (see Orton 1933: 28-29 and Rydland 1982: 175). If we set these cases aside, however, a substantial number of words with ME /ɛr/ appear with an [ɔ:]-type vowel in Northumberland and north Durham (see Appendix 3). Unlike the variants [eɘ] and [ɑ:], [ɔ:] only occurs in words derived from ME /ɛr/ which have /ɜ:/ in StE (i.e. not in those which have /ɑ:/ in StE).

As is the case with the development of the ME sequences /ɪr/ and /ɔ:r/, the extent to which [eɘ], [ɑ:] and [ɔ:] alternate in words derived from ME /ɛr/ will determine the extent to which they merge with NURSE and NORTH or remain variably distinct.

3.2.5. Allendale and Weardale

Although the OC records merger of ME /ʊr/ and /ɒr/ (as well as a few instances of merger of ME /ɪr/) at Allenheads in the south of Allendale next to the Durham border, the data for Allendale in the SED, and the data for the neighbouring Weardale (STH (Stanhope) in the OC and Du3 (Wearhead) in the SED) reveal a more complex situation. In this section, I review the development of NURSE and NORTH in each of these locations, since the presence or absence of the merger in the data from these locations is of some importance in understanding its history (I return to the significance of these data in Section 3.5 below).

As mentioned above, ME /ʊr/ and /ɒr/ (as well as a few instances of ME /ɪr/) are represented by the same diphthong in Allenheads, [ɒə]. Another diphthong, [uə], is found in FORCE words, possibly a few NORTH words, and in the NURSE words *curtain*, *word* and *worth*. It appears that there is a complete merger of ME /ʊr/ with NORTH and FORCE in Allenheads. Apart from *bird*, words with ME /ɪr/ do not take part in this merger, but are instead represented by the diphthong [ɛə]. Similarly, ME /ɛr/ takes no part in the 'NURSE-NORTH Merger' here, usually being represented by the vowel [ä:].

The data for Allendale (SED Nb9) reveal something very close to the 'NURSE-NORTH Merger'. Both NURSE and NORTH words are recorded with [ɔ:]-type vowels (most commonly [ɔ:] or [ɔ:ᵊ]), or an [ọə] diphthong. All words with ME /ɒr/ and /ɔ:r/ are subsumed under these pronunciations, as are the majority of words with ME /ʊr/ and a number of words with ME /ɪr/. However, three instances of ME /ʊr/ words with a central vowel [ə:] are recorded, whilst ME /ɪr/ is usually represented by an [eə]-type diphthong. ME /ɛr/ takes no part in the 'NURSE-NORTH Merger', being represented here by either the vowel [a:] or an [eə]-type diphthong. If we assume, on the evidence of Allenheads from the OC, that [ə:] in NURSE words is not original in this area, it appears that there was a merger of NURSE and NORTH in Allendale, but that it is no longer complete.

The data for Stanhope reveal that there is only minimal overlap of NURSE and NORTH. ME /ɒr/ and, to a certain extent, ME /ɔ:r/, are represented by an [ɔ:]-type vowel. ME /ɔ:r/ is also commonly represented by an [uˑə] diphthong. ME /ʊr/ is represented by [ɑˑə], [ʊ] or [ɜ:], ME /ɪr/ by [ɑˑə], [ɜ:] or [ɛ(ɹ)], and ME /ɛr/ by [ä:] (and, in one instance, by [ɜ:]). In only three instances are there overlaps between NURSE and NORTH/FORCE: *coarse* and *fortune* are recorded with [ɑˑə], and *turn* is recorded with [uˑə]. Given the relative phonetic similarity of [ɑˑə] and [uˑə], it is perhaps not surprising that there are a few crossovers between the two phonemes, and this need not be indicative of merger of NURSE and NORTH at any stage in the history of this dialect.

The data for Wearhead (SED Du3) are rather complex. ME /ɒr/ is represented by an [ɔ:]-type vowel. ME /ɔ:r/ appears to be represented by a diphthong [ɷə]. This diphthong also appears in some words with ME /ʊr/ and /ɪr/, but these are also recorded with a central vowel, for example, [ə:]. In one instance, ME /ʊr/ is represented by [ɔ:]. ME /ɛr/ is typically represented by [a(:)] or [aɹ]. The data from Wearhead appear to show that there is a partial or variable merger of NURSE and NORTH/FORCE (particularly FORCE) and, as such, it represents a halfway house between the (near) consistent merger in Allendale and the lack of merger in Stanhope, as its geographical location would predict.

It appears to be the case, then, that there is a merger of NURSE and NORTH in Allendale, at least. Even here, however, ME /ɛr/ remains distinct. The evidence for the 'NURSE-NORTH Merger' in Weardale is less convincing. I return to the significance of these data from Allendale and Weardale in Section 3.5 below.

3.2.6. The NURSE and NORTH lexical sets in south Durham

In Orton's data from Byers Green (Orton 1933), NURSE words typically have [ə:], whilst NORTH and FORCE words have [œ:]. That is, there is a curious reversal in the normal phonetic position of NURSE and NORTH in this dialect. Only a few instances of crossover between the two lexical sets are recorded: *course*, *ford* and *sword* have [ə:]. Reasons for this are unclear, and Orton does not offer comment. These words aside, there is no merger of NURSE and NORTH in Byers Green.

Three locations in south Durham were surveyed in the SED: Witton-le Wear (Du4), Bishop Middleham (Du5) and Eggleston (Du6). Witton-le-Wear lies only eight kilometres west of Byers Green, and Bishop Middleham is less than five kilometres south of Coxhoe (COX), where consistent merger of ME /ɒr/ and /ʊr/ was recorded in the OC. The NURSE and NORTH data for these three locations is given in Appendix 3.

At all three locations, NURSE words typically have [ə] or [ə:], whilst NORTH and FORCE words typically have a low mid back rounded vowel, e.g. [ɔ:] or [ɒ]. The vowel [œ:], recorded in NORTH and FORCE at Byers Green in Orton (1933), is also recorded to a lesser extent at each of the SED locations. These data suggest that there has been a move away from [œ:] in NORTH and FORCE to an [ɔ:]-type vowel in this area, as suggested by Orton (1933: 42). The picture is complicated somewhat by a number of crossovers between NURSE and NORTH/FORCE in each location, however. In the Witton data, the NURSE vowel [ə:] occurs in the words *bour-tree*, *door*, *forenoon* and *forward*, whilst [ɐ] is recorded in *fortnight* and [ɐ:] in *fork* and *morning*. At Bishop Middleham, there is a greater degree of crossover between the lexical sets: *for*, *forenoon*, *fork*, *morning*, *side-boards*, and *yorks* are all recorded with [ə:], whilst *burr* and *spurlings* are recorded with [œ:]. In Eggleston, the rare vowel [œ:] occurs in two NORTH/FORCE words (*fore-finger* and *shaft-horse*) and one NURSE word (*girdle*), [ə:] appears in *forenoon* and *mourners*, and [əɹ] in *fork*.

These data from south Durham are not easy to interpret. At first glance, they appear to offer some evidence of a 'NURSE-NORTH Merger' which has been reversed leading to hypercorrection, so that some NORTH words have ended up with the centralised NURSE vowel.[7] If this is the case, we have evidence that the 'NURSE-NORTH Merger' was once more widespread than it is now. Against this, however, is the evidence from Byers Green. Orton's data suggests that there was no significant merger of NURSE and NORTH in this part of Durham. If we take Orton's earlier data as a starting point, centralised pronunciation of NORTH in the SED could be interpreted as relics of the previously more common [œ:] pronunciation which have been reinterpreted as variants of the NURSE vowel. If this is the case, and it is hard to explain Orton's data if it is not, then there is no evidence for a 'NURSE-NORTH Merger' in these locations.

3.2.7. Summary of changes

The changes outlined in Sections 3.2.1 to 3.2.6 above may be summarised as follows:

1) ME /ʊr/ and /ɒr/ have merged, in an [ɔ:]-type vowel, in almost all of Northumberland and in north Durham.
2) To varying degrees, ME /ɪr/ and /ɔ:r/ have also merged with this [ɔ:]-type vowel, although alternate developments (to [eɘ] and [uɘ] respectively) are also found, particularly away from Tyneside. As noted above, these cases may be labelled partial/variable merger.
3) In all locations in Northumberland and north Durham, ME /ɛr/ becomes an [ɑ:]-type vowel in words which have StE /ɑ:/ and which have StE /ɜ:/. In addition, an [eɘ]-type diphthong is recorded at most locations, and is also found in words which have StE /ɑ:/ and those which have StE /ɜ:/. At most locations, ME /ɛr/ is also represented by an [ɔ:]-type vowel, although in this case it is only possible in words which have StE /ɜ:/, not words which have StE /ɑ:/. A number of locations, most notably in southwest Northumberland and western Durham, do not have any instances of [ɔ:] in words with ME /ɛr/.

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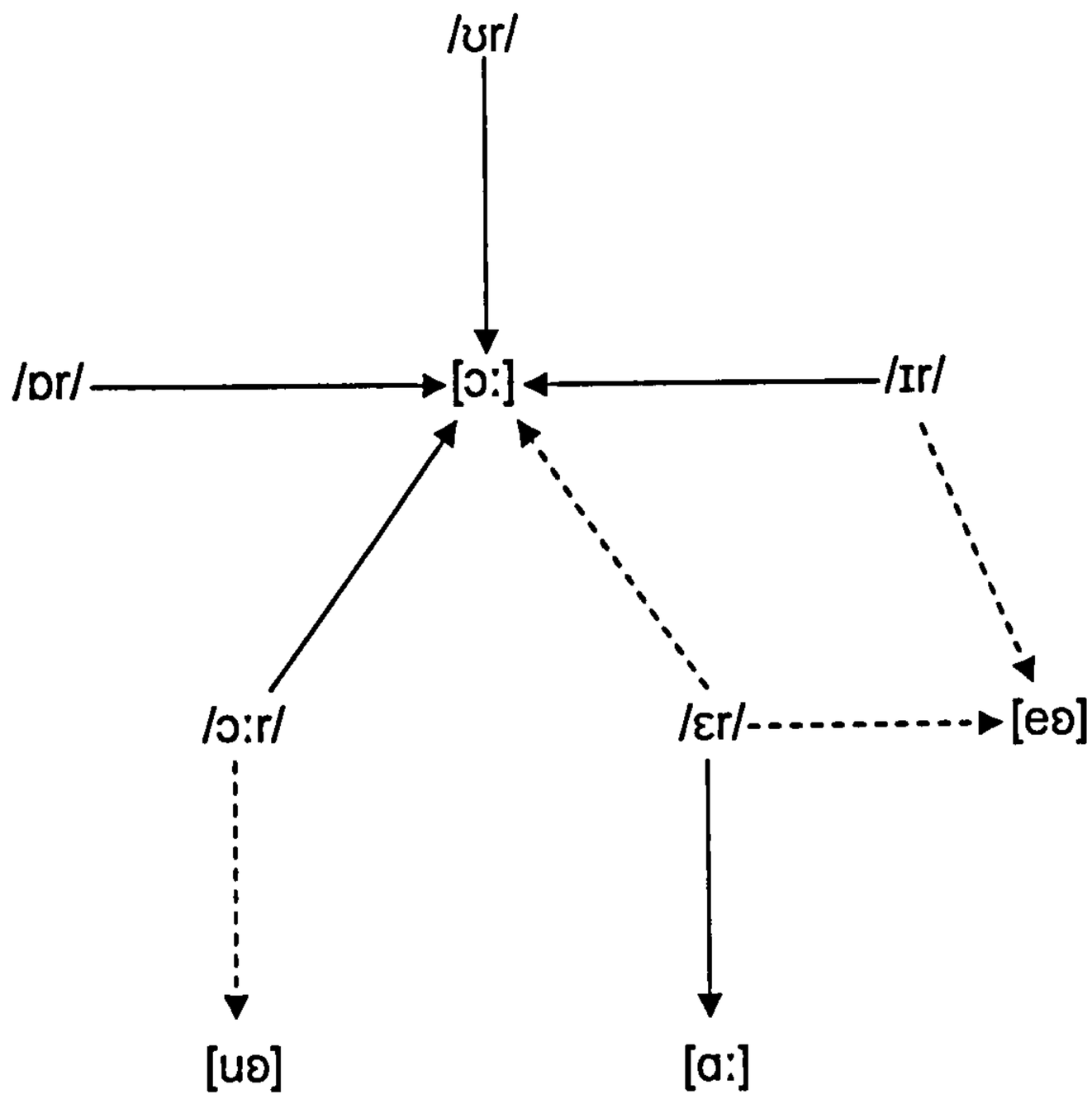
[7] I return to the problem of reversal of the 'NURSE-NORTH Merger' in Chapters 4, 7 and 8.

[eɵ] and [uɵ] for ME /ɪr/ and /ɔ:r/, found in some locations only, are the remains of archaic distinctions which have been lost elsewhere. At one time, all dialects of English maintained a distinction between ME /ɒr/ and /ɔ:r/ (NORTH and FORCE), and between ME /ʊr/ and /ɪr/. I return to the loss of these distinctions in Sections 3.5 and 3.6 below.

Figure 17: Summary of the changes of the ME sources of NURSE and NORTH in NbTE.



These developments, in Northumberland and north Durham, are summarised in Figure 17. The solid lines indicate that the change happened at all relevant locations, at least variably or partially. The dashed lines indicate that the change is only recorded in some locations.

3.3. Burr-modification

The account of the development of NURSE and NORTH in NbTE has not, thus far, taken into account the usual explanation of the origin of the 'NURSE-NORTH Merger' in NbTE: that it is the result of the historical presence of uvular R in the region. Wells (1982: 396-97) states that:

> It is the effect of uvular /r/ on a preceding vowel which has historically given rise to forms such as [bɔʁ:dz] *birds*, [wɔʁ:mz] *worms* in Northumberland: the [ʁ] has not only coalesced with the vowel, making it uvularized, but has also caused it to be retracted from centre to back.

Påhlsson (1972: 20) also attributes the low-mid back vowel in words such as *first* and *word* to the influence of a historical following uvular R, and he terms this change 'Burr-modification', after the traditional name for the uvular R in the northeast of England, the 'Burr':

> Burr-modified vowels are vowels that have become retracted and lowered (in most cases) due to a following posterior /r/, e.g. "first" [fɔ:st], "word" [wɔ:d].

An explanation of the 'NURSE-NORTH Merger' based on Burr-modification is also supported by Beal (1985) and (2000). In this section, I examine the effects of this Burr on the vowels of NbTE, and the role it may have played in the developments of the sources of the NURSE and NORTH lexical sets discussed in Section 3.2 above.

3.3.1. The Northumbrian Burr

Uvular R is a well-known (if now near moribund) pronunciation, characteristic of Northumberland and north Durham. The Burr is clearly of some antiquity; Daniel Defoe wrote, in his *Tour Through the Whole Island of Great Britain* (1724-27, vol. ii: 662), that:

> I must not quit *Northumberland* without taking notice, that the Natives of this Country, of the antient original Race or Families, are distinguished by a *Shibboleth* upon their Tongues, namely, a difficulty in pronouncing the Letter *R*, which they cannot deliver from their Tongues without a hollow Jarring in the Throat, by which they are plainly known, as a Foreigner is, in pronouncing the *Th.* this they call the *Northumberian* R, and the Natives value themselves upon that Imperfection, because, forsooth, it shews the Antiquity of their Blood.[8]

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[8] The exact wording and spelling of this passage from Defoe vary from source to source; see, for example, Påhlsson (1972: 75).

There is, in fact, even earlier evidence for the existence of the Northumbrian Burr, as noted by Wales (2006: 101):

> Hugh Jones has been left unnoticed as also commenting upon what he calls a "Kind of Burr in the Throat", in his Accidence to the English Tongue, probably earlier than Defoe (1724).

Thus the earliest date of attestation of the Burr predates the earliest evidence of the 'NURSE-NORTH Merger' by some time. In fact, Heslop (1892: xxiv) refers to the suggestion that the Burr originated in the speech of (Harry) Hotspur which, Shakespeare tells us (2 Henry IV, Act 2, Scene 3), was peculiar in some way:

> *For his, it stuck upon him as the sun*
> *In the grey vault of heaven, and by his light*
> *Did all the chivalry of England move*
> *To do brave acts. He was indeed the glass*
> *Wherein the noble youth did dress themselves.*
> *He had no legs that practised not his gait;*
> *And speaking thick, which nature made his blemish,*
> *Became the accents of the valiant;*
> *For those that could speak low and tardily,*
> *Would turn their own affection to abuse*
> *To seem like him. So that in speech, in gait,*
> *In diet, in affections of delight,*
> *In military rules, humours of blood,*
> *He was the mark and glass, copy and book,*
> *That fashioned others.*

The Burr is recorded in the traditional dialects of Northumberland and north Durham in both of the sources discussed in Chapter 2, although there is evidence of its disappearance, in the 20th century, particularly around Tyneside. Viereck (1966: 72) notes, for example, that [ʁ] and [ɹ] are in free variation in Gateshead, and Hughes and Trudgill (1980: 72) record the same variation in the speech of their Tyneside informant.[9]

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[9] The data from the TLS, discussed in Chapters 5, 6 and 7 below, suggest that by 1970, the Burr had almost completely disappeared from Gateshead. Only a few definite instances of uvular R can be heard, particularly in the speech of informant G519.

3.3.2. The phonetics of the Northumbrian Burr

Having reviewed a range of evidence from the 18th, 19th and 20th centuries, Påhlsson (1972: 19) summarises the phonetics of the Northumbrian Burr as follows:

> The Northumbrian Burr of today is a posterior /r/ realised most frequently as a voiced uvular fricative, less often as a uvular flap, and only rarely as a uvular vibrant (roll). Velar fricatives may occasionally be heard. A uvular plosive is reported to have been heard twice by one field worker.

He suggests that over the course of the century before his research, a change in the pronunciation of the Burr, from a trill to a fricative, appears to have taken place. Subsequent to Påhlsson (1972), the only major source for the pronunciation of the Northumbrian Burr is the OC (Rydland 1998), which presents data from the period 1928-1939, as discussed in Chapter 2. The OC data is generally consistent with Påhlsson's findings, with the Burr typically being recorded as a uvular fricative or tap (see Rydland 1998: 22).

A potentially very important, but often overlooked, phonetic feature of the Northumbrian Burr is labialisation. Beal (1985: 41-42) suggests that labialised pronunciation of the Burr would have given it "even more backing and lip-rounding power" and, as such, was crucial in Burr-modification. Labialised pronunciations of the Burr are noted by Påhlsson (1972: 17) to have occurred in the 18th century, and are recorded in Ellis (1889), and in the SED, where labialised pronunciations of the uvular R are described in the phonetic notes for Ebchester, Earsdon and Washington, although they are rarely indicated in the transcriptions.[10] Additionally, Påhlsson (1972: 19) notes "a tendency towards a noticeable lip modification" in his own data from Thropton. Evidence for labialised articulation of the Burr is, however, rather sparse in the phonetically detailed data in the OC. A labialised uvular is only recorded with any frequency in Belford, Matfen and Ovingham. It appears that labial coarticulation of the Northumbrian Burr is/was sporadic yet widespread, and it may well be the case that labialised pronunciations have been under recorded.

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[10] Ellis (1889: 641) states that "The Nb. burr is complicated by some labialisation".

3.3.3. Burr-modification and the loss of rhoticity

Beal (1985: 42) suggests that Burr-modification is concomitant with the loss of rhoticity in the dialects of the northeast of England, probably in the 20th century:

> Thus the burr-modification of [ɜ:] to [ɔ:] in bird ... is a feature of the twentieth century, depending as it does on the rapid and recent loss of post-vocalic /r/ in these dialects.

That this is not, in fact, the case, is evidenced in a variety of data from the 19th and 20th centuries. Firstly, Ellis (1889) and Wright (1905) record [ɔʁ] in NURSE words in the dialects of the northeast of England, suggesting that the change in the vowel took place prior to the loss of coda /r/. We cannot, of course, know the exact pronunciation of the [ʁ] in Ellis and Wright's transcriptions for certain; nor, indeed, can we be sure that what they symbolise as post vocalic [ʁ] was phonetic. Local (1983) suggests, for instance, that Ellis's palaeotype is as much a phonological as a phonetic transcription. Additional evidence for the pronunciation of the NURSE vowel as [ɔ] independent of loss of the following uvular R is, however, available in the OC and the SED. In a number of cases, the historical word final sequence /rC/ (where C is typically an alveolar nasal) has been eliminated, not through the loss of the post vocalic /r/, but through the introduction of an anaptyctic vowel (usually schwa) between the /r/ and the following consonant. In such cases, the uvular R is no longer in coda position and, as such, is not susceptible to weakening and loss. Yet despite this, the vowel [ɔ] is still found before the /r/. The following data from Bamburgh (OC location BAM) demonstrate:

[ɔʁə] is found in: *bird*, *born*, *burn* (n.), *corn*, *horn*, *thorn*, *word*, *worm*

If we add to this the fact that ME /ʊ/ in words like *hurry* and *worry* also usually appears as [ɔ][11] (see Rydland 2002a and 2002b for further discussion), the idea that Burr-modification depends upon weakening and loss of the Northumbrian Burr cannot be sustained.

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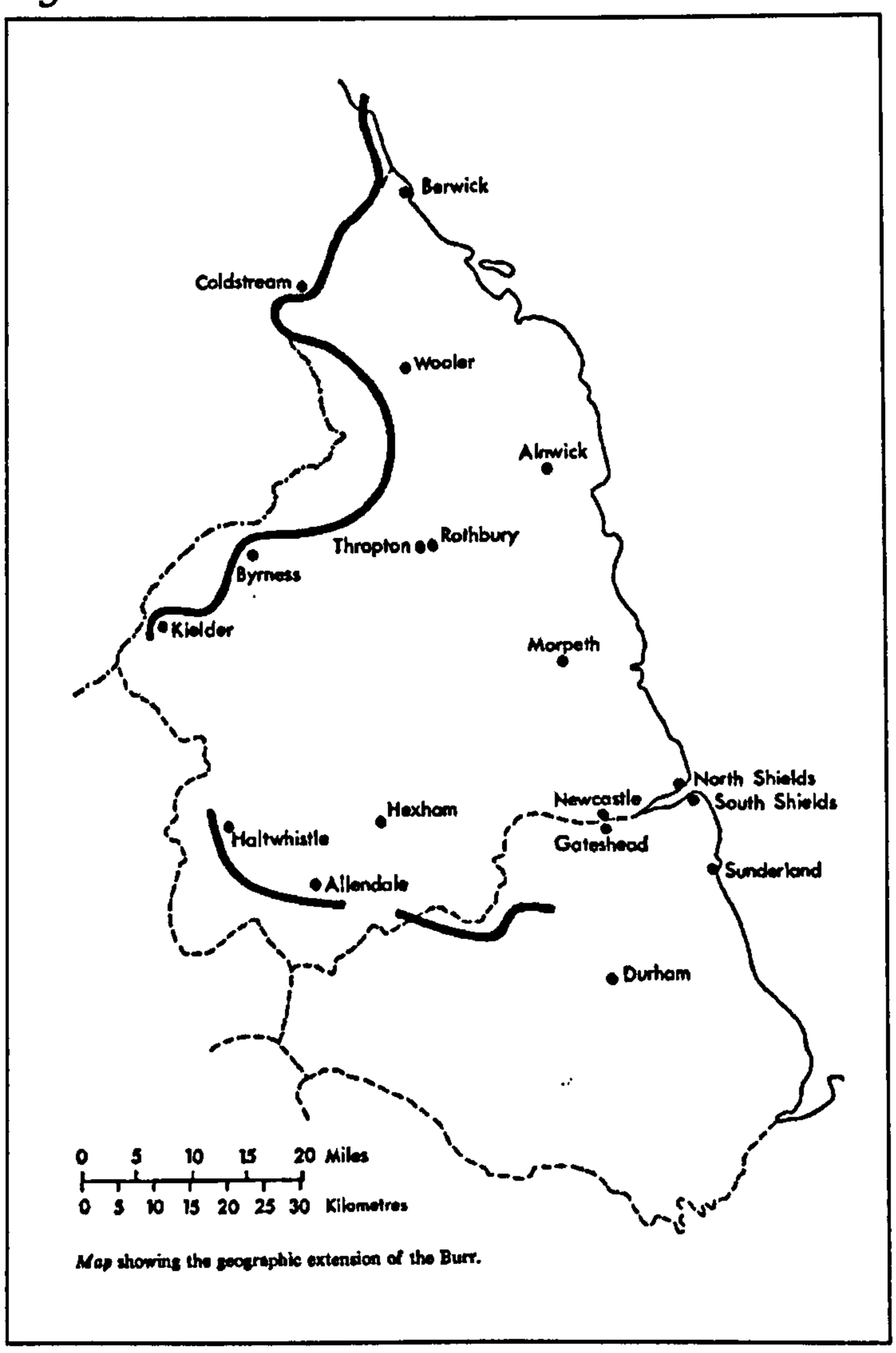
[11] The following [ʁ] is not, of course, lost here.

3.3.4. Geography of the Burr

Although it is entirely possible that geographical expansion or contraction might have led to differing distributions, it is not unreasonable to suggest that the Northumbrian Burr and the 'NURSE-NORTH Merger' might coincide geographically if there is indeed a connection between the two phenomena. The geography of the 'NURSE-NORTH Merger' was described in Chapter 2 (see Figure 16), and in this section I examine the geographical distribution of the Northumbrian Burr.

Påhlsson (1972: 22) provides the following distribution map for the Burr:

Figure 18: The distribution of the Northumbrian Burr.



Map showing the geographic extension of the Burr.

Påhlsson's map shows that the Burr is characteristic of most of the historical county of Northumberland and part of north Durham. Only the central Cheviots and the extreme southwest of Northumberland are outside of the Burr area. Påhlsson (1972: 26) suggests that it is difficult to determine the precise distribution of the Burr in north

Durham due to the "contradictory nature" of the data and the historical mobility of the population.

A number of comments can be added to Påhlsson's analysis. Firstly, it appears that the Burr has, throughout its recorded history, been only variably present in Berwick – this is true of the data in Ellis (1889), the OC (from the early 1930s) and Mather and Speitel (1986). In southwest Northumberland, the Burr is only recorded variably at Haltwhistle in the SED, and not at all in Coanwood from the OC. In Allendale, no instances of the Burr are recorded in either the SED or the OC, despite the (presumably erroneous) statement in Orton and Halliday (1962:14) that "*r* is [ʁ]" in location Nb9 (Allendale).[12]

The situation in north Durham is indeed more complex. Although Ellis fails to record the Burr in South Shields, Wright (1972) records it in the pit village of Whitburn immediately to the south. And although the Burr has not been reported in Sunderland, it is recorded in Washington in the SED (location Du1). Viereck (1966) records the existence of the Burr in Gateshead, whilst the SED records the Burr consistently in Ebchester on the Northumberland border. Between Ebchester, to the west, and Gateshead and Washington, to the east, the evidence is patchy; according to Påhlsson (1972: 24), the Burr is recorded at Annfield Plain in Bailes (1948). These data suggest that the rough southern limit of the Burr passed between Whitburn and Sunderland, south of Washington and Gateshead, east to the area of Consett. The Burr is not recorded in the OC or the SED in the rest of Durham, although Ellis (1889: 644) complicates the picture, by suggesting that the Burr occurred, sporadically at least, in two locations in southern Durham, Kelloe and Bishopton.

3.3.5. Has the Burr been instrumental in the 'NURSE-NORTH Merger'?

In this section, I seek to determine whether the Burr has played the central role in the 'NURSE-NORTH Merger' attributed to it by the hypothesis of Burr-modification. In doing so, I examine three pieces of evidence: the cross-linguistic effects of uvular consonants on adjacent vowels; the development of unstressed final *-er* in words like

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[12] There is no evidence of the Burr at this location in either the Basic Materials or in the associated audio recording.

letter; and the relationship between the geography of the Burr and the 'NURSE-NORTH Merger'.

3.3.5.1. Cross linguistic effects of uvular consonants on adjacent vowels

Consonants of certain kinds are well known to affect the pronunciation of adjacent vowels. Perhaps the most famous example is 'colouring' of /e/ in Proto-Indo-European to /a/ and /o/ by adjacent 'laryngeals' (see Saussure 1887 and Sihler 1995).

Uvulars are one group of consonants known to affect the pronunciation of adjacent vowels. Ladefoged (1997: 602) argues that:

> We need a phonetic theory that allows us to explain why ... high vowels are more likely to be lowered by uvular consonants (as occurs in Serer, Squamish, Quechua, Montana, Salish, and many other languages) than for the reverse to occur.

He suggests that such a theory would use the same articulatory features for consonants and vowels, the result being that "both these classes of sounds have a great effect on one another precisely because they are produced within the same mouth" (Ladefoged 1997: 602). In this theory, Ladefoged associates "mid back vowels with uvular consonants", and here he echoes Catford (1977: 160), who defines his category of 'Dorso-Uvular' sounds as follows:

> dorsal or radical surface of tongue against extreme end of soft palate, including the uvula. Stops [q, G], nasal [N], fricatives [χ, ʁ], trill [ʀ], approximant (vowels) [ʌ, ɔ].

One well-known example of the effect of a uvular consonant on an adjacent vowel, and one which is very apposite in the discussion of Burr-modification in NbTE, occurs in Standard High German. In this language, /r/ is uvular (either a trill, fricative or approximant; see Griffin 1982 and Hall 1993), and is usually only found in prevocalic position. In post-vocalic position, /r/ may be vocalised, giving [ɐ]. The following examples illustrate:

werden	'to become'	['veɐdn̩]
Irland	'Ireland'	['iɐlant]

Where this uvular /r/ historically followed an unstressed [ə], the pronunciation [ɐ] now occurs. This change means that final [ə] (derived from historical final [ə] which was not followed by /r/) and [ɐ] now contrast, giving rise to such pairs as:

diese	'this' (fem.)	[di:zə]
dieser	'this' (masc.)	[di:zɐ]

The close similarity of this development and the development of the unstressed syllable in words like *letter* in NbTE is discussed in Section 3.3.5.2 below.

In summary, then, vowels may be lowered by adjacent uvular consonants, since uvular consonants are particularly associated with mid back vowels phonetically. A clear example of this lowering is seen in the development of [ɐ] from historical [əʁ] in Standard High German. Phonetically, uvular consonants have most in common with mid back vowels. A theory of Burr-modification is entirely consistent with these facts, particularly given the extra "lip-rounding power" associated with labialised pronunciations of the Burr (Beal 1985: 41-42).

3.3.5.2. The development of -er in NbTE

A crucial piece of evidence for the effect of the Northumbrian Burr on preceding vowels comes from the behaviour of the *lett*ER lexical set (see Wells 1982: 166-7) in these dialects. Regardless of the original vowel quality, the unstressed nature of the final syllable of the *lett*ER lexical set led to the reduction of this sequence to /ər/, which resulted in [ə] in StE (see, for example, Dobson 1957: 868-70). The same vowel occurs in the *comm*A lexical set (Wells 1982: 167), which has no historical final /r/.

In NbTE, however, the vowels in *comm*A and *lett*ER are usually not the same. An examination of the *comm*A words *America*, *banana*, *borough*, *Dinah*, *Myra*, *Sarah*,

sirrah, *soda*, *sofa* and *Stella* in the OC reveals that the final unstressed vowel is [ə] at the locations for which we have data.[13] *lett*ER words, on the other hand, usually have a different vowel in NbTE. Ellis (1889: 674-677) records [ɔʁ] in *lett*ER in southeast Northumberland and at Wark in North Tynedale. The OC typically records the vowels [ɐ] or [ɐ][14] in *lett*ER in Northumberland, "roughly equivalent to a centralised cardinal [ɔ] ... but is still different from [ɔ̈]" (Rydland 1998: 25). See, for example, *better*, *father*, *finger*, *master*, *thunder* and *water* in the OC. In the SED, the vowel [ɔᵚ] is typically recorded in *lett*ER words in Northumberland and north Durham (see, for example, *brother* (VIII.1.5), *butcher* (III.11.1; VIII.4.6), *butter* (V.5.4), *farmer* (VIII.4.7), *father* (VIII.1.1), *finger* (VI.7.7), *halter* (I.3.17), *hammer* (I.7.13), *ladder* (I.7.14), *mother* (VIII.1.1), *shoulder* (VI.6.6)).

This vowel also occurs as the second component of diphthongs such as [eɐ] and [uɐ]. These diphthongs typically correspond to similar diphthongs in StE, /eə/ and /uə/, and can be historically analysed, like the StE forms, as deriving from a diphthong with an earlier schwa, followed by /r/, as the second component. Hence [eɐ] and [uɐ] derive from earlier /eər/ and /uər/ respectively, and are further examples of modification of a preceding schwa by the Northumbrian Burr.

Perhaps the most striking feature in these data is that pronunciations of *lett*ER such as [ɔʁ], [ɐ] and [ɔᵚ] are only ever recorded in locations which have the Northumbrian Burr. In locations in Northumberland and Durham which do not have the Burr (e.g. ALH, CNW, COX and STH in the OC, and Nb9, Du3, Du4, Du5 and Du6 in the SED), *lett*ER words uniformly have [ə], occasionally followed by (non-uvular) /r/. Where no /r/ occurs, this is the same vowel as is found in *comm*A. That is, there is a direct correspondence between the appearance of a mid back (or fairly back) rounded vowel in *lett*ER words and the presence of uvular R.

The combination of the distinction between the vowels in *comm*A and *lett*ER, and the geographical co-occurrence of a mid back (or fairly back) rounded vowel in *lett*ER words with the Northumbrian Burr strongly suggests that it is the Burr which is

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[13] The word *china* usually has the *happ*Y vowel in the OC. Final unstressed [ə] also appears in words like *barrow*, *borrow*, *fellow* and *narrow* in NbTE.

[14] See Section 3.2 above for a discussion of the relationship between [ɐ] and [ɐ].

responsible for the retraction and rounding of the vowel in *lett*ER. That is, we have here a clear case of Burr-modification. The striking similarity of this modification with the development of the German sequence [əʁ], described in Section 3.3.5.1 above, speaks for itself. The fact that the Burr has this backing and rounding effect on the *lett*ER vowel suggests that it might also have a similar effect on the vowel in NURSE words.

3.3.5.3. The geography of the Burr and the merger compared

Although they are not identical, the distribution of the Northumbrian Burr and the 'NURSE-NORTH Merger' are very similar. Both phenomena are variably present in Berwick in the far north of Northumberland. The appearance of the 'NURSE-NORTH Merger' in ALH, CNW and Nb9 without the Northumbrian Burr is the major difference in distribution. In Durham, both phenomena are characteristic of the northern portion around Tyneside. With the exception of Coxhoe in the OC, which has the merger but not the Burr, neither is typical of central or southern Durham.

This close similarity in distribution does suggest that the 'NURSE-NORTH Merger' and the Burr are connected, and that the Burr is causal in the merger of NURSE and NORTH. Data such as that from Allenheads and Coxhoe would, however, need to be explained if this is so, and I return to this issue in Sections 3.5 and 3.6 below.

A note of caution is necessary, nonetheless. Although the merger and the Burr are distributed similarly, they share this pattern of distribution with a number of other phonological features which distinguish the dialects of Northumberland and north Durham from those further south and west. An examination of the Linguistic Atlas of England (Orton *et al.* 1978) reveals that there is a bundle of isoglosses separating most SED locations in Northumberland and north Durham from those in the rest of northern England (see, for example, maps Ph5, Ph10, Ph40, Ph43a and Ph222).

3.3.5.4. Summary

The evidence presented above all points in one direction – that the Northumbrian Burr did have a part to play in the development of the 'NURSE-NORTH Merger'. I defer to Section 3.6 any further examination of the effects of the Burr on the NURSE

and NORTH lexical sets since the evidence reviewed in the following sections suggests that the Burr may have been only one factor, albeit a crucial one, in the development of this merger in the northeast of England.

3.4. Other NURSE-NORTH mergers in England

Watt (1998a: 275-276) comments on the existence of NORTH-like vowels in NURSE words in Cleveland in the middle of the 19th century,[15] quoting examples such as *ho't* 'hurt' and *bo'd* 'bird', which resemble similar 19th century spellings of NURSE words in TE (see Section 2.4). Lying beyond the area normally associated with the 'NURSE-NORTH Merger' and the Burr, this data is intriguing, raising as it does questions about the nature and origin of the merger in the dialects of the northeast of England.

The examples quoted in Watt (1998a) from Cleveland are not isolated oddities, however. An examination of traditional dialect data suggests that they are, in fact, only the tip of a phonological iceberg which stretches from north Yorkshire, across the north Midlands, and as far as north Lancashire in the north west of England. NORTH-like pronunciations of NURSE are common in Yorkshire (see, for example, Klein 1914, Cowling 1915, Sykes 1961, Tidholm 1979, and the SED), Lincolnshire (see Oxley 1940 and the SED), Cheshire, Derbyshire and Staffordshire (see Maidment 1992 and the SED), and in Lancashire (see Rydland 1982 and the SED). Sporadic examples of NORTH-like pronunciations of NURSE are also found in Berkshire, Essex, Huntingdonshire, Leicestershire, Rutland and Suffolk (in the SED).

Rather than attempt to synthesise all of the relevant data here, I analyse the pronunciation of NURSE and NORTH in three locations in order to determine whether we are, in fact, dealing with the same 'NURSE-NORTH Merger' found in the northeast of England, or whether these data represent an independent phenomenon. These locations are Egton in North Yorkshire (data from Tidholm 1979), north Lincolnshire (Oxley 1940) and north Lancashire[16] (Rydland 1982).

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[15] Watt refers to Atkinson (1868: xiii), cited in Llamas (1998: 13).

[16] Pre-1974 boundaries; this area is now part of Cumbria.

The relevant data for NURSE and NORTH from Egton in North Yorkshire, from Tidholm (1979), are:

/o:/

border, born, cord, corn, corner, corpse, deform, door, floor, for, force (n.), forge, fork, form, former, forward, horse, moor, north, order, poor, short, sort (n.), storm, thorn, York(shire)

/or/

for, fork, storm

/o/

bird, birth, bur-tree, church, cur, fir, first, fur, furnace, furniture, further, her, horse, hurt, journey, murder, murk, north, nurse, purse, stir, third, thirsty, thirteen, thirty, Thursday, turn, turnip, urchin, word, work, worm, worse, worst, worth

/ə/

church, first, thirsty, thirteen, thirty, Thursday, work, worm, worse, worth

/ə:/

bird, birth, burden, certain, church, cur, curb, deserve, fir, first, fur, furnace, furniture, further, girl, her, hurt, journey, kernel, murmur, nurse, person, preserve, purpose, purse, return, sermon, serve, servant, service, stir, surgery, third, thirsty, thirteen, thirty, Thursday, turn, vermin, word, work, worm, worse, worst, worth

This data reveals that, although NURSE words are frequently pronounced with a short mid back rounded vowel in Egton, there is minimal overlap with NORTH, which typically has a long mid back round vowel. The two NORTH words which are pronounced with the same vowel as NURSE, *horse* and *north* (highlighted), are only variably so, and this pronunciation is almost certainly due to shortening before the following voiceless fricative. A similar pattern of distribution to that in Egton is evident throughout east Yorkshire and the east Midlands, and it appears that, despite the phonetic similarity of NURSE and NORTH, there is no merger.

The relevant data for NURSE and NORTH for north Lincolnshire, from Oxley (1940), are given below. Since a consistent distinction between NORTH and FORCE is evident in the data, I ignore FORCE in the current discussion.

[o]

bird, burden, curse, dirt, dirty, first, fortnight, furnace, furnish, furniture, further, hurt, hurting, journey, purse, shirt, third, thirteen, thirteenth, thirty, thirtieth, turn, turnip, urchin

[ə]

birch, church, fern, skirt, thirsty, turf

[əɹ]

cork, earth, fork, hoard, horn, horse, landlord, lord, morning, mortar, mortgage, mourn, orchard, organ, Ormsby, short, storm, thorn, Thorpe, word, world, Yorkshire

This data reveals a curious situation in north Lincolnshire whereby NURSE and NORTH appear to have swapped places. NURSE is pronounced, by and large, with a mid back rounded vowel, whilst NORTH is pronounced, by and large, with a centralised unrounded vowel. As can be seen from the data, there is minimal overlap of NURSE and NORTH, with only a few items (highlighted) crossing between the lexical sets. Whatever their precise history, it appears, from Oxley's data at least, that there has been no significant merger of NURSE and NORTH in north Lincolnshire, despite the NORTH-like pronunciations of NURSE words in the area. This pattern of distribution is reminiscent of that found in Byers Green in County Durham, described in Section 3.2.6 above.

The data from Rydland (1982), for both locations in north Lancashire, reveal that the normal vowel in NURSE is [ɚː], occasionally shortened to [ə] or [ɚ], and the vowel in NORTH words is [ɔɚ]. In a number of cases, however, NURSE words also have [ɔɚ]. These are listed in Table 13.

These data show that the [ɔɚ] pronunciation of NURSE in north Lancashire is entirely restricted to words derived from ME /ʊr/. With the possible exception of *kernel*, which Rydland (1982: 188) suggests may have derived from ME /ʊr/ too, words derived from ME /ɪr/ do not contain [ɔɚ], nor do words derived from ME /ɛr/. Nevertheless, these data suggest that there has been a partial merger of NURSE and NORTH in north Lancashire, of a similar type to that found in the northeast of England.

Table 13: [ɔə˞] in NURSE words in north Lancashire.

Lexical Item	Coniston	Cartmel
burn (*v.*)	ɔə˞	ɔə˞
burr (*halo*)		ɔə˞
burs (*goosegrass*)	ɔə˞	
curl	ɔə˞	ɔə˞
curse	ɔə˞ ~ ə˞ ~ ə	ɔə˞ ~ ə
furniture	ɔə˞	ɔə˞
hurt	ɔə˞	ɔə˞
journey	ɔə˞	ɔə˞
kernel	ə: ~ ɔə˞	ə:
murder	ɔə˞	ɔə˞
nurse	ɔə˞	ɔə˞
purple	ɔə˞	ɔə˞
purpose	ɔə˞	ɔə˞
purse	ɔə˞ ~ uə˞	ɔə˞
Thursday	ɔə˞	ɔə˞
turf	ɔə˞ ~ ə˞:	ə˞:
turkey	ɔə˞	ɔə˞
turn	ɔə˞	ɔə˞
urchin	ɔə˞	ɔə˞
word	ɔə˞ ~ ə˞:	ɔə˞ ~ ə˞:
worm	ɔə˞ ~ ə˞:	ə˞:

Although this review of 'NURSE-NORTH Merger'-like phenomena in other parts of England has necessarily been selective, the essential patterns are clear. In Yorkshire and Lincolnshire, there does not appear to have been any significant merger of NURSE and NORTH, despite the close phonetic similarity that obtains between the two lexical sets in some locations. In north Lancashire, on the other hand, there has been a partial merger of NURSE and NORTH, involving ME /ʊr/.

The relationship of these patterns of development to the 'NURSE-NORTH Merger' in the northeast of England is not clear. Although the situation in north Lancashire is similar, the fact that the two areas are separated by a swathe of non-merging dialects in Westmorland, Cumberland, and southwest Northumberland, suggests that we may, in fact, be dealing with two independent developments.

3.5. Orton's suggestion

Following his comment that:

> The current vernaculars in the county [Northumberland] are not necessarily pure. It is indeed beyond question that they have been corrupted to a large extent by extraneous influences, and that they have absorbed a great deal from Standard English in the course of the last four or five centuries. (Orton 1929: 128)

Orton (1929: 129) states that:

> Northumbrians frequently employ the same vowel in words of the type *board*, *corn*, *horn* etc., viz.: [ɔ̄] (*low-back-tense-round*), as in words like *bird*, *third* etc. In neither group is the sound in question the true native development: the former class contain, when normal, the diphthong [uə̯] (*high-back-tense-round*, lowered, + *mid-flat-slack* lowered towards *low-back* position), whereas the latter exhibit [eə̯] (first element being *mid-front-tense*). Diphthongal pronunciations of these kinds, though still extant, are obsolescent. The [ɔ̄]-forms are similarly of non-native origin.

Orton suggests that the native development of ME /ɔ:r/ (FORCE) is the [uɞ]-type diphthong discussed in Section 3.2.3 above, whilst the native development of ME /ɪr/ is the [eɞ]-type diphthong discussed in Section 3.2.2. In both these historical lexical sets, Orton suggests that the [ɔ:] variant is not a native development, but rather is the result of external influence, presumably from StE. At first sight, this statement is puzzling, suggesting as it does that the vowel [ɔ:] in (at least some) NURSE words is the result of StE influence on the dialects of the northeast of England, since [ɔ:] does not occur in StE pronunciations of NURSE. Given the discussion in Chapter 2, Section 2.3.3, concerning the pervasive nature of external influence on the phonology of traditional dialects, Orton's suggestion (which he did not follow up) is, nevertheless, intriguing.

The discussion in Sections 3.2.2 and 3.2.3 revealed that [ɔ:] is an alternative pronunciation to [eɞ] and [uɞ] in words derived from ME /ɪr/ and /ɔ:r/ respectively, and, indeed, is the exclusive pronunciation in some locations, particularly around Tyneside. Other than the fact that this alternate pronunciation exists for these words, is there any evidence for an external origin of the [ɔ:]-type pronunciations?

It appears, in fact, that there is, in the form of evidence from the distribution of [ɔː]-type pronunciations in words which had ME /ɛr/. Recall that the discussion in Section 3.2.4 above identified three major reflexes of ME /ɛr/ in NbTE: [eə], [ɑː] and [ɔː]. Of these, [eə] and [ɑː] could occur in words derived from ME /ɛr/ which have either /ɑː/ or /ɜː/ in StE. That is, they do not follow the split pattern of development characteristic of StE, discussed in Section 3.2.4 above. [ɔː], on the other hand, only occurs in words derived from ME /ɛr/ which have /ɜː/ in StE (i.e. not in those which have /ɑː/ in StE). That is, [ɔː] does follow the split pattern of development of ME /ɛr/ characteristic of StE. Where ME /ɛr/ is represented by /ɜː/ in StE, NbTE may have [ɔː], but where ME /ɛr/ is represented by /ɑː/ in StE, NbTE may not have [ɔː]. This identical lexical distribution of [ɔː] in NbTE and of /ɜː/ in StE suggests that [ɔː], in this case at least, does have its origin in the StE pattern, as Orton hypothesised. [ɔː], then, would appear to be a localised development of StE /ɜː/ (or some similar earlier form).

But how do we get from StE /ɜː/ (or some similar earlier form) to NbTE [ɔː]? It is here that the idea of Burr-modification plays a key role in the development of the 'NURSE-NORTH Merger'. As was discussed in Section 3.3.5.2 above, the historical uvular R in NbTE was responsible for the backing and rounding of the unstressed central vowel [ə] in words like *better* and *water*. The sequence /əʁ/ gave rise to a vowel variously symbolised as [ɐ], [ɒ] or [ɔˠ]. Lass (1999: 113) suggests that the predecessor of StE /ɜː/ was /ər/ or /ʌr/ (see Figure 14 above). If such a sequence was adopted into a still rhotic NbTE (and it seems that NbTE was rhotic until recently – see Section 3.3.3 above), it might well have resulted in something like [əʁ] or [ʌʁ]. Given that the Burr changed unstressed /əʁ/ to [ɒ] ~ [ɐ] ~ [ɔˠ], it follows that it would also have had an effect on stressed [əʁ] or [ʌʁ], leading to a rounding and backing of the vowel. A change along the lines of [əʁ] / [ʌʁ] > [ɔʁ] > [ɔˠː] > [ɔː] would result in the distribution of [ɔː] as a reflex of ME /ɛr/.

The geographical distribution of [ɔː]-type vowels in words with ME /ɛr/ also supports this hypothesis. Although forms of the 'NURSE-NORTH Merger' are recorded in areas where the Burr is unknown, in almost every one of these cases, there is no involvement of ME /ɛr/ in the merger. Appendix 3 reveals that the 'NURSE-NORTH Merger' is consistently recorded in Coxhoe in Durham, but that not a single instance of ME /ɛr/ is recorded with the merged vowel [ɔː]. Similarly, the analysis in Section

3.2.5 above revealed that although there was a 'NURSE-NORTH Merger' in Allendale, there was also no involvement of ME /ɛr/ there. The only definite exceptions to this otherwise general rule, are the words *clerk*[17] and *fern* in Coanwood, a location which lies just beyond the Burr area.[18]

This hypothesis not only explains the identical lexical distribution of NbTE [ɔ:] and StE /ɜ:/ in words which had ME /ɛr/. It also fits with the known behaviour of the Northumbrian Burr and the geographical distribution of involvement of ME /ɛr/ in the 'NURSE-NORTH Merger'. In Chapter 2, Section 2.3.3, we saw that phonological patterns adopted from StE are common in traditional NbTE, and this appears to be another case of this, as suggested by Orton (1929). But can we extrapolate, on the basis of the behaviour of reflexes of ME /ɛr/, from this hypothesis to explain [ɔ:] variants in words derived from ME /ɔ:r/ and /ɪr/, as Orton suggests? Unfortunately in these cases we have no lexical heuristic as we did for ME /ɛr/. Nevertheless, the "obsolescent" nature of [eɐ] and [uɐ] in these words, and the fact that these pronunciations are almost unknown in the traditional dialects in and around urban Tyneside, suggests that the influence of StE has been at work here too, levelling archaic localised distinctions. In the case of ME /ɪr/, it seems not unreasonable to suggest that at least some [ɔ:] pronunciations are the result of Burr-modification of earlier StE [əʁ] or [ʌʁ]. Although [ɔ:] in FORCE words cannot be explained in quite the same way, the fact that these words have [ɔ:] in StE would favour the replacement of [uɐ] by [ɔ:] in the dialects of the northeast of England.

3.6. Summary of developments in light of Orton's suggestion

In Section 3.2 above, I summarised the developments of the ME sources of the NURSE and NORTH lexical sets in NbTE. In light of the discussion of Burr-modification and Orton's suggestion, I examine these developments again in this section. First, however, I examine the possibility that similar developments of NURSE

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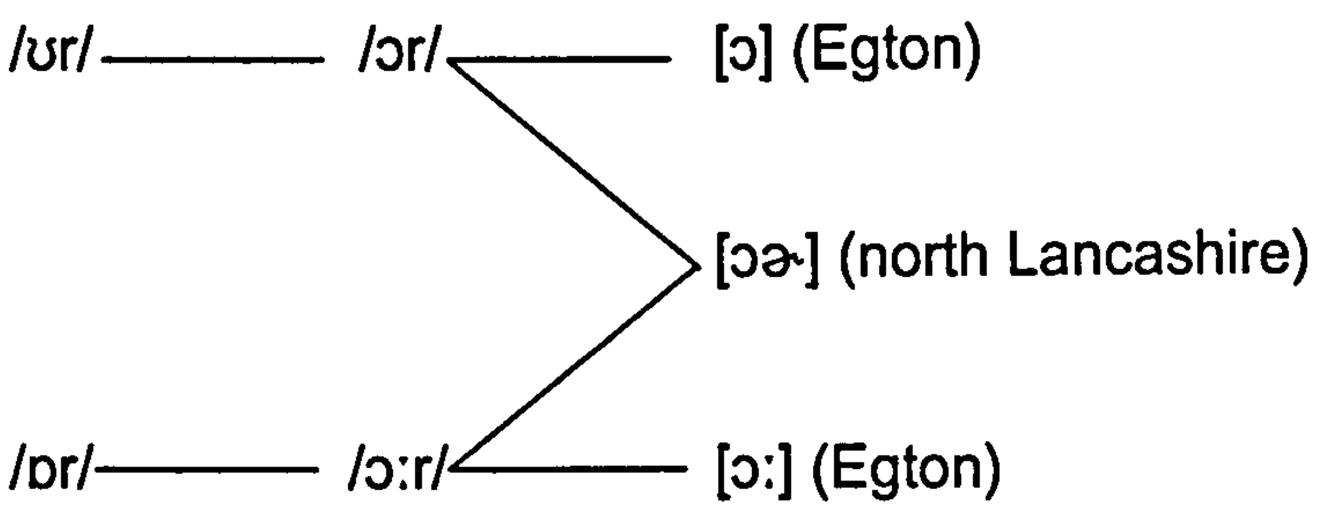
[17] Although *clerk* typically contains /ɑ:/ in RP, it may alternatively contain /ɜ:/, signifying that it need not belong to the group of words with ME /ɛr/ which only have /ɑ:/ in RP and [ɑ:] (never [ɔ:]) in NbTE.

[18] It appears that the converse is not true – locations with the Burr need not have [ɔ:] in words with ME /ɛr/, although they almost always do. See, for example, the data from Capheaton in Appendix 3.

and NORTH in other parts of England might be connected with each other and with the 'NURSE-NORTH Merger' in the northeast of England.

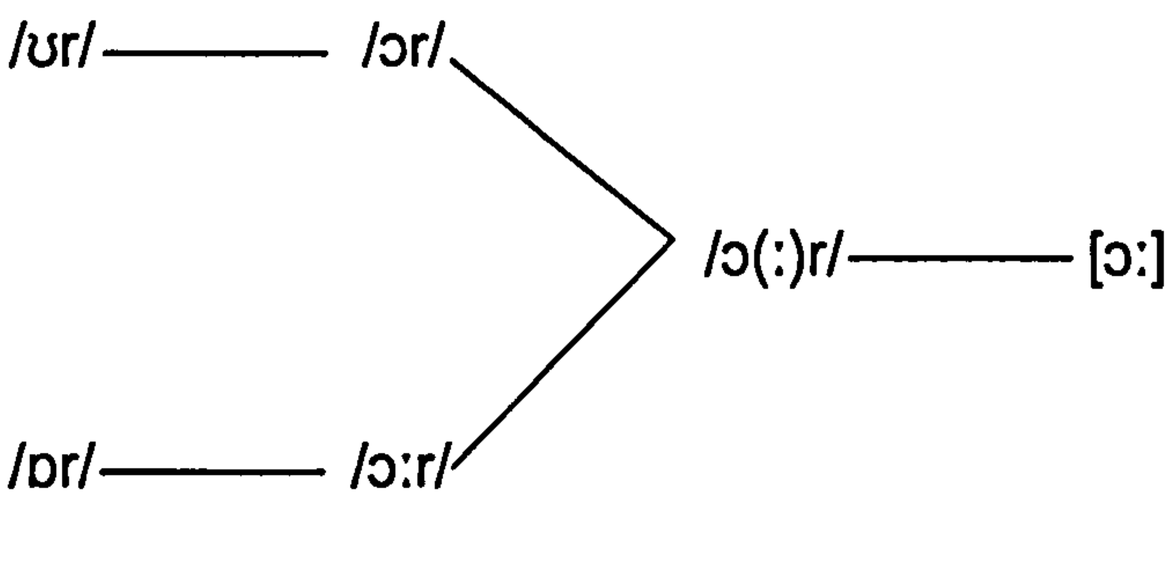
The partial merger of NURSE and NORTH in north Lancashire and the non-merger of NURSE and NORTH in Egton could easily have developed from the same historical system, as shown in Figure 19.

Figure 19: Possible development of ME /ʊr/ and /ɒr/ in Yorkshire and north Lancashire.



Given that the partial merger of NURSE and NORTH in north Lancashire can be derived in this way, it is, of course, possible that at least part of the 'NURSE-NORTH Merger' in NbTE has the same origin, as illustrated in Figure 20.

Figure 20: Possible development of ME /ʊr/ and /ɒr/ in NbTE.



If the 'NURSE-NORTH Merger' in the northeast of England did develop in the way suggested in Figure 20, this has a number of consequences for the hypothesis outlined in Sections 3.3.5.4 and 3.5 above. Firstly, it suggests that the 'NURSE-NORTH Merger' has at least part of its origin in a geographically widespread development of ME /ʊr/ to a mid back rounded vowel. Secondly, it suggests that the Burr was not responsible for the lowering of ME /ʊr/ to /ɔr/, since this also takes place

in areas which never had the Burr. Thirdly, it suggests that the Burr may indeed have been responsible for the development of [ɔ:] pronunciations in words derived from ME /ɛr/,[19] at least, since mid back rounded pronunciations of these words are not found in other areas.[20] Lastly, it suggests that the 'NURSE-NORTH Merger' is a local development in the northeast of England, albeit one paralleled by the independent merger of NURSE and NORTH in north Lancashire. All of these consequences are entirely consistent with the origin of the 'NURSE-NORTH Merger' suggested in Sections 3.3.5.4 and 3.5 above. If this suggested development is correct, however, the potential lack of merger of ME /ʊr/ and of /ɒr/ in south Durham (discussed in Section 3.2.6 above), and the resultant break in geographical continuity between North Yorkshire and north Durham, would require explanation.

In light of this, and of the discussions in Sections 3.2, 3.3, 3.4 and 3.5, I now examine the likely history of each of the source ME sequences in turn.

3.6.1. ME /ɔ:r/ (FORCE)

The reflexes of ME /ɔ:r/ in NbTE are [uɐ] and [ɔ:]. The final [ɐ] in [uɐ] (also [ɐ], [ɔᵚ], etc.) derives from the Burr-modification of the schwa in the earlier diphthong [uə], attested in locations without the Burr (as discussed in Section 3.2.5). The course of development of [uɐ] must have been something along the lines of /ɔ:r/ > /o:r/ > /oər/ > /uəʁ/ > [uɐ]. Given that [uɐ] is not characteristic of Tyneside or the surrounding areas, it could be argued that [ɔ:]-type pronunciations of ME /ɔ:r/ are derived from external (standard) influence, as suggested by Orton.

3.6.2. ME /ɒr/

The reflex of ME /ɒr/ in NbTE is [ɔ:], presupposing a change along the lines of /ɒr/ > /ɔʁ/ > /ɔ:ʁ/ > [ɔ:]. The transcription [ɔᵚ:] in the SED represents a late stage in this change. Since this development does not differ materially from that found in more standard varieties of English, there is no trace of external influence here.

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[19] Via /ər/.

[20] See, for example, the comments in Maidment (1992: 153-154).

3.6.3. ME /ʊr/

The reflex of ME /ʊr/ in NbTE is also [ɔ:]. It is difficult to determine whether the change was /ʊr/ > /ɔʁ/ > /ɔ:ʁ/ > [ɔ:] or /ʊr/ > /əʁ/ > /ɔʁ/ > /ɔ:ʁ/ > [ɔ:], although the evidence from other varieties of English (for example, in Yorkshire, Lincolnshire and Lancashire) suggest that the first alternative is correct. Similarly, the extent to which more standardised patterns contributed to this development are unknown, since /əʁ/ in these words would ultimately give rise to [ɔ:] via Burr-modification (e.g. /əʁ/ > /ɔʁ/ > /ɔ:ʁ/ > [ɔ:]).

3.6.4. ME /ɪr/

The reflexes of ME /ɪr/ in NbTE are [eɵ] and [ɔ:]. The final [ɵ] in [eɵ] (also [ɐ], [ɔᵚ], etc.) derives from the Burr-modification of the schwa in the earlier diphthong [eə], attested in locations without the Burr (as discussed in Section 3.2.5). The course of development of [eɵ] must have been something like /ɪr/ > /er/ > /eəʁ/ > [eɵ]. Given that [eɵ] is not characteristic of Tyneside or the surrounding areas, it could be argued that [ɔ:] pronunciations of ME /ɪr/ are derived from external (standard) influence, as suggested by Orton. However, since even those areas with no Burr have [ɔ:] for ME /ɪr/ at least some of the time, it may well be the case that there has been a tendency to merge ME /ʊr/ and /ɪr/ throughout their history. Local versions of standardised pronunciations, e.g. /əʁ/, would, however, ultimately give rise to [ɔ:] via Burr-modification (e.g. /əʁ/ > /ɔʁ/ > /ɔ:ʁ/ > [ɔ:]).

3.6.5. ME /ɛr/

The reflexes of ME /ɛr/ in NbTE are [ɑ:], [eɵ] and [ɔ:]. [ɑ:], the least problematic of these variants, would have developed along the lines of /ɛr/ > /ar/ > /aʁ/ > /a:ʁ/ > [ɑ:].[21] The final [ɵ] in [eɵ] (also [ɐ], [ɔᵚ], etc.) derives from the Burr-modification of the schwa in the earlier diphthong [eə]. The reasons for the split development of ME /ɛr/ to [ɑ:] and [eɵ] remain unclear.

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[21] The precise place of pre-R lengthening of /a/ in this development cannot be known for certain, although transcriptions in Ellis (1889) and Wright (1905) suggest /aʁ/ > /a:ʁ/. The SED transcription [aᵚ:] represents a late stage in this change.

Since [ɔ:] in words with ME /ɛr/ is found only in those words which have /ɜ:/ in StE, and is absent in those locations which do not have the Burr (including Lancashire, Lincolnshire and Yorkshire), it is the best candidate for a pronunciation derived from non-localised varieties of English. By Burr-modification, the local version of a more standard pronunciation, e.g. /əʁ/, would give rise to [ɔ:] via the changes /əʁ/ > /ɔʁ/ > /ɔ:ʁ/ > [ɔ:].

3.7. An Irish English origin for the 'NURSE-NORTH Merger'?

To conclude this survey of the history of the 'NURSE-NORTH Merger', I examine one final intriguing suggestion. Watt (1998a: 123) suggests a novel explanation for the origin of this merger:

> The retraction of the NURSE vowel in TE may be a similar reflex to that found in some forms of Irish English (indeed, [ɔɹ] is stereotypical in Irish pronunciations of words like *sir* and *thirty*).

Although this suggestion is only made in passing, it is worth examining here in some detail, not only since the impact of Irish immigration on British Urban Englishes has recently generated some interest,[22] but also because it would appear to cast doubt on the hypothesis outlined in Sections 3.5 and 3.6 above.

Watt's statement that "[ɔɹ] is stereotypical in Irish pronunciations of words like *sir* and *thirty*" does, at first sight, appear to be true, in some cases at least. The following is a list of spellings from various sources which are suggestive of a 'NURSE-NORTH Merger' in Irish English:

a) Harris (1985: 209) discusses early evidence of the pronunciation of Belfast Vernacular found in D. Patterson (1860), among which the spelling *torpentine* is given for 'turpentine'.

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[22] At the University of Aberdeen, June 2004, a one-day colloquium, *The Influence of the Languages of Scotland and Ireland on Linguistic Varieties in Northern England*, was held to investigate this issue. See also Beal and Corrigan (2000) and Allen *et al.* (2004).

b) In William Dean Howells's *An Imperative Duty* (1891), there are two scenes involving an Irish manservant. The word 'sir' is repeatedly represented as *sor* in his speech; similarly 'first' appears as *forst*.

c) In Joyce (1910: 78), he notes that "*Wor* is very usual in the south for *were*".

d) In Macafee (1996), NURSE words are frequently listed with alternative *or* spellings, e.g. *bird~bord*, *burn~born* (vb.), *church~chorch*, *dirt~dort*, *further~ford(h)er*, *turf~torf*, *urchin~orchin*

These spellings of Irish pronunciations of NURSE words looks very similar to the kinds of spellings used to represent the 'NURSE-NORTH Merger' in TE (see Chapter 2, Section 2.4). However, are the pronunciations of NURSE words in Irish English and TE connected, as Watt (1998a) appears to suggest? In order to answer this question, I suggest, in light of research by, for example, Bickerton (1981, 1984), that it is necessary to test this hypothesis against three heuristics. These are:

i) What/Manner: Was the linguistic feature in question a feature of Irish English?
ii) When/Time: Does an explanation based on Irish English influence fit with the known chronology of the linguistic feature and of Irish immigration to the area?
iii) Where/Place: Does the geographical distribution of the linguistic feature fit with the geographical distribution of Irish immigration?

In other words, we must be sure that the right speakers are "in the right place at the right time" (Muysken and Smith (1986: 2); Muysken and Smith also term this issue "Who, What, Where and Why?"). I suggest that it is only after these issues are addressed that we can begin properly to evaluate any hypothesis that this or any linguistic feature, for that matter, is due to contact with Irish English.

3.7.1. Heuristic (i): Was the linguistic feature in question a feature of Irish English?

The answer to the first of these questions is the most crucial of the heuristics, in that, if it is found to be negative, an explanation based on Irish English influence cannot be

sustained. In order to answer this question for the 'NURSE-NORTH Merger', it is necessary to move beyond an examination of spelling pronunciations in literature and other popular sources, to an investigation of linguistic data for the NURSE and NORTH lexical sets in the dialects of Ireland in the 20th and 21st centuries. Although it is impossible to know for certain what kind of English was spoken by Irish immigrants to Tyneside in the mid 19th century, an examination of more recent linguistic data from the traditional dialects of Irish English should reveal whether there is any evidence that a 'NURSE-NORTH Merger' could ever have been part of Irish English. Table 14 presents Irish English data for the pronunciation of the NURSE and NORTH lexical sets. The data comes from a variety of locations in Ireland, most of which provided large numbers of immigrants to Tyneside (see Neal 2000). Unfortunately, we have little or no traditional dialect data for a number of locations in Ireland which also provided large numbers of immigrants to Tyneside, e.g. Mayo and Sligo, but the general patterns of the development of the NURSE and NORTH lexical sets in Ireland are apparent.

Table 14: The development of the NURSE and NORTH lexical sets in Irish English.

ME	ɔ:r	ɒr	ʊr	ɪr	ɛr
Ulster Scots[23]	or	or, ɔr	ʌr	ɛr, ʌr	ɛr
Southwest Tyrone Traditional Dialect[24]	or	ɔr	ör	ɪr, ör	ɛr, ar
Conservative Belfast Vernacular[25]	or	ɔr	ör	?	ɛr
North Roscommon[26]	o:r	ɑ:r	ɜr	er, ɜr	er

The data from these dialects do not reveal any 'NURSE-NORTH Merger' in Irish English, nor does it look like there ever was one, since most of the original distinctions are still intact. Although the development of ME /ʊr/ resembles the development of /ɒr/ in some locations, they are never the same, and are often differentiated in terms of vowel quantity as well as vowel quality (NURSE is typically

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[23] Gregg (1964), Gregg (1985), Mather and Speitel (1986), and Montgomery and Gregg (1997).

[24] Ongoing research by the Warren Maguire.

[25] Harris (1985).

[26] Henry (1952).

short, NORTH long). ME /ɛr/ is usually kept distinct from both NURSE and NORTH in all of these varieties.

How these data relate to spellings such as those discussed above is something which needs further investigation. It can be seen, however, that the answer to the first question, whether the linguistic feature in question was a feature of Irish English, appears to be 'No'. Of course, the possibility that the passage of time may have obscured an earlier merger in Irish English cannot be entirely ruled out, but the data presented above suggest that this is unlikely.

3.7.2. Heuristic (ii): Does an explanation based on Irish English influence fit with the known chronology of the 'NURSE-NORTH Merger' and of Irish immigration to the area?

In order for Irish English influence to have been a (or, indeed, the) factor in the merger of the NURSE and NORTH lexical sets, it follows that the merger can only have begun with the arrival of significant numbers of Irish English speakers in the northeast of England. If a particular feature of a British (urban) dialect is present before the arrival of significant numbers of Irish immigrants, then Irish English cannot be the *origin* of the feature. At best, Irish English may have had a *reinforcing* effect (presuming that heuristic (i) is satisfied).[27]

According to MacRaild (1999), Neal (1997, 2000) and Allen *et al.* (2004), major Irish migration to Tyneside began in the middle of the 19th century. This being the case, an explanation of the origins of the 'NURSE-NORTH Merger' lying in Irish English influence suggests that the 'NURSE-NORTH Merger' was not present in the form we know it before this time.

As I have shown in Chapter 2, Section 2.4, however, there is evidence to suggest that the 'NURSE-NORTH Merger' was a feature of the traditional dialects of the northeast of England from at least the middle of the 19th century, and possibly from as early as the second half of the 18th century. As a result, it seems highly unlikely

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[27] See Harris (1991) for further discussion of this kind of reinforcing effect.

that Irish English influence could account for the presence of the 'NURSE-NORTH Merger' in TE, given that the evidence for the merger in the dialect predates the arrival of the Irish on Tyneside in the 19th century. The answer to the second question, whether an explanation based on Irish English influence fits with the known chronology of Irish immigration to the area, is also, therefore, 'No'.

3.7.3. Heuristic (iii): Does the geographical distribution of the linguistic feature fit with the geographical distribution of Irish immigration?

In order for Irish influence to have been a (or the) factor in the merger of the NURSE and NORTH lexical sets, it follows that the merger should be most characteristic of the areas of highest Irish settlement in the Northeast. MacRaild (1999), Neal (1997, 2000) and Allen *et al.* (2004) suggest that post-Famine Irish migration to the northeast of England – and indeed more generally - was concentrated in the major urban centres (Tyneside, Wearside and Teeside, in particular). This being the case, the pronunciation of the NURSE and NORTH lexical sets ought to be more similar to Irish English in these areas than in the rural hinterland. As has been discussed in this chapter and Chapter 2, however, the 'NURSE-NORTH Merger' has been characteristic of the traditional dialect of most of Northumberland, rural and urban, as well as parts of north Durham throughout its recorded history. This state of affairs pertains to the SED data from the middle of the 20th century, the OC data from the first half of the 20th century, and the data presented in Ellis (1889). Indeed in Ellis (1889), the geographical limits of the 'NURSE-NORTH Merger' appear to be more or less identical with the geographical limits recorded in the later surveys.

Any explanation of the origin of the 'NURSE-NORTH Merger' lying in Irish English influence thus fails to explain how the merger is also characteristic of such remote areas as the South Tyne Valley, the Cheviot slopes, and north Northumberland. The geographical attestation of the 'NURSE-NORTH Merger' does not support the hypothesis of an origin in Irish influence on the dialect.

Hence the answer to the third question, whether the geographical distribution of the linguistic feature fits with the geographical distribution of Irish immigration, is also 'No'.

3.7.4. Summary

The idea that the 'NURSE-NORTH Merger' originated in Irish English influence on TE fails to fulfil all three of these heuristics, and as such, cannot explain the origin of this feature in TE. It should be clear from the above discussion that the linguistic, chronological and geographical evidence does not support the hypothesis that the 'NURSE-NORTH Merger' in TE has its origin in Irish English.

3.8. Conclusions

The aim of the analysis in this chapter was to uncover the origins of the 'NURSE-NORTH Merger' in TE and, in so doing, to better explain the nature of this merger. Combined with the analysis in Chapter 2, it is now possible to give an answer to the question *What is the 'NURSE-NORTH Merger'?*, at least as it is revealed in the traditional dialect sources.

The answer is not, however, straightforward. The examination of the history of the merger in this chapter reveals that there is no one uniform 'NURSE-NORTH Merger' in the dialects of the northeast of England. Instead, the merger means different things in different places, and as such, it is best described in terms of its history.

At its core lies the merger of ME /ɒr/ and /ʊr/, and this merger is shared by almost all of the varieties in Northumberland and north Durham. But defining the 'NURSE-NORTH Merger' in this way alone does not distinguish it from similar phenomena in other parts of England which, although potentially related, are distinct from the merger in the northeast. All 'merging' varieties in the northeast of England also involve ME /ɪr/ and /ɔ:r/, some completely, but others only variably so. In addition, most varieties variably incorporate a subset of ME /ɛr/ words into the merger, and it is the lexically specific nature of this change which suggests that the 'NURSE-NORTH Merger' is the result of internal change and external influence. The degree to which earlier lexical distinctions survive, at least variably, at any given location, has important consequences for the definition of the 'NURSE-NORTH Merger' at that location. Clearly the status of the merger at a location like NCL in the OC, which does not differentiate between ME /ɔ:r/, /ɒr/, /ʊr/ and /ɪr/, is very different to the status of

the merger at a location like CAP which has variably distinct developments of ME /ɔ:r/ and /ɪr/.

As previous analyses of the 'NURSE-NORTH Merger' have suggested, the Northumbrian Burr has played a role, but in perhaps unexpected ways. The lowering of ME /ʊ/ before /r/ is shared with other varieties of English which seem never to have had uvular R. Hence, this central feature of the 'NURSE-NORTH Merger' need not be explained by Burr-modification.

The fact that the Northumbrian Burr has modified the quality of the unstressed central vowel in */ettə*ER words helps to explain why the lexical distribution of ME /ɛr/ words characteristic of StE appear in the northeast with an [ɔ:]-type vowel, however. If Orton's suggestion is correct, these pronunciations originate in Burr-modification of early non-local /ər/ in NURSE words.

It might well be the case, then, that one of the most stereotypical features of the traditional dialects of the northeast of England derives, in part, from a non-local, standard-like variety of English. That this should be so is not surprising, given that such influence pervades the phonology of these dialects. This fact not only establishes the futility of searches for 'pure' dialect, but also, even more importantly, gives us an insight into the linguistic landscape within which traditional dialect features exist. Non-localised phonological features could only be so pervasive in the phonology of traditional dialects if those non-localised phonological features were part of the daily linguistic milieu within which traditional dialect speakers operated. If the 'NURSE-NORTH Merger' has its origin, in part at least, in influence from more standardised varieties of English, then it follows that the kind of speakers who consistently use the 'NURSE-NORTH Merger' also find themselves in a speech community where traditional pronunciations coexist alongside more standardised supra-local forms. Combined with the evidence from the analysis of the sources of data for the 'NURSE-NORTH Merger' in Chapter 2, this suggests that merged and non-merged forms might well coexist in TE. In the remainder of this thesis, I turn to the consequences of this for our understanding of the 'NURSE-NORTH Merger' and for the history of the merger itself.

Chapter 4: The Apparent Reversal of the 'NURSE-NORTH Merger'

4.1. Introduction

My analysis of the traditional dialect data, in Chapters 2 and 3, suggested that, apart from a number of lexically specific exceptions, the NURSE and NORTH lexical sets are pronounced alike in the Tyneside area. However, Wells (1982: 375) qualifies his account of the 'NURSE-NORTH Merger' in TE with the observation that:

> In a less broad Newcastle accent, NURSE words have [ɜ:] or something similar, e.g. rounded centralised-front [ø:]. It appears that no hyper-correction of the type *short* *[ʃø:t] occurs: either the merger of NURSE and NORTH was never categorical, or speakers are unusually successful in sorting the two sets out again.

Wells's observation is supported by more recent research on TE by Watt (1998a) and Watt and Milroy (1999), which suggests that the 'NURSE-NORTH Merger' is disappearing from TE. Given the assertion by Labov (1994: 311) that "It is generally agreed that mergers are irreversible: once a merger, always a merger", which I return to below, this apparent reversal of the 'NURSE-NORTH Merger' is clearly problematic.

'Wells's Problem' raises a number of intriguing questions concerning the nature of this apparent change. Wells implies that this change should have produced hypercorrect forms of NORTH but, for one reason or another, it does not appear to have done so (the speakers were "unusually successful in sorting the two sets out again"). Although he does not pursue the matter, Wells suggests that this might be explained by assuming that "the merger of NURSE and NORTH was never categorical". But what does Wells mean by "never categorical"? I have already suggested (Chapter 1) that the term 'categorical' is ambiguous. We do not know whether Wells (1982) means that the merger of NURSE and NORTH was never categorical for every single speaker of TE, whether the merger of NURSE and NORTH was only found in the speech of some speakers and not others, or whether

the merger of NURSE and NORTH was restricted to only particular lexical items, and perhaps he intends some combination of these alternatives. As the discussion in Chapter 1 makes clear, the importance of establishing the definition of the key term 'categorical' is central to understanding the term 'merger'.

In this chapter, I examine the research by Watt (1998a) and Watt and Milroy (1999) in order to corroborate Wells's statement and to establish the distribution of NURSE and NORTH variants in modern TE. Watt and Milroy's research and a comparison of their data with the traditional dialect data analysed in Chapters 2 and 3 suggest a number of alternative solutions to 'Wells's problem', which are discussed in turn: (1) that there has indeed been a reversal of the 'NURSE-NORTH Merger'; (2) that the 'NURSE-NORTH Merger' was not a merger in the first place; and (3) that the apparent reversal of the 'NURSE-NORTH Merger' is, in fact, illusory. I suggest that neither the traditional dialect data nor the data from Watt (1998a) and Watt and Milroy (1999) are sufficient to enable us to chose between these three solutions, and conclude that a more detailed phonetic analysis, at both the community and individual levels, of a larger corpus of TE is necessary to gain a proper understanding of the relationship between the apparently categorical merger of NURSE and NORTH in the traditional dialect data and the situation described by Wells (1982).

4.2. NURSE in the PVC

4.2.1. The PVC

In 1994, a corpus of TE was collected in Newcastle Upon Tyne as part of the ESRC funded project *Phonological Variation and Change in Contemporary Spoken British English* (henceforth PVC; see Milroy, Milroy and Docherty 1997, Watt 1998a, Watt and Milroy 1999, and Allen *et al.* 2007). This corpus consists of 26 hours of recordings involving a sample of 32 speakers, selected by means of a social network model (Milroy 1987). The sample was equally divided between males and females, younger (15-27) and older (45-67) speakers, and between working- and middle-class speakers, such that each social cell had four members. According to Watt and Milroy (1999: 27), speakers were recorded "in conversation exchange in self-selected dyads for around 45 minutes", with minimal interference from the fieldworker. This free conversation was followed by a wordlist task of around 200 items.

Although Watt (1998a) conducts a superficial analysis of the combined NORTH-THOUGHT-FORCE lexical set in a pilot study of eight speakers from this sample, this lexical set is not analysed further in either Watt (1998a) or Watt and Milroy (1999) since it is characterised by "a lack of socially-conditioned variability (and even allophony)" (Watt 1998a: 169). Watt (1998a) (and Watt and Milroy 1999) transcribes the NORTH vowel as [ɔ:].

Watt (1998a) and Watt and Milroy (1999) conduct a more detailed auditory analysis of NURSE for all speakers. Watt and Milroy (1999: 34) state that in their analysis of NURSE (as well as FACE and GOAT), they aimed to analyse "40 (stressed) tokens per speaker". They note, however, that this was not always possible for NURSE, since it has a relatively low rate of occurrence. Watt and Milroy overcome this problem by aggregating and averaging the figures for each social cell (four speakers) so that their figures are composites rather than reflections of individual behaviour. I return to this important feature of Watt and Milroy's analysis below.

Watt and Milroy (1999: 28) identify four variants of the NURSE vowel in the PVC corpus. They record the first of these, [ɑ:], in the words *learn*, *German* and *jersey* only, noting that it occurs rarely in male speech. It seems that, by the 1990s, this variant [ɑ:], which occurs in words which had ME /ɛr/ (as discussed in Chapter 3), had largely disappeared, and it is therefore not considered further by Watt and Milroy.

As regards the remaining pronunciations of NURSE, Watt and Milroy (1999: 33) state that "the range of phonetic exponents of this vowel in TE is very broad". They claim (p. 32), however, that:

> Tokens of NURSE ... though scattered across the vowel space in a continuous fashion, appear to cluster around certain points in the space, with the result that we can with reasonable ease distinguish three variant categories associated with each cluster.

These three variants, distributed along the front to back phonetic dimension, are [ø:], [ɜ:] and [ɔ:]. Of these three variants, [ɔ:] is the familiar traditional NURSE vowel in NbTE discussed in Chapters 2 and 3, whilst [ɜ:] and [ø:] equate with the "less broad"

NURSE variants described by Wells (1982: 375). I discuss each of these three variants in the PVC data in turn.

[ø:]

Although Watt and Milroy (1999: 33) describe [ø:] as a "fully fronted and rounded variant", they note (p. 45) that it is, in fact, only variably rounded, with pronunciations identical or near to [ɛ:] and [e:] also possible. In their analysis of the distribution of this variant in the PVC data, Watt and Milroy (1999: 39) find that it is "widely used, especially by young women of both social classes, accounting for two fifths of all NURSE tokens". The distribution of this variant in the PVC data is summarised in Figure 21 below.

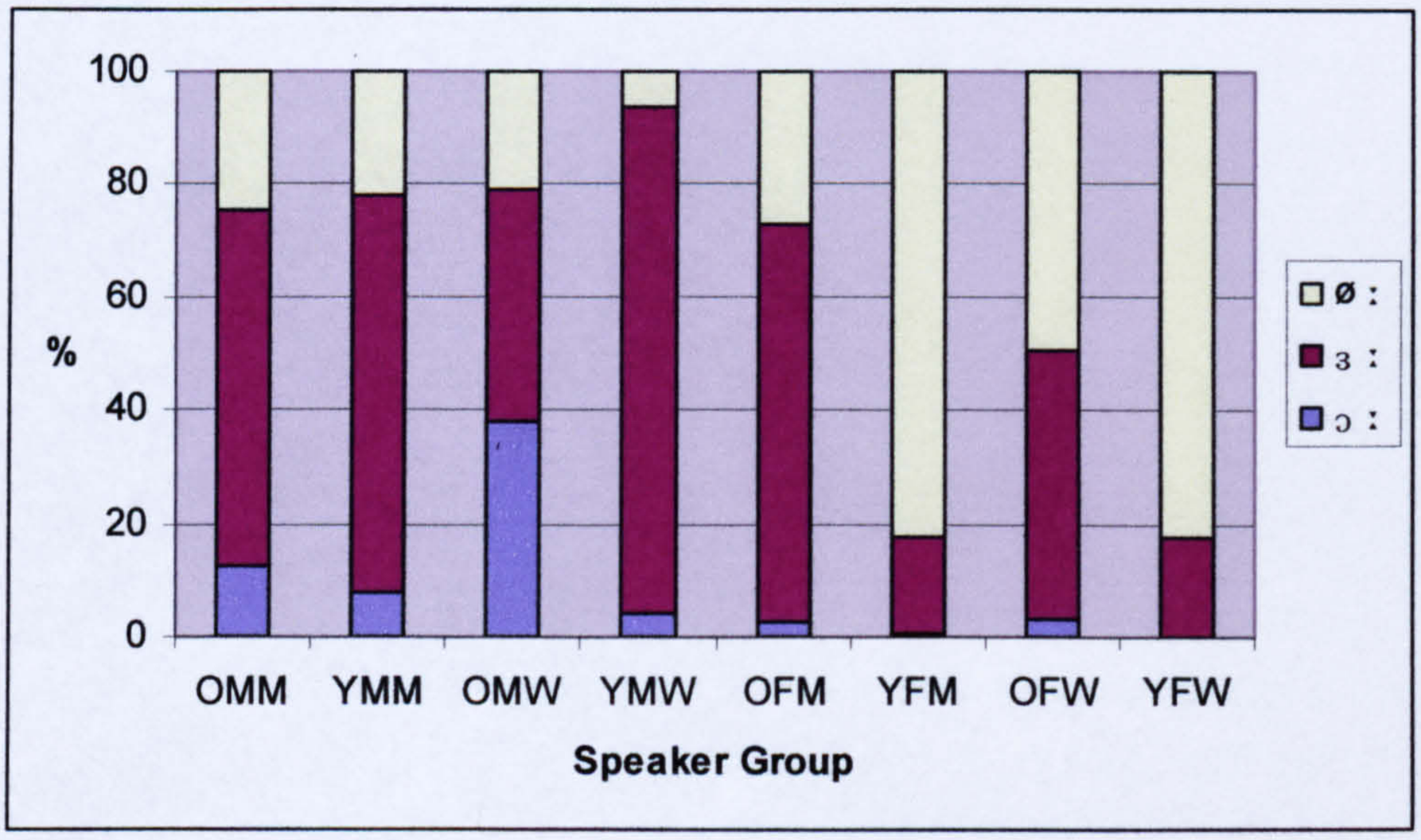
[ɜ:]

The central NURSE variant [ɜ:], which Watt and Milroy (1999: 33) equate with the widespread, typical pronunciation of NURSE in the north of England, is described as "the commonest contemporary variant of NURSE in TE" (p. 34). They note, however, that "the range of non-peripheral qualities of this vowel in TE is wider than the IPA symbol suggest" (p. 33). This is presumably a result of their division of the wide range of NURSE pronunciations into three discrete categories, with the inevitable loss of information that this involves. The distribution of [ɜ:] in the PVC data is summarised in Figure 21 below.

[ɔ:]

Watt and Milroy (1999: 28) find that the "traditional" NURSE variant [ɔ:] is scarce in the PVC data. They describe this variant as "similar or identical in quality to the vowel in NORTH in this dialect", although, as noted above, they do not analyse the pronunciation of NORTH in the PVC data in detail. Their data for the [ɔ:] variant of NURSE, summarised in Figure 21, reveal that [ɔ:] "accounts for only a little over 7% of the total sample" (p. 39), with the vast majority of [ɔ:] recorded in the older working-class male group. Watt and Milroy (1999: 39) note that [ɔ:] "is hardly used at all by women".

Figure 21: The distribution of NURSE variants in the PVC.



4.2.2. Watt and Milroy's apparent-time interpretation of the data

Although Watt (1998a) also compares the pronunciation of NURSE in the PVC with the pronunciation of NURSE as revealed in a number of historical sources on the phonetics and phonology of TE, Watt and Milroy use an apparent-time interpretation of the distribution of variants in the PVC data to explain the history of NURSE (see Labov 1994: 43-72 for a discussion of apparent-time methodology). This apparent-time interpretation of the data leads Watt and Milroy to two conclusions.

Firstly, and perhaps most importantly, Watt and Milroy (1999: 39) suggest that the highly localised variant [ɔ:] is "recessive". Since [ɔ:] is largely restricted to the speech of older working-class males, but is almost completely absent from the speech of younger working-class males, Watt and Milroy (1999: 39) hypothesise that [ɔ:] "was once a much more widely distributed Tyneside variant which has since lost ground to less localised forms". I return to Watt and Milroy's apparent-time interpretation of this distribution in Section 4.6 below.

Secondly, Watt and Milroy (1999: 28) suggest that one of these "less localised forms", [ø:], "is on the increase, particularly among young women", since their data reveal that the younger females from both socio-economic classes use significantly more [ø:] in NURSE than their older counterparts.

4.2.3. Watt and Milroy on the relationship between NURSE and NORTH

As was noted above, Watt (1998a) suggests that the vowel in the NORTH lexical set is [ɔ:], with little or no variation. If this is indeed the case, then the data presented in Figure 21 above indicate that in the vast majority of cases, NURSE and NORTH are not pronounced alike in modern TE, since only 7% of all NURSE tokens have been recorded with [ɔ:]. That is, most speakers of TE do not have a merger of NURSE and NORTH. In conjunction with the historical data examined in Watt (1998a) and the apparent-time interpretation of the PVC data, Watt and Milroy (1999: 33), like Wells (1982), "infer that the merger postulated with such confidence in earlier descriptions of TE was either not categorical for all Tyneside speakers, or was falsely reported".

In the introduction to this chapter, I suggested that 'Wells's Problem' is the consequence of a general linguistic principle, that mergers are irreversible. This principle, which Labov (1994) calls 'Garde's Principle', is discussed in detail in Section 4.4.1 below. In light of evidence that the apparent merger of NURSE and NORTH is disappearing from TE, Watt and Milroy are confronted with the same problem as Wells (1982) – how to explain this apparent exception to Garde's Principle. I noted in the introduction to this chapter that Wells's suggestion that "either the merger of NURSE and NORTH was never categorical, or speakers are unusually successful in sorting the two sets out again" is ambiguous, since Wells does not explain what he means by "categorical". Although Watt and Milroy (1999: 33) are somewhat more explicit in their suggestion that "the merger ... was either not categorical for all Tyneside speakers, or was falsely reported", they similarly do not explain what they mean by "categorical", nor do they follow up their suggestion that the merger was "falsely reported". Watt (1998a) does, however, consider the means by which the apparent 'NURSE-NORTH Merger' might have been lost from TE, suggesting three possibilities:

1) The 'NURSE-NORTH Merger' was a merger, but it was only characteristic of the speech of a subset of speakers of TE; reversal of the merger did take place. Although he acknowledges (2) and (3) as possible, Watt (1998a) opts for this explanation;

2) There was no merger of NURSE and NORTH in the first place; i.e. the 'NURSE-NORTH Merger' was a near-merger and, as a result, reversal of the merger was unproblematic;
3) NURSE and NORTH did share the same phonetic space, but only variably; i.e. the 'NURSE-NORTH Merger' was a variable merger and, as a result, reversal of the merger was unproblematic.

In Sections 4.4 and 4.5 of this chapter, I examine each of these possibilities in detail. Before I do so, however, I examine some potential problems with the interpretation of the PVC data which have a direct bearing on what these data can tell us about the development of the 'NURSE-NORTH Merger'.

4.2.4. Problems with interpreting the PVC data

Interpretation of the data for NURSE from the PVC is problematic in a number of ways. Firstly, Watt (1998a) and Watt and Milroy (1999) do not analyse the PVC data for NORTH (or FORCE) in any great detail, the result being that the relationship between the NURSE and NORTH lexical sets in these data remains unclear. As a result of this superficial analysis of NORTH (and FORCE), we cannot be sure that what is transcribed as [ɔ:] in NURSE is the same as the expected vowel in NORTH, or that the rather different NURSE variants, [ɜ:] and [ø:], are not also found in NORTH. Despite their analysis of NURSE, then, Watt and Milroy's data do not allow us to answer the questions posed by Wells (1982): whether there ever was a merger of NURSE and NORTH in TE, whether this merger has been reversed, and whether there has been any consequent hypercorrection of NORTH.

Secondly, the fact that figures for the frequency of NURSE variants in the PVC data are aggregated for each speaker group means that we do not know what the precise distribution of NURSE variants was for each speaker. For example, Watt and Milroy (1999: 45) record 95 NURSE tokens for the older working-class male group, 20 (21%) of which had [ø:], 39 (41%) [ɜ:], and 36 (38%) [ɔ:]. What these data do not reveal is whether all four of the older working-class male speakers had similar frequencies of the three NURSE variants, or whether any one of the variants of NURSE was particularly characteristic of individual speakers. This has very important consequences for our understanding of the 'NURSE-NORTH Merger'. If all four of the

older working-class males have a similar distribution of NURSE variants to the group average then, in the majority of cases, they do not produce NURSE with a back vowel, but rather with a central and front vowel. If we presume that NORTH has [ɔ:] in the PVC (as Watt and Milroy do), then these older working-class male speakers only merge NURSE with NORTH variably, and as a result, maintain a phonological (and frequently a phonetic) distinction between the two lexical sets (as discussed in Chapter 1). This interpretation is consistent with Watt's suggestion (3) above (to be discussed below). On the other hand, it is possible that one of the older working-class male speakers in the PVC consistently uses the variant [ɔ:] in NURSE, whilst the other three do not, or only do so occasionally. In this case, it is possible that some speakers in the PVC corpus may have a more complete merger of NURSE and NORTH, at least in production terms, but that they are surrounded by speakers who do not have merger of NURSE and NORTH. This might indicate that there is a merger of NURSE and NORTH in TE, that it survives only in the speech of some speakers, and that it is being lost, since it is characteristic only of older working-class males. This interpretation is consistent with Watt's suggestion (1) above. But Watt and Milroy's analysis of their data does not enable us to determine whether this is the case or not.

Finally, if Watt and Milroy are correct in their assumption that the 'NURSE-NORTH Merger' is disappearing from TE, then it might well be the case that what evidence there is for the merger in their data is not sufficient to determine its status. That is, it might be the case that none of the speakers in their sample are consistent enough in their use of the 'NURSE-NORTH Merger' to be comparable to the kinds of speakers who were surveyed in traditional dialect studies. That the NURSE and NORTH lexical sets in the PVC might not act in the same way as these lexical sets in the kinds of traditional dialect collected in the OC and SED does not mean that we can project the modern situation backwards. I return to this and related issues in Section 4.6 below.

4.3. Explaining 'Wells's (and Watt and Milroy's) Problem'

As discussed above, Watt (1998a) suggests three explanations for the apparent reversal of the 'NURSE-NORTH Merger' despite Garde's Principle of the irreversibility of mergers. These three explanations essentially boil down to two if, as I

suggested in Chapter 1, variable mergers are not considered to be mergers in the way that invariable mergers are. That is, Watt (1998a) hypothesises that the 'NURSE-NORTH Merger' has apparently been reversed because either: (1) the 'NURSE-NORTH Merger' was a merger, for a subset of speakers of TE only (i.e. "it might be that the merger never took place in the phonologies of all speakers of Tyneside English", Watt 1998a: 276), and it has been reversed; or (2) it was never a merger in the first place (i.e. it was a near-merger or a variable merger).

Although neither Wells nor Watt and Milroy consider it, there is a third explanation for the apparent reversal of the 'NURSE-NORTH Merger' – that the disappearance of the merger is illusory and is instead an artefact of methodological differences between traditional dialectology and modern sociolinguistic surveys such as the PVC. In the following sections, I consider each of these possible explanations, beginning first with perhaps the most challenging of them all, that the 'NURSE-NORTH Merger' was indeed a merger, for some speakers at least, and that it has been reversed. I follow this with a discussion of the possibility that the 'NURSE-NORTH Merger' never was a merger, and conclude with a discussion of the possibility that the disappearance of the merger is illusory.

4.4. There was a merger, and it has been reversed

4.4.1. Garde's Principle

As noted in the introduction to this chapter, Labov (1994: 311) states that "It is generally agreed that mergers are irreversible: once a merger, always a merger". Following Garde (1961), Labov (1994) formulates the following general principle:

GARDE'S PRINCIPLE

Mergers are irreversible by linguistic means.

It is important to note that Garde's Principle does not imply that mergers are irreversible; rather, it predicts that no change internal to the linguistic system itself can precipitate the recreation of a lost distinction. Garde's Principle does not predict that mergers cannot be reversed through external influence on the linguistic system.

Labov makes the obvious but important point that Garde's Principle flows from the arbitrary nature of the linguistic sign: since there is no natural association between particular meanings and particular phonetic forms, the introduction of new distinctions requires the learning of "a very large number of brute facts that have no explanation or connection with any other linguistic facts" (p. 311). As such, reversal of merger is equivalent to lexical split, since a merged lexical set retains no memory of the input lexical sets and is, in effect, a single lexical set (see Labov 1994: 311, 333, 337 for the equation of reversal of merger and lexical split; Labov 1994: 337 notes that where a lexical split has occurred in a particular dialect, speakers without the split are "in the position of the 'merged dialect' faced with a distinction").

Lavov (1994: 312-313) states further that:

> The *impossibility* of reversal established by Garde's Principle is not a deduction, but rests on empirical observation ... It is based on the empirical observation that at no known time in the history of languages has such a reversal been accomplished by enough speakers to restore two original word classes for a given language as a whole.

Although a number of interpretations of this statement are perhaps possible, the most obvious reading is that Labov is referring to mergers which have occurred invariably in the phonetics and phonologies of every speaker of the language (i.e. a language "as a whole"), such that all knowledge of the original lexical sets has been lost. In Chapter 1, I defined mergers of this kind as the most uncontroversial, clear-cut cases of merger. If this is indeed what Labov intends, it is likely that he is correct in his assertion, since all knowledge of the original distinction has been lost to all speakers of the language.

Although his statement relates to mergers which have occurred in a language "as a whole", Labov implies that reversal of mergers with a more restricted scope is equally difficult. He suggests (p. 312) that it is difficult for speakers to "learn a phonemic distinction not native to their own dialect", whilst he considers at length the impossible nature of the reversal of the MEAT-MATE and LOIN-LINE 'mergers' (see Chapter 1, Section 1.4), even though they were, if they existed at all, restricted to subsections of the English-speaking population.

4.4.2. Reversal of merger is possible given the right social conditions

Despite the apparent impossibility of reversal of merger, Labov (1994: 342) suggests that "Given the right social conditions, it is reasonable to think that a distinction can be reintroduced into a speech community in a consistent way". Labov argues, however, that the "social conditions" necessary for such a reversal are rather exceptional, since he believes that mergers develop and exist "below the level of social consciousness" (p. 342). Labov suggests (p. 343) that to create the "social conditions" necessary for reversal of merger, "there must be an overt campaign to bring the problem to social attention and bestow prestige on the distinction". In particular, Labov (1994: 348) suggests that:

> the full acquisition of a lexical split is possible under the control of an educational system that places a strong emphasis on remaking behavior to eliminate all social variation.

Labov believes, however, that such a change will have only a limited impact on those directly involved in such an educational system, suggesting that "It seems unlikely that such a transformation is possible in the community at large" (p. 348).

4.4.3. Reversal of merger with hypercorrection

Beyond such extreme cases, however, Labov suggests that there are two ways in which apparent 'reversal of merger' can occur: (1) with hypercorrection; and (2) where there was no merger in the first place. I discuss the second of these options in Section 4.5 below. Labov's first solution to the problem of apparent reversal of merger is to allow that reversal of merger is indeed possible. However, given the degree of difficulty involved, it cannot be wholly successful. Labov (1994: 312) suggests that "Some frequency of hypercorrect forms is thus inevitable among those trying to learn a phonemic distinction not native to their own dialect". Essentially, this solution is not in violation of Garde's Principle; rather, it constitutes strong evidence that it is virtually impossible to get reversal of merger right.

One well-known instance of hypercorrection, in this instance due to imperfect learning of a lexical split (which is, as I noted above, analogous to a reversal of merger), involves the FOOT and STRUT lexical sets in British English. In the non-southern dialects of English in England, there is no distinction between the FOOT

and STRUT lexical sets. Typically, both of these lexical sets have an [ʊ]-type vowel. In the south of England, and in RP, a lexical split has occurred, such that FOOT words maintain [ʊ] and STRUT words have developed [ʌ]. This lexical split was only partially phonetically conditioned, so that speakers attempting to learn the FOOT-STRUT distinction have no simple way of determining which words in the combined FOOT-STRUT lexical set have [ʊ], and which have [ʌ] in StE – they have to learn the "brute facts".

Trudgill (1986: 66-67) points out that this has led to overgeneralization of [ʌ], such that [ʌ] also appears in FOOT words. He gives as examples of such hypercorrection /bʌčə/ for *butcher*, and /(kʌp)hʌk/ for *(cup-)hook*. Similarly, Trudgill (1986: 67) records instances of hypercorrection by speakers attempting to implement the lexical split which has occurred in words with ME /a/ (see Labov 1994: 334) in southern British English (including RP), but not in northern British dialects. Besides traditional northern /gæsmæsk/ *gasmask*, and southern /gæsmɑ:sk/, Trudgill records the hypercorrect forms /gɑ:smɑ:sk/ and /gɑ:smæsk/.

4.4.4. Watt (1998a) on reversal of the 'NURSE-NORTH Merger'

As was noted in Section 4.2.2 above, Watt (1998a) suggests, as one explanation for the apparent reversal of the 'NURSE-NORTH Merger', that the merger of NURSE and NORTH was only categorical for a subset of speakers of TE, and that it has been and, perhaps, continues to be reversed.

Since Watt (1998a) and Watt and Milroy (1999) do not record anything other than [ɔ:] in NORTH, they agree with Wells (1982) in not recognising any hypercorrection of the NORTH lexical set. Since Labov (1994) predicts hypercorrection in all but the most unusual cases of reversal of merger, Watt (1998a) must explain how the 'NURSE-NORTH Merger' has been reversed without it. This he does by re-examining Garde's Principle and appealing to the notion of 'dialect contact'.

Watt (1998a: 277) suggests that Garde's Principle should be reworded as follows:

> *Mergers are irreversible by phonologically internal processes.*

In rewording Garde's Principle in this way, Watt removes the potential ambiguity that exists in Labov's formulation of the Principle, discussed in Section 4.4.1 above. As noted there, a strict interpretation of Garde's Principle in this way does not rule out reversal of merger as a result of external influence on the linguistic system, and it is precisely such influence that Watt suggests is responsible for the apparently 'clean' reversal of the 'NURSE-NORTH Merger' in TE. Watt (1998a: 276) suggests that the 'NURSE-NORTH Merger' might only have been a feature of working-class speech which existed alongside speakers who had no merger of NURSE and NORTH. According to Watt, this contact, between a merging variety and a non-merging variety of English on Tyneside, could have provided the necessary external influence to override Garde's Principle. Watt envisages the reversal of the 'NURSE-NORTH Merger' as having proceeded as follows:

> Regular contact with a higher-status variety in which NURSE and NORTH were still separate would then make an explanation of the apparent reversal of the merger comparatively straightforward. Presumably, any stigma attached to pronunciations like [ʃɔ:t] *short* or [fɔ:st] *first* would mean that lower-status speakers would be more inclined to adjust their pronunciation in line with that used by, for example, local schoolteachers, doctors or churchmen. This would probably take place first in more formal styles of speech (perhaps reinforced by correction) and later would pass into free conversation style.

The result of this "increased amount of contact between the 'merged' dialect and 'unmerged' ones allowed the distinction between NURSE and NORTH to be restored" (Watt 1998a: 280). Note that Watt's explanation of reversal of merger by dialect contact is essentially the same as that suggested by Wyld (1936) and Kökeritz (1953) for the reversal of the apparent MEAT-MATE merger (see Section 1.4.1).

4.4.5. Problems with Watt's suggestion

Although Watt's hypothesis that the 'NURSE-NORTH Merger' has reversed due to dialect contact within the same speech community is attractive, a number of problems remain.

The fact that Watt (1998a) and Watt and Milroy (1999) do not analyse the distribution of NURSE variants at the individual level, but instead analyse the frequency of

NURSE variants at the level of social group averages means that it is impossible to determine whether the 'NURSE-NORTH Merger' is, in fact, categorical for a subset of their informants. As discussed in Section 4.2.4, it is entirely possible that the figure of 38% of NURSE tokens with [ɔ:] for older working-class males is the result of one of the four speakers in that cell using [ɔ:] in all NURSE words, the result being that the merger is indeed categorical for at least one of the speakers in their sample. Likewise it is entirely possible that this figure signifies that each of the older working-class males in the PVC sample uses [ɔ:] for NURSE words 38% of the time, the result being that the merger is not categorical for any speaker in their sample.

In Section 4.4.3 above, I discussed the fact that hypercorrection commonly attends reversal of merger, even where the merger is only characteristic of a subset of the population. That is, it appears to be difficult for a merger to reverse cleanly even when it is not characteristic of all speakers of a language (and these are the kind of mergers that Labov and others have been most interested in). Although Watt (1998a) explains why speakers of TE may have reversed the 'NURSE-NORTH Merger', and how this reversal entered the community, he does not, in my opinion, fully explain how those speakers of TE have avoided hypercorrection, since they have had to learn a new distinction "not native to their own dialect" (Labov 1994: 312).

4.5. There was no merger (and hence no reversal)

If, as Labov (1994) suggests, mergers cannot be reversed (except under the most unusual of circumstances) without hypercorrection, and since Wells (1982) finds no evidence of hypercorrection of the NORTH lexical set in TE, might it then be the case that the 'reversal' of the 'NURSE-NORTH Merger' was possible because there never was a merger of the NURSE and NORTH lexical sets in the first place? That is, has the 'NURSE-NORTH Merger' been falsely reported? Since, in such a scenario, NURSE and NORTH would not have been identical, there would have been no difficulty in reversing the apparent merger of the two lexical sets along the correct lexical boundaries (see Section 1.4 for further discussion).

Faced with the apparent unmergings of the MEAT-MATE and LOIN-LINE mergers, which appear to have occurred without any hypercorrection,[1] Labov (1994) is forced to consider them impossible. Rather, he suggests that these mergers were not mergers at all, but were instead instances of near-merger, as was discussed in Section 1.4. Is it possible that the reversal of the 'NURSE-NORTH Merger' can be explained in the same way?

The idea that there never was a merger of NURSE and NORTH in TE seems, at first sight, to fly in the face of all of the traditional dialect data surveyed thus far. As noted in Section 2.3, Watt (1998a: 275) states that "The evidence for the merger of the NURSE and NORTH sets in twentieth century TE is as good as that used to demonstrate mergers elsewhere in English and other languages".[2] From as far back as the end of the 19th century, the traditional dialect data is (with the exception of the survival of a number of older lexical distinctions in some locations) unanimous in its identical representation of the vowels in NURSE and NORTH. In the face of such seemingly overwhelming data, is it possible that all of the dialectologists involved got the phonetic facts wrong, and, in doing so, falsely reported the merger?

In Chapter 1, I suggested that there are two ways in which the distinction between two lexical sets can be maintained whilst giving the impression that they are phonetically the same. These are:

1) The phonetics of two lexical sets are very close, and although there may be some identity of individual tokens from either lexical set, the average phonetic position of the two lexical sets is sufficiently distinct to allow for phonological distinction; as was pointed out in Section 1.4.1, this appears to be the reality behind the phonetic similarity of the MEAT and MATE lexical sets in Belfast Vernacular English. It is this situation which has been described as near-merger;

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[1] As discussed in Section 1.4.1, Labov (1994: 304-306) examines the usual suspects for hypercorrection in this case (*great*, *break*, *yea*, *steak* and *drain*). He finds that these are not, in fact, instances of hypercorrection, and, as such, describes the split of MEAT and MATE as "clean and complete".

[2] As was noted there, however, this doesn't necessarily imply that the evidence is all that good.

2) Similar to (1), is a situation whereby members of two lexical sets are variably identical in phonetic terms, but all members of at least one of the lexical sets have alternate (perhaps rather different) phonetic variants which allow a distinction to be maintained between the two lexical sets; the distinction between the FOOT and GOOSE lexical sets is maintained in this way in Mid-Ulster English (FOOT with both [ʊ̈] and [ʉ], GOOSE with [ʉ] only; see Section 1.3.4). It is this situation which I labelled 'variable merger' in Chapter 1.

The apparent merger of NURSE and NORTH in TE, if that is indeed what it was, could be interpreted in either of these ways, and Watt (1998a) acknowledges that either of these two situations is, in fact, possible. In what follows, I discuss the meaning and consequences of both of these scenarios with respect to the 'NURSE-NORTH Merger'.

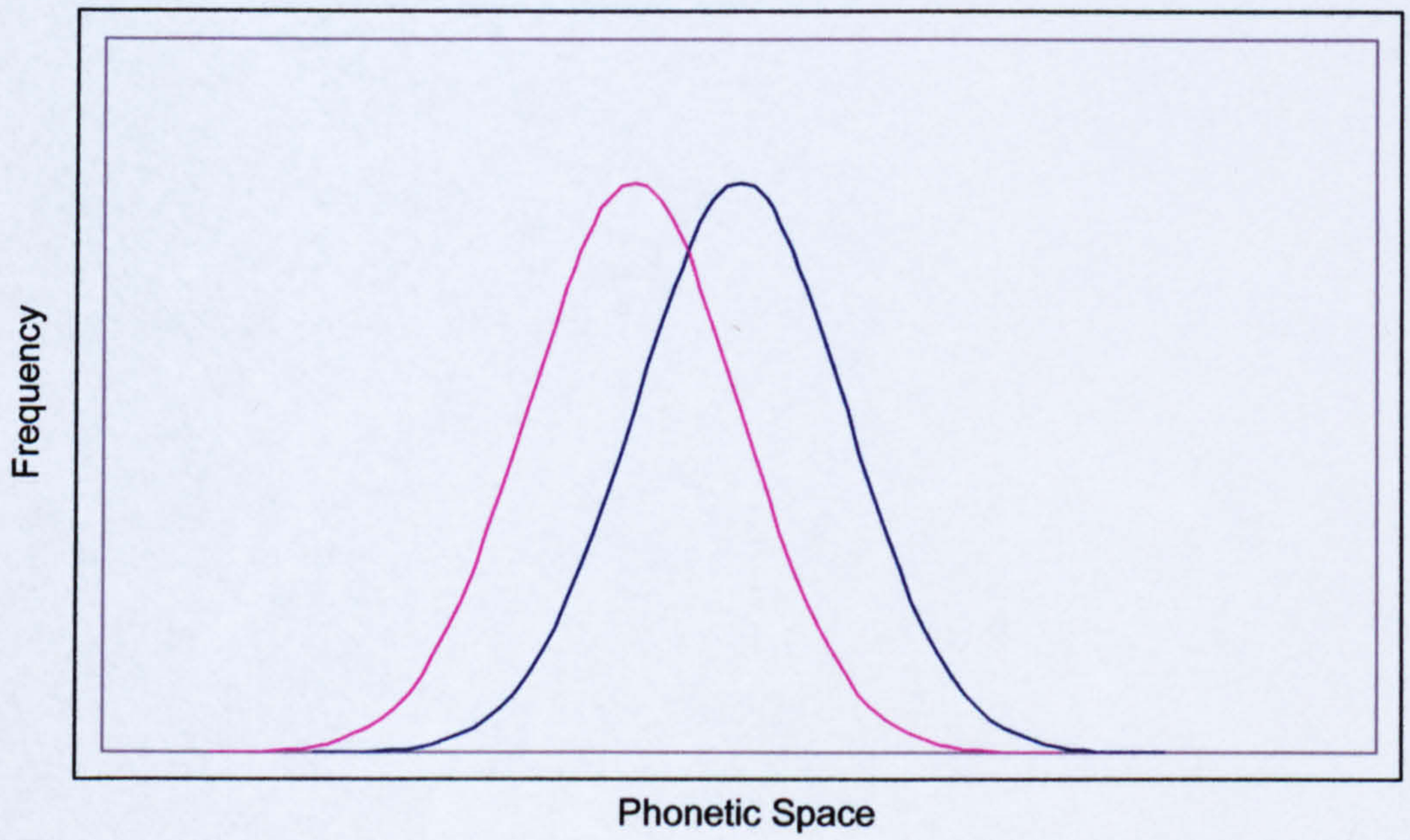
4.5.1. Scenario (1): the NURSE and NORTH lexical sets were phonetically very similar, but not identical; i.e. the 'NURSE-NORTH Merger' was a near-merger

As was discussed in Section 1.4, a number of reported mergers, such as the LINE-LOIN and MEAT-MATE mergers, are characterised by near rather than complete phonetic identity. In such cases, individual tokens from either lexical set may be pronounced the same on some occasions, but slightly differently on others, and this difference in pronunciation, though small enough to be potentially difficult to discriminate auditorially, is sufficient to maintain a phonological distinction between the two lexical sets.

If we hypothesise that Scenario (1) lies behind the apparent merger of NURSE and NORTH in TE, we must assume some small phonetic difference between the two lexical sets which has, up until now, not been discerned. This phonetic difference could obtain on a variety of phonetic dimensions, e.g. length, roundness, height, frontness, rhoticity, etc. Taking frontness as an example (since it is frontness which, according to Watt (1998a) and Watt and Milroy (1999), has become the important factor for distinguishing NURSE and NORTH in modern TE), a hypothetical phonetic range for NURSE, under Scenario (1), might be [ʊ̈ː], [ɔː], [ɒ̟ː], etc., whilst a hypothetical phonetic range for NORTH might be [ɔː], [ɒ̟ː], [ɒ̟ː]. In such a case, NURSE and NORTH would be very similar phonetically, but not identical.

Figure 22 illustrates Scenario (1) in abstract terms. In this figure, phonetic space is represented by the X axis, whilst frequency of pronunciation of particular variants is enumerated on the Y axis. Two lexical sets are illustrated (one symbolised by a blue line, the other by a pink line). Although the two lexical sets overlap to a large degree, the frequency of distribution of pronunciation for the two lexical sets remains distinct, and there is a part of the phonetic space which is unique to each lexical set. In this way, the phonological distinction between the two lexical sets is maintained, so that any subsequent divergent development is unproblematic.

Figure 22: An abstract illustration of Scenario (1).



As was discussed above, it is important to consider the behaviour of individual speakers in such cases. If Figure 22 illustrated the distribution of the two lexical sets averaged across the sample as a whole, there would be no way of knowing whether particular speakers pronounced the two lexical sets alike, whilst other speakers pronounced them differently.

Chapters 2 and 3 revealed that the NURSE and NORTH lexical sets are, barring the various (geographically restricted) historical lexical exceptions, recorded with the same vowel (e.g. [ɔ:]) in the traditional dialects of the northeast of England. If Scenario (1) is correct, we must assume that the traditional dialect data are incorrect. That is, a large number of traditional dialectologists (e.g. Alexander Ellis, Joseph Wright, Harold Orton, Stanley Ellis and Wolfgang Viereck) failed to recognise that

although NURSE and NORTH were phonetically close they were not the same all of the time. Rather, their transcriptions are the result of a mistaken perception of identity for the two lexical sets.

As was discussed in Section 1.4, Labov (1994) believes that such errors in perception lie behind a number of reported mergers which have subsequently 'reversed'. Since, as was discussed in Section 2.3.5, the phonetic data for traditional dialectology were transcribed impressionistically, and often gathered on the spot, with little or no ability for repetition of the same phonetic output (as can be done with modern recording and computer equipment), it is not impossible that a minor difference between NURSE and NORTH on one or more phonetic dimensions could have been missed.

Watt (1998a) and Watt and Milroy (1999) transcribe as [ɔ:] the back pronunciation of NURSE. Given the rather broad phonetic categories they use for their auditory analysis, it is unlikely that the kinds of minor phonetic differences that might distinguish NURSE and NORTH under Scenario 1 have been recorded and, indeed, Watt (1998a: 279) concedes that this is possible:

> It may be that the classes only appeared to be merged because ... they were qualitatively very close, and phoneticians reporting on TE could not tell them apart.

In any case, since Watt and Milroy do not analyse NORTH in the same way as NURSE, it is impossible to determine the phonetic relationship between the two lexical sets from their data.

4.5.2. Scenario (2): the NURSE and NORTH lexical sets were only variably identical; in addition to the 'merged' variant, one or both of the lexical sets had another distinct phonetic variant; i.e. the 'NURSE-NORTH Merger' was a variable merger

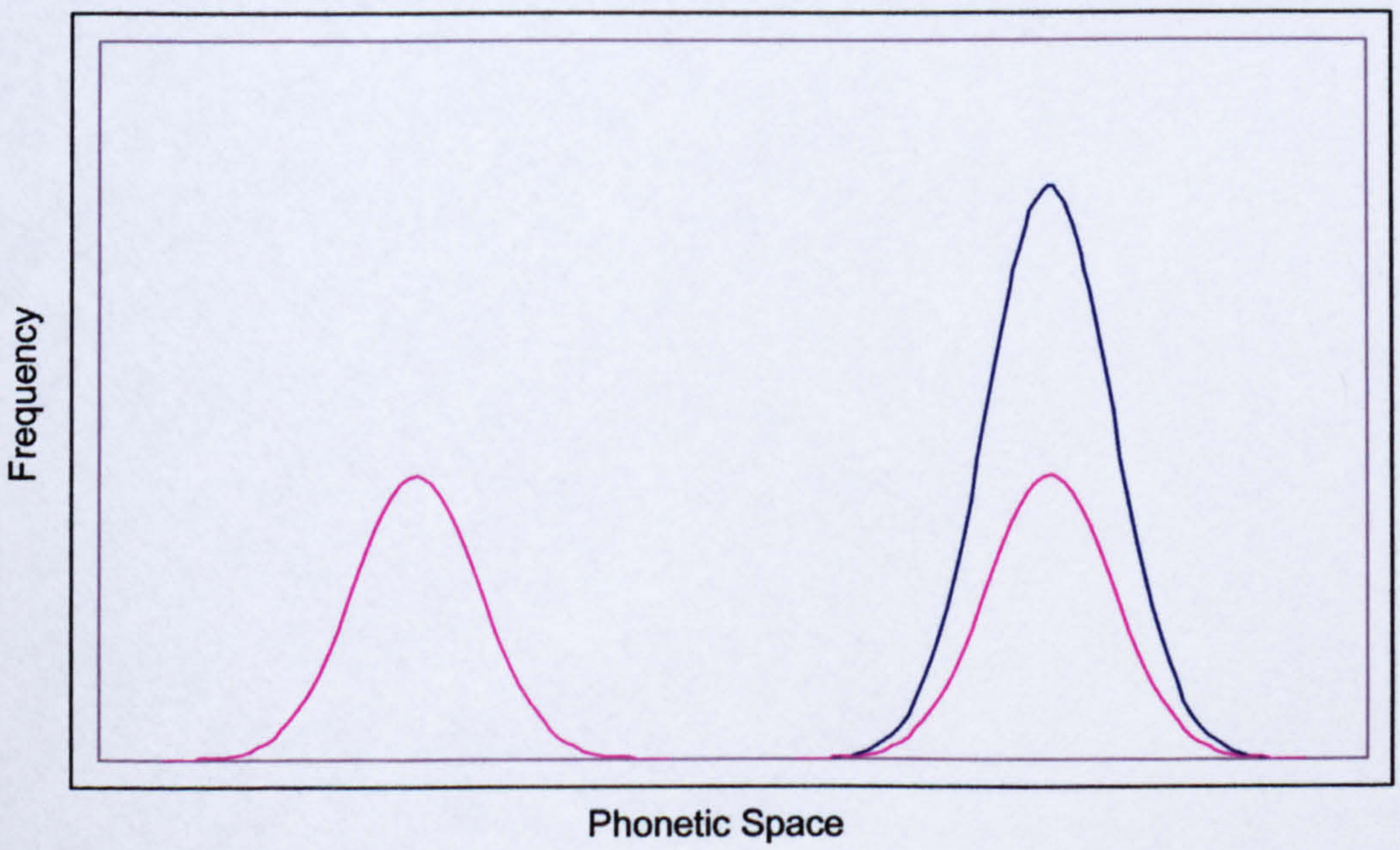
As was discussed in Section 1.3.4, the FOOT and GOOSE lexical sets share one identical phonetic realisation ([ʉ]), but all members of FOOT also have the variant [ʊ̈], which no member of GOOSE ever has. As such, a distinction is maintained between the FOOT and GOOSE lexical sets in Mid-Ulster English, such that each is still free

to undergo separate development without any hypercorrection of either lexical set. The merger of FOOT and GOOSE in Mid-Ulster English is therefore variable.

An analogous situation for NURSE and NORTH is a more extreme version of Scenario (1) discussed above. In such a situation, NURSE and NORTH would both share the phonetic variant [ɔː] (the classic merged variant reported in traditional dialect studies), whilst one or both of the lexical sets would also have one or more, perhaps obviously phonetically distinct, variant (or variants). For example, NURSE words might also have the variants [ɜː] or [øː], in addition to [ɔː], *in the speech of the same speaker*, whilst NORTH would not. Alternatively, NORTH might have a possible variant that NURSE does not, e.g. [oː].

Figure 23 illustrates Scenario (2) in abstract terms. In this figure, phonetic space is represented by the X axis, whilst frequency of pronunciation of particular variants is enumerated on the Y axis. Two lexical sets are illustrated (one symbolised by a blue line, the other by a pink line). Although the lexical set illustrated with the pink line shares the phonetic space of the lexical set illustrated with the blue line, its members may also be pronounced with a wholly different variant. Hence, there is no loss of distinction between the two lexical sets, so that any divergent development is unproblematic. The importance of considering individual speakers in such cases is made apparent by Figure 23.

Figure 23: An abstract illustration of Scenario (2).



If Figure 23 illustrated the distribution of the two lexical sets averaged across the sample as a whole, there would be no way of knowing whether half of the speakers pronounced the two lexical sets alike, whilst the other half pronounced them differently, whether all speakers pronounced all members of the two lexical sets alike half the time, or some combination of these two possibilities. Similarly, the importance of establishing the phonological distribution of particular lexical items is also made apparent; Figure 23 assumes that the pink line represents one unified lexical set, with every member of that set capable of having the two separate variants. If the two peaks represented by the pink line represented two non-alternating groups of words, we would, instead, be dealing with two lexical sets.

It is clear that Scenario (2) provides an explanation for the apparently 'clean' reversal of a merger. But is such a scenario possible for the NURSE and NORTH lexical sets in TE?

Since, barring the various (geographically restricted) historical lexical exceptions discussed in Chapter 3, the NURSE and NORTH lexical sets have been recorded with an identical vowel (e.g. [ɔ:]) in the traditional dialects of the northeast of England, we must assume that the traditional dialect data does not tell us the whole story about NURSE and/or NORTH if Scenario (2) is correct. That is, Scenario (2) can only be correct if the traditional dialectologists failed to record one or more major variants of either or both of the NURSE and NORTH lexical sets. Since Scenario (2), unlike Scenario (1), does not require the alternate variants of any given lexical set to be phonetically similar, we cannot hypothesise, as we might with Scenario (1), that the traditional dialectologists failed to discern the alternate pronunciation(s) which maintained the distinction between the two lexical sets. Rather, Scenario (2), if it is correct, suggests that the alternate pronunciation(s) which maintained the distinction between the two lexical sets were purposefully ignored or excluded from the data.

The discussion in Chapter 2 suggests that just such an exclusion of particular variants was a feature of the methodology of traditional dialectology. As was discussed there, traditional dialectologists were particularly concerned with recording only those pronunciation variants which were features of the traditional dialect, rather than the modified speech of the wider community, i.e. variants which were the

product of internal development within the dialect, or which had, at least, been entrenched in it for some time. I suggested in Chapter 2 that it is entirely possible that alternate pronunciations of NURSE might have existed, not only within the speech community in which the traditional dialect speakers lived, but, more importantly, within the speech of the traditional dialect speakers themselves.

The research by Watt (1998a) and Watt and Milroy (1999) suggests likely alternate pronunciations of NURSE which, had they existed, might not have been recorded by traditional dialectologists. These pronunciations, particularly [ɜ:], are closer to StE phonetically and in terms of their lexical distribution, and are more characteristic of the kinds of speakers who would not have been sampled in traditional dialect surveys. Although the methodology of traditional dialectology does suggest that such pronunciations might have existed, there is no direct evidence that they did. The very fact that surveys such as the OC and the SED failed to record any such variants in the speech of their informants may speak against this interpretation. In either case, the traditional dialect data does not enable us to determine whether Scenario (2) lies behind the 'NURSE-NORTH Merger' in TE.

As was discussed in Section 4.2.4 above, the PVC data presented in Watt (1998a) and Watt and Milroy (1999) does not allow us to determine whether the non-identity of NURSE and NORTH in the PVC is the result of differences between individuals or of differences within the speech of individuals themselves, since their numerical data represent composite group averages. As such, the PVC data also do not allow us to infer whether or not Scenario (2) holds for those speakers who use back pronunciations of NURSE. As discussed above, it is possible that the figure of 38% of NURSE tokens with the back variant [ɔ:] for older working-class males is the result of one of the four speakers in that cell using [ɔ:] in all NURSE words, or is the result of each of the older working-class males in the PVC sample using [ɔ:] in NURSE words 38% of the time.

Although he does not pursue it, Watt (1998a) does acknowledge that Scenario (2) may lie behind the 'NURSE-NORTH Merger' and its apparent reversal. Watt (1998a: 198) suggests, rightly, that if the 'NURSE-NORTH Merger' "was not categorical for

any speaker of TE ... the reported merger of NURSE and NORTH could have no phonological or phonetic status in past or present forms of the dialect".

4.6. The reversal is illusory (there has been no change in the status of NURSE and NORTH)

Given the overwhelming evidence for a merger of NURSE and NORTH in the traditional dialect data, and the distinct paucity of back variants of NURSE in the modern PVC data, it might seem obvious that there has been a change in the pronunciation of NURSE (and hence in the apparent 'NURSE-NORTH Merger') in TE. To suggest, then, that the apparent change in the pronunciation of NURSE is only illusory seems counterintuitive. It is possible, however, that rather than being the result of change in the pronunciation of NURSE in the intervening period, this mismatch is the result of methodological differences. That is, the pronunciation of NURSE, as recorded in the traditional dialect surveys, still survives in the northeast of England, existing, as it perhaps always has done, alongside other less localised pronunciations. In this section, I compare the methodologies of traditional dialectology and of the PVC in order to show that it is indeed possible, although there is some evidence against such a view, that this difference in the pronunciation of NURSE is illusory, since we are not comparing like with like.

The discussion in Chapter 2 showed that the methodology of traditional dialectology, as, for example, in the OC and the SED, was geared towards gathering the most archaic and localised forms of speech in any given location. Every methodological decision made by traditional dialectologists was intended to maximise the chances of recording this kind of speech. As such, traditional dialectologists had very specific requirements as to who might act as an informant and as to what constituted suitable data for their surveys.

The consequence of this approach was that the data collected were not representative of the community as a whole, nor necessarily of the everyday speech of the informants themselves. Since traditional dialectologists were not attempting to provide a model of speech in its social context, this does not mean that their data is

problematic; rather potential problems lie with any interpretation that modern socio-dialectologists attempt to make of this data.

The discussion in Chapter 2 suggests that it is very likely indeed that in addition to linguistic patterns recorded in the traditional dialect surveys, other linguistic patterns present in the same community were not recorded, since they did not occur in the speech of the informants, and were not considered to be properly part of the localised archaic dialect which was the subject of the research. Additionally, I argued, in Chapter 2, that it is entirely possible that non-localised patterns of speech which might not have been considered of interest to traditional dialectologists may have existed within the speech of the specially selected informants themselves.

It is possible, then, given this methodological bias, that [ɔ:] was not the only possible pronunciation for NURSE in the northeast of England at the time the traditional dialect surveys were carried out. In the context of the modern data presented for NURSE by Watt and Milroy, and as noted above, it seems not unlikely that [ɜ:], and perhaps even [ø:] were also present in the wider community, but not in the speech of the traditional dialect informants, in which case they would have gone unrecorded. Indeed, it is also possible that such pronunciations were present in the speech of some or all of the traditional dialect informants, especially those labelled as bidialectal, in which case such forms were not deemed sufficiently local or archaic for study. In either case, it is not impossible that all three of the pronunciations of NURSE identified by Watt and Milroy were already present in the community, perhaps at similar levels to those recorded in their later data.

If we examine the frequency of the NURSE variant [ɔ:] in the PVC data presented in Watt and Milroy (1999: 45), we find that it accounts for just over 7% of the total of NURSE tokens. Although this is low compared with the frequency of the other NURSE variants, this figure certainly suggests that this variant has not disappeared from the community. Since [ɔ:] constitutes nearly 38% of NURSE tokens for older working class males, the speaker profile most similar to the typical traditional dialect informant, it may even be the case that there has been no significant decline in [ɔ:]-type pronunciations of NURSE, given that we do not know the frequency of [ɔ:] in the speech of the traditional dialect speakers themselves, or within the community as a

whole. Certainly, a figure of 38% would be sufficient for anyone using a methodology developed to access the most archaic localised pronunciations to record consistent [ɔ:] in NURSE whilst at the same time setting pronunciations such as [ɜ:] and [ø:] aside as not immediately relevant to the task at hand.

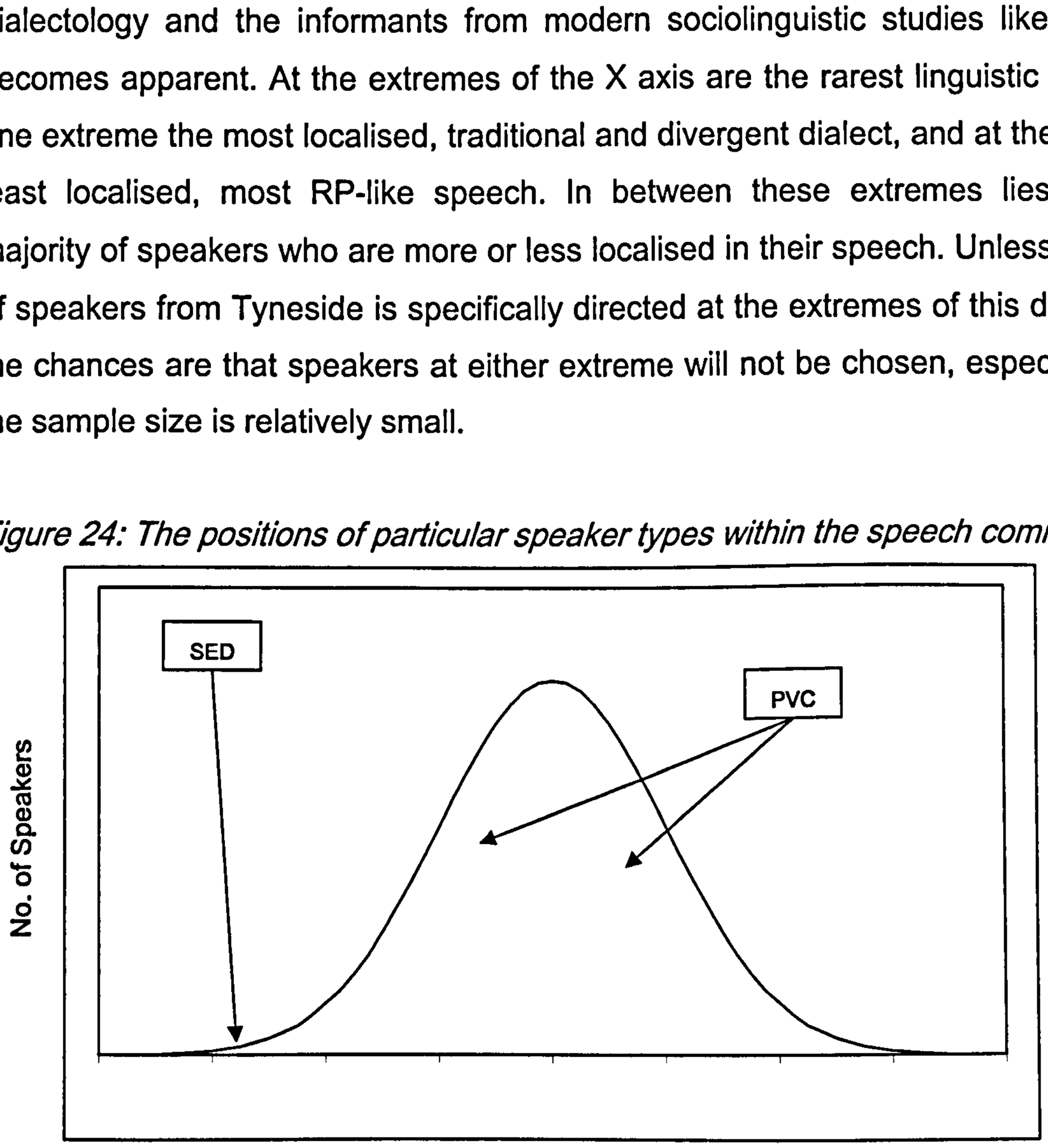
Although care must be taken when interpreting the traditional dialect data, it is not necessarily the case that the data from modern sociolinguistic surveys exhaustively enumerates the kinds of speech present in the community under study either. In a survey like the PVC, the speech of a relatively small number of informants (especially in an urban context) is examined, and conclusions are drawn as to the status of various linguistic features in the community. In the case of the PVC, the sample size was 32, divided equally between males and females, younger and older speakers, and working- and middle-class speakers. Although this undoubtedly gives us a much better idea of speech patterns in the community than traditional dialect surveys, it is possible, perhaps even probable, that this kind of survey might miss certain kinds of uncommon speaker type entirely. Good (1953: 237), for example, calculates that "If a particular species is represented *r* times in the sample of size *N*, then *r*/*N* is not a good estimate of the population frequency, *p*, when *r* is small". It might even be the case that very rare species might not be sampled at all. As mentioned in Section 2.3.6, Ellis (1976: 94-95) suggests that the SED fieldworkers "were almost always using as their informants all of those in a given locality who conformed to the criteria". Orton (1962: 15) tells us of the SED localities that "preference was given to communities that had had a fairly stable population of about five hundred inhabitants for a century or so". As was also discussed, in Section 2.3.4, the typical number of SED informants from each location in Northumberland and Durham was two or three. Even assuming that the populations for the SED locations were lower than the target set by Orton, for example, two or three hundred, the SED informants only represent a very small percentage of the possible speakers at any particular location, perhaps as low as 1% or less. Since the SED speakers were selected because they spoke in a certain way in the first place, it follows that their mode of speech was relatively rare.

As a result, any sample of the population which does not take this rarity into account is quite likely to select very few informants who speak the kind of English that the SED informants did. It is possible, particularly with small samples, that informants of

the type used by the SED, if they do exist in the community, might not be sampled at all. If speakers who use dialect of the type recorded in the SED only constitute 1% or less of the population, then the PVC sample of 32 speakers had just under a one in three chance of selecting such an informant, since speakers were not selected on linguistic grounds (see Watt and Milroy 1999: 27). Thus it is entirely possible that the SED and PVC samples need not overlap.

If we assume, for example, that varieties of English spoken on Tyneside are distributed as in Figure 24, the non-comparability of the informants used in traditional dialectology and the informants from modern sociolinguistic studies like the PVC becomes apparent. At the extremes of the X axis are the rarest linguistic types – at one extreme the most localised, traditional and divergent dialect, and at the other the least localised, most RP-like speech. In between these extremes lies the vast majority of speakers who are more or less localised in their speech. Unless a sample of speakers from Tyneside is specifically directed at the extremes of this distribution, the chances are that speakers at either extreme will not be chosen, especially when the sample size is relatively small.

Figure 24: The positions of particular speaker types within the speech community.



Although the PVC sample includes four older working-class males, such speakers need not have been habitual users of traditional dialect, even in Orton's day, since informants for traditional dialect surveys were chosen because they were the kind of

speakers who would have linguistic features like the 'NURSE-NORTH Merger' in the first place, not just because they were older males. Even if the PVC failed to sample any speakers of the type used in traditional dialect surveys, Figure 24 suggests that it is perfectly possible that NURSE and NORTH forms equivalent to those found in the SED could still be found in modern TE if the same directed informant selection procedures were used.

Although an argument can be made that there has been no change in the status of NURSE, but rather that the discrepancy between the traditional dialect data and the data from the PVC is the result of methodological differences alone, there is evidence in the PVC data that there has, in fact, been change in the status of NURSE in the second half of the 20th century. This evidence is from an apparent-time interpretation of the PVC NURSE data. It is an apparent-time interpretation of the data in Figure 21 that leads Watt (1998a) and Watt and Milroy (1999) to suggest that [ɔ:] is losing ground to [ɜ:] and [ø:] in NURSE. In Figure 21, it can be seen that [ɔ:] is characteristic of the older working-class male group, but is almost completely absent from the speech of their younger counterparts. Given that this pattern fits with a wider move away from traditional dialect pronunciations in Britain, as reported, for example, in Foulkes and Docherty (1999) and Kerswill (2003), it seems likely that this apparent-time interpretation of the PVC NURSE data is correct.

The comparison of the NURSE data from traditional dialect studies with the NURSE data from the PVC suggests that there has been a significant change in the pronunciation of NURSE in the intervening period, and hence in the 'NURSE-NORTH Merger', whatever its status. Although the apparent-time evidence from Watt (1998a) and (1999) support this hypothesis, it is possible that the non-comparability of the methodologies of traditional dialectology and of the PVC have given the illusion of change where, in fact, there has been none.

In this section, two possibilities have been explored. Firstly, the frequency of back pronunciations of NURSE from the PVC data extrapolated to the community as a whole are potentially comparable to the frequency of back pronunciations of NURSE in the traditional dialect data, given the exclusive sampling techniques employed therein. Secondly, the low frequency of traditional dialect speakers in the community

may well mean that small sociolinguistic samples which are not designed to uncover rarer speech types might well fail to select speakers of this type, giving the impression that certain kinds of speech are absent from the community.

In neither case do the traditional dialect data nor the PVC data allow us to determine for certain whether the apparent loss of the 'NURSE-NORTH Merger' in TE is real or illusory. In order to answer this question, and to confirm the apparent-time interpretation of the PVC data with real-time data, analysis of further data, from a larger sample of TE collected at a time intermediate between the traditional dialect data and the PVC, at both the community and individual levels, is required.

4.7. Summary

In this chapter, I have examined data from modern TE which appear to indicate that the 'NURSE-NORTH Merger' is disappearing from the dialect. A number of possible explanations for this disappearance were discussed. To reiterate, these were:

1) There was a merger of NURSE and NORTH, at least for some speakers in the community, and it is being reversed. Although no hypercorrection of NORTH has been reported, Labov (1994) suggests that, except under the most unusual circumstances, this should have occurred;

2) Although there has been a change in the pronunciation of NURSE, this is unproblematic, since there never was a merger of NURSE and NORTH in the first place; i.e. the merger of NURSE and NORTH was falsely reported, and was instead a near-merger or variable merger;

3) There has been no change in the status of NURSE and NORTH in TE; rather, the discrepancy between the traditional dialect data and the modern data from Watt (1998a) and Watt and Milroy (1999) is the result of methodological differences.

In each of these cases, there are problems with interpreting the traditional dialect data and the modern data which mean that it is impossible to evaluate them fully. The

chief problems with interpreting the traditional dialect data are discussed in Chapter 2: the data is not representative of the community as a whole, nor necessarily of the speech of the informants themselves. Moreover, the phonetic accuracy of the data remains questionable, despite its quantity. The problems with interpreting the PVC data have been described above: the composite nature of the data means that we cannot know the frequency of particular pronunciations of NURSE for particular speakers; the lack of detailed analysis of NORTH means that we cannot know for certain what relationship it has with NURSE nor whether there has, in fact, been any hypercorrection of a more subtle kind; the broad phonetic categorisation of NURSE variants potentially hides important phonetic characteristics of that lexical set; and the dearth of back variants of NURSE may mean that the PVC data cannot tell us what we need to know about the development of the 'NURSE-NORTH Merger'. In order to address these issues, I suggest that further data are required. In order to allow us to determine exactly which of the above three scenarios is correct, these data, and the analysis of them, must fulfil a number of criteria that the traditional dialect data and the PVC data do not. These criteria are:

1) The data must allow us to examine the NURSE and NORTH lexical sets in the social context in which they occur; that is, the data must be drawn from a sample of TE which covers a wide range of speech types, and is sufficiently large that it includes examples of rarer speech types;

2) The data should be from a particular period in time such that they contain a wealth of data on the interrelation of the NURSE and NORTH lexical sets and all of their variant pronunciations; data collected at some date intermediate between the traditional dialect surveys (such as the SED) and the PVC would not only fulfil this requirement, but would also allow us to complement Watt and Milroy's apparent-time interpretation of their data with equivalent real-time data;

3) The analysis of the data should involve NORTH as well as NURSE, so that the exact relationship between the two lexical sets can be ascertained. In order to determine the nature of this relationship, and to reveal any subtle hypercorrection, the phonetic analysis of these two lexical sets should be

more detailed than that conducted by Watt (1998a) and Watt and Milroy (1999);

4) The analysis of the data should be conducted at both the level of the social group (to capture any general trends in the development of NURSE and NORTH), and at the level of the individual (to determine the extent to which the merger is, or is not, categorical of a subset of speakers of TE).

In the following two chapters of this thesis, I describe and analyse just such a corpus of data, such that precisely these criteria are addressed – the Tyneside Linguistic Survey.

Chapter 5: The Methods and Analysis of the TLS

5.1. Introduction

At the end of the previous chapter, I suggested that a chronological and methodological bridge was needed between the unrepresentative traditional dialect data for the 'NURSE-NORTH Merger' and the more recent data presented in Watt and Milroy (1999) which failed, for a number of reasons, to determine the exact relationship between the NURSE and NORTH lexical sets. I also argued that such a source of data should include a range of speakers, from those who speak traditional Tyneside dialect (and hence approximate to the OC and SED informants), to those who speak less localised varieties of English. Such a range of speakers would allow us to understand the social and linguistic context in which the 'NURSE-NORTH Merger' occurs in a way that the traditional dialect data do not. Moreover, it should provide a wealth of data on the 'NURSE-NORTH Merger' itself, in a way that the source used by Watt and Milroy (1999) does not. Equally as importantly, it should provide evidence of the transition between merger and non-merger, and reveal the mechanisms and results of the reversal of the merger, if that is indeed what has occurred.

As I pointed out at the end of Chapter 4, such a bridge exists in the form of the substantial Tyneside Linguistic Survey (TLS).[1] In this chapter, I introduce the TLS, its origins, methods and contents, and how I intend to analyse it. This chapter is organised as follows. In the first half, I introduce the TLS, analysing its theoretical underpinnings, aims and methods, since all of these factors impact upon the kind of data that has resulted.[2] This is followed by a discussion of the subset of the TLS data which still survives. In the second half of this chapter, I detail the methods used in my social and phonetic analysis of the TLS sample. The results of this analysis are then presented in Chapter 6.

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[1] This abbreviation was used by the original TLS research team, and I adopt it here.

[2] For a general discussion of this issue, see Chapter 1 of Labov (1994).

5.2. The TLS: theoretical underpinnings, aims and methods

Strang (1968: 788), in her introduction to a new research project, the "Tyneside Linguistic Survey", suggested that:

> the English (though not the Scots) have been guilty of relative neglect of the study of urban dialects, which are well known to raise different problems, and to require different methods, from rural ones.

Strang proposed that the conurbation of Tyneside, with its relatively stable local population, its history of immigration, and its (at the time Strang wrote the preceding) programme of slum clearance and rehousing, was a fertile area in which to explore the methodologies required to understand the linguistic and social structure of English urban dialects. Given the heterogeneous nature of the population of such an urban setting, Strang rejects the kind of narrow focus on traditional, localised dialect of traditional dialectology as in Viereck (1966), for example, who surveyed the same urban setting, Gateshead. Strang (1968: 789) suggests, rather, that it is necessary to:

> rule out choice of informants on the basis of the kind of criteria normal in the investigation of rural and traditional dialect – birth and continuous residence in the area, local parentage, membership of a specified age-group, etc. For my enquiry is a linguistic, not a dialect, survey, and must show who speaks what kind of English in a particular area under review.

Since Strang (1968: 789) believes that "different English urban areas have varying patterns of social distribution of varieties of English", it is the objective of urban linguistic surveys to determine this pattern for any given city. As such, Strang (1968: 789) assumes that "a social rather than a personal basis for selection of informants is needed", and this selection of informants must be designed to test what Strang (1968) believes is a key feature of (British) urban dialects: the relationship between working-class status and localised speech on the one hand, and between middle-class status and less localised speech on the other. Strang (1968: 791) suspected that there is "a high degree of correlation between working-class status and use of localised variety of English", a hypothesis which she hoped to test as the TLS progressed.

Pellowe *et al.* (1972) lay out the design of the TLS which, in order to answer these questions, was conducted in the late 1960s and early 1970s. The TLS consisted of three phases; these were:

TLS Phase 1:

A survey of varieties of English in the city of Newcastle Upon Tyne; this phase of the TLS consisted of two judgement samples of middle-class speakers in order to establish the range of varieties present (see Strang's remarks above; see also Pellowe 1967), and a larger random sample of speakers from the city;

TLS Phase 2:

This part of the survey consisted of a random sample of the same population as Phase 1 (the population of the city of Newcastle), in order to discover whether all of the existent varieties of English in the community had been uncovered, and to enable estimation of population parameters;

TLS Phase 3:

This part of the survey was designed in a similar way to Phase 2, but sampled a different part of the Tyneside population – in this instance, the population of the borough of Gateshead, south of the River Tyne. As well as increasing the geographical coverage of the survey, Phase 3 was designed to determine the adequacy of the TLS sampling methodology for exhaustively uncovering the varieties of English spoken on Tyneside. I examine the methodology of Phase 3 of the TLS in detail below.

In order to determine the "ecology" of Tyneside English (Pellowe *et al.* 1972: 1), the TLS sought to establish which linguistic features were most important in differentiating speech varieties in the conurbation. Jones-Sargent (1983) explains that in order to do this objectively, linguists must not approach the data with preconceived notions of what linguistic features are important in determining this. She points out (p. 18) that:

> The Labovian model invokes the principle of restrictive selection in variable sampling in the linguistic ... classification; firstly by selecting one sub-domain, (segmental phonology), secondly by taking into account a small sub-set of variables from this sub-domain.

As an example of this "restrictive selection", Jones-Sargent (1983) refers to the study of Norwich English by Trudgill (1974). While Trudgill (1974: 79) believes that "the majority of segmental phonological elements in Norwich English are involved in variation of some social significance", he only examines sixteen linguistic variables which he believes, as a native speaker of the variety, to be particularly socially significant. Jones-Sargent (1983: 19) suggests that this kind of approach runs the risk of "excluding many relevant parameters of linguistic variation". In order to avoid this problem, the TLS sought to analyse as wide a range of linguistic variables, from as many linguistic domains, as possible. Pellowe *et al.* (1972: 18-19) enumerate 303 linguistic variables, from the domains of phonetics (segmental and supra-segmental), discourse, syntax and lexis, which are examined in order to establish the range of speech types on Tyneside. It was the intention of the TLS to establish empirically which of these variables were important for distinguishing the various speech types, rather than to decide in advance of the analysis.[3]

In a similar vein, the TLS sought to establish which social variables were most important in the differentiation of social groups in the community under study. Jones-Sargent (1983: 9) argues that, in the same way that linguists should not approach the data with preconceived notions as to which linguistic features are of importance, any *a priori* decision as to which social factors are important is equally problematic. Jones-Sargent criticises, for example, the use by Labov (1966) of only three social factors (occupation, income and education) to create a ten-point hierarchical social scale, and the similar use, by Trudgill (1974), of six social factors (occupation, income, education, housing, locality and father's occupation) to classify informants into five social groups (see Section 5.6.3 for further discussion of this methodology). Jones-Sargent (1983: 8) argues that such a selection of social variables is based on the untested hypothesis that "the set of social variables incorporated, (six, and three, respectively) are sufficient, and relevant social indicators to categorise their sample populations in a way suitable to their purpose". She suggests, rather, that:

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[3] For details of this kind of analysis, see Jones-Sargent (1983), Moisl *et al.* (2006) and Moisl and Maguire (2007).

> The important issue is not whether all the social information has been included, but whether enough factors have been taken into account, and whether they are the most useful ones. It is impossible to know, in advance, which are the most useful ones ... We do not know, *a priori*, which social variables we can afford to exclude. The *non-relevance* of all the social variables which are effectively (and tacitly) excluded by Labov and Trudgill has *not* been established.

In Phase 3 of the TLS, for example, the social data listed in Appendix 4 were (ideally) collected for each informant (see Jones-Sargent 1983: 149-157, and the NECTE website). It was hoped that an analysis of these social variables would reveal the social structure of the Tyneside population, whilst determining empirically, rather than subjectively, which of these social variables were most important for differentiating members of the community. I discuss the social variables listed in Appendix 4 further in Section 5.6 below. It was in the coincidence between the linguistic and social groups (to be uncovered in their analysis) that the TLS sought to model the "ecology" of TE (see Pellowe *et al.* 1972).

It is unclear to what extent the TLS, as described above, was implemented. Pellowe (1967) appears to have constituted part of Phase 1 of the TLS, although only brief sample recordings associated with this survive. Of the rest of Phase 1, nothing is known, nor do any recordings survive. Similarly, the extent to which Phase 2 of the TLS was carried out is unknown. Other than the information given in Pellowe *et al.* (1972) and Jones-Sargent (1983), almost nothing is known about Phase 2 of the TLS, and no recordings appear to survive.

The situation is quite different for Phase 3 (the Gateshead sample), however. Although this part of the TLS does not, for one reason or another, exist in its entirety, a substantial number of recordings do survive. It is these Phase 3 recordings which are the subject of the rest of this chapter and of Chapter 6; I therefore do not discuss Phases 1 and 2 further in this thesis.

5.3. The TLS Phase 3: the Gateshead sample

The remainder of this chapter (and indeed the remainder of this thesis) is concerned, then, only with Phase 3 of the TLS. As mentioned above, Phase 3 of the TLS was conducted in the Borough of Gateshead, immediately south of the River Tyne from Newcastle. It is not known precisely when Phase 3 of the TLS was conducted, although evidence from the content of the TLS interviews themselves, and from personnal communication with some of those associated with the original TLS project, suggest a date of around 1970.[4] In the following sections, I examine the methodology of this Phase of the TLS in more detail in order to establish what kind of data source it is, how it compares to the traditional dialect data and the PVC data analysed in the previous chapters, and to what extent it fulfils the criteria listed at the end of Chapter 4.

5.3.1. Sampling (informant selection)

As was discussed in Section 5.2 above, the sampling procedures used for the selection of informants were central to the methodology of the TLS. Although the sampling method for Phase 3 of the TLS built upon the methods employed in Phases 1 and 2, it was a completely independent sample, which did not depend upon the previous phases in any way. As such, I describe only the sampling procedure for Phase 3 of the TLS here.[5]

As mentioned in the introduction above, the TLS was designed so as not to lead to "rigorous exclusion of large sectors of the population" (Strang *no date:* 5). Pellowe (1976: 205) states that the purpose of the TLS was, rather, "to determine who speaks what kind of English in a particular area, or more technically, to determine the pattern of social distribution of varieties of English". In order to achieve this, the TLS Phase 3 sample was designed with two aims in mind, according to McNeany (*no date*):

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[4] See also Allen *et al.* (2007) and the NECTE website.

[5] Details of the sampling procedures for Phases 1 and 2 can be found in Pellowe *et al.* (1972: 22-23) and Jones-Sargent (1983: 26-27).

1) to determine the proportion of speakers in the population speaking particular varieties of English;
2) to determine whether there is more variety in speech types among middle-class than among working-class speakers.

In order to fulfil these aims, McNeany argues that the sample must be stratified. The assumption is made that "there is a close and consistent relationship" between localised *vs.* non-localised speech on the one hand, and socio-economic class on the other (McNeany *no date:* 1). In order to capture this relationship, Pellowe *et al.* (1972: 23) record that the Phase 3 sample consisted of "a *stratified* sample based on a factor which satisfies any *a priori* knowledge we have of distribution of social and linguistic features". Pellowe *et al.* (1972: 24) describe this stratifying factor as the "rateable value per dwelling by polling district". McNeany (*no date:* 2) suggests that a sample drawn from the Electoral Register, at the level of the Polling District "will ensure the inclusion of most socio-economic classes in the proportions in which they are represented in the population". He also argues (p. 5) that polling districts are homogenous enough in socio-economic terms to ensure that all socio-economic groups are represented.

This stratification procedure divided the polling districts into five strata, the figures for which (with totals added) are given below (see Pellowe *et al.* 1972: 24 for further details).

Figure 25: The TLS Phase 3 projected sample.

Stratum	R.V.[6]	Population	Sample
1	'High'	1758	8
2	£50-80	14210	54
3	£20-50	24397	42
4	Rent = £4 plus	7313	11
5	Other Council	21892	35
Totals		69570	150

[6] Presumably this refers to 'Rateable Value'.

This gives a sample population of 150, approximately 0.2% of the electoral population.[7]

Had this sample been selected by random sampling of each of these strata, the numbers of speakers chosen for each stratum ought to be proportional to the percentages of population found in each stratum. The figures above do not, however, bear this out. If the figures are converted into percentages of the total (for Population and for Sample), it can be seen that the sample does not accurately represent the breakdown of the population:

Figure 26: Constitution of the TLS Phase 3 projected sample.

Stratum	% Population	% Sample
1	2.5	5.33
2	20.5	36
3	35	28
4	10.5	7.33
5	31.5	23.33

Note, in particular, that the higher socio-economic strata, 1 and 2, are overrepresented in the sample, whilst the lower socio-economic strata, 3, 4 and 5, are underrepresented. The reason for this seemingly anomalous situation is given in McNeany (*no date:* 2):

> The proportion of non-localised speakers in the population however is such that such a sample would not yield enough of them to facilitate an acceptable classification ... the total proportion of the population represented in them is small, while the number of varieties is, at least hypothetically, equal.

That is, McNeany predicts that a small sample does not adequately represent the range of speech varieties found amongst non-localised speakers since they form only

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[7] The total population figure is slightly different than that derived from the 1971 census, discussed in Section 5.6.4 below. This difference reflects the divergence between the two sources used to establish the population (the Electoral Register and the census respectively).

a small proportion of the population. In Section 4.6, I discussed exactly this problem, with reference to the rarity of traditional dialect speakers in the community. In that discussion, I suggested that the rarest speech types were unlikely to be selected in (relatively small) samples of the population unless the sample was designed to target these extremes. This is precisely the procedure followed by McNeany (*no date:* 2), when he proposes:

> the drawing of a random sample from each of the 33 polling districts, supplemented by a proportionately larger sample from some districts in order to uncover a reasonable proportion of non-localized varieties.

McNeany (*no date:* 6) argues that although sampling in proportions equivalent to the breakdown of the population is unbiased with respect to the proportions of middle-class and working-class speakers in the population, such a sample is biased with respect to the question "'What varieties are spoken' since we will not have full rep[resentation] of N[on-]L[ocal] and middle class varieties". Proportionally larger sampling of middle-class polling districts is the means by which this bias is redressed, although McNeany (*no date:* 5) admits that "from a numerical point of view this is a biased sample". It is this desire to include more non-localised speakers which accounts for the mismatch between the population and sample figures given above.

5.3.2. Elicitation of the linguistic and social data

The TLS (Phase 3) data were elicited by means of interviews, in the homes of the informants, conducted by Vincent McNeany. The interviews were normally on a one-to-one basis (the interviewer and interviewee), although on a number of occasions, a third (and fourth) speaker was present. These interviews, which were recorded on reel-to-reel tapes, were conducted with two purposes in mind: (1) to collect linguistic data; and (2) to collect social data. In order to achieve both of these aims in the limited time available for interview, the interviews were, in most cases, fairly structured. The typical TLS (Phase 3) interview consists of a series of conversational questions designed to elicit the social information described in Section 5.2 (the main part of the interview), followed by a short wordlist task, a lexical recognition task, and a syntactic acceptability judgement task. A transcribed example of such an interview

is given in Appendix 5. Due to the everyday nature of the questions asked, and the easy manner of the interviewer, the first part of the interview was, in most cases, fairly conversational, providing a substantial sample of naturalistic speech.[8] The extent to which this represents the typical linguistic behaviour of the informants is unknown although in more than a few cases the interviews are conversational to the extent that the usual interview structure is abandoned (see Section 5.6.3 below for some of the problems this creates). The extent to which the TLS (Phase 3) interviews capture a wide range of speech types indicates that the TLS interviews were relatively successful in "gaining access to the vernacular" (Milroy 1987: 24).

5.3.3. The current state of the TLS

It was mentioned in Section 5.2 above that the TLS Phase 3 sample, as described in Pellowe *et al.* (1972: 23-24), does not exist in its entirety. Pellowe *et al.* give a total of 150 for the Phase 3 sample, but as of July 2007, the names of only 107 Phase 3 informants are known, whilst audio recordings exist for only 88 of these speakers (see Allen *et al.* 2007 and the NECTE website). As such, the TLS recordings, as they exist today, represent only a fragment of the whole TLS as described in Pellowe *et al.* (1972), and only a part of Phase 3 of the survey in particular. The reasons for this are uncertain; it is not known whether the 107 named speakers represent all of an incomplete Phase 3 sample, or whether recordings were made for the remaining 43 speakers but subsequently lost. Similarly, the fate of the 19 recordings for which speaker names exist but no recording survives is also unknown. The surviving Phase 3 informants are identified by codes, which consist of a G followed by a three-digit number (e.g. G052). It appears that these codes were invented by the original TLS project members, and they are, therefore, used in this thesis to identify informants.

As was mentioned in Section 5.3.2 above, the original TLS (Phase 3) recordings were made on reel-to-reel tapes. In the thirty-five years since these recordings were made, they have, in many cases, degraded considerably in quality. Fortunately, cassette copies of these reel-to-reel recordings were made in 1994,[9] at a time before

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[8] See Labov (1972: 209) on the Observer's Paradox.

[9] See details of this, see "The Catherine Cookson Archive of Northumbrian Dialect" at <www.ncl.ac.uk/necte/sponsors.htm>.

they had degraded to any significant degree. The quality of these cassette copies remains good, and these versions of the TLS interviews have recently been digitised (as .wav files). The surviving TLS recordings now form part of the Newcastle Electronic Corpus of Tyneside English (NECTE),[10] along with the PVC recordings which provided the data for Watt (1998a) and Watt and Milroy (1999), discussed in Chapter 4. My analysis of the TLS data, described in the following sections, is based upon these recordings.

5.4. The current analysis of the TLS

Although it lies within the historical county of Durham, the account of the traditional dialect of Gateshead given in Viereck (1966) places Gateshead firmly within the area of the 'NURSE-NORTH Merger' (see the relevant data in Appendix 3). As such, the TLS data provides an ideal testing ground for investigation of the linguistic and social distribution of NURSE and NORTH variants in TE.

Although Phase 3 of the TLS was collected using a distinctive methodology, and while it was collected for a particular purpose, there is no reason to suggest that the data which survive cannot be used for (socio-)linguistic analyses which do not depend upon the original TLS methodologies, and this has, in fact, been done, in the realm of morpho-syntax (see Beal and Corrigan 2000, 2002). Beal and Corrigan, who compare systems of negation and relativisation, and pronoun usage and subject-verb concord in the TLS and PVC, suggest that despite these corpora being designed with particular methods and types of analysis in mind, they can both be profitably used in other kinds of analysis. This suggests that sociophonetic analysis of the TLS, in ways that the original project did not envisage, is equally possible.

In Sections 5.5 to 5.8, I detail the methodologies employed in my analysis of NURSE and NORTH in the TLS. These methodologies are designed with the criteria listed at the end of Chapter 4 in mind. Although these methodologies differ from (and, in places, fly in the face of) the intentions of the original TLS project, it is my contention that the TLS data can be profitably analysed in this way.

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[10] See <www.ncl.ac.uk/necte>.

5.5. TLS recordings chosen for analysis

In Section 5.2 above, I discussed the methodology advocated by Strang (1968: 789), whereby "birth and continuous residence in the area" was not a necessary prerequisite for inclusion in the TLS sample, since the aim of such a survey was to "show who speaks what kind of English in a particular area under review". Given the heterogeneous nature of the Tyneside population referred to in Strang (1968), it should not be surprising, then, to discover that a substantial number of speakers who were not natives of Tyneside are among the 88 TLS informants for whom we have surviving recordings. There are, in fact, 11 such informants; the speakers codes for these informants and their places of origin are given in Table 15.

Table 15: Non-native informants in the surviving TLS sample.

Speaker	Place of Origin
G025	Durham
G028	Ulster
G220	Other England
G225	Other England
G229	Durham
G235	Other England
G236	Scotland
G237	Durham
G239	Other England
G333	Durham
G516	Ulster

All of these informants betray, to a greater or lesser degree, linguistic traces of their origins. Those speakers identified as originating in Durham come from parts of County Durham which are linguistically distinct from Tyneside (see Section 2.5 for discussion). Since the purpose of this thesis is to examine the development of a localised feature of TE (the 'NURSE-NORTH Merger'), these non-native speakers are plainly problematic, since they often display phonetic, phonological and lexical differences in these two lexical sets. For example, the speakers from Ulster are at least variably rhotic, and maintain (variably) a NORTH-FORCE distinction. And although the speakers from Durham are geographically proximal to Tyneside, they

appear to have a uniform distinction between NURSE and NORTH which presumably reflects the fact that the 'NURSE-NORTH Merger' is not a feature of the dialect of most parts of County Durham, as was discussed in Chapters 2 and 3.

This problem is not, of course, new. As well as being a concern in traditional dialectology, those who work within a sociolinguistic framework have also had to develop means of dealing with such speakers. For example, Labov (1966: 641), in his survey of New York English, finds it necessary to treat "out-of-town" speakers separately, since "during their formative years, they were not exposed to the traditional dialect of the city". Trudgill (1974: 25) discusses the same problem, suggesting that "to obtain a realistic picture of the speech of the city, and particularly of attitudes to Norwich speech, it would have been necessary to interview everybody, irrespective of their origin". Nevertheless, Trudgill (1974: 25) comments that because of "the short time available and the small size of the sample, time could not be spent on informants whose linguistic behaviour was radically different from other informants". As such, Trudgill excludes non-native informants from his analysis altogether. Exclusion of non-natives from socio-linguistic surveys which aim to describe the dialect of a particular area is also recorded in Milroy (1987: 78), where it is stated that all of her informants were natives of Belfast, although one was "brought to Belfast as a very small child". More recently, Stoddart, Upton and Widdowson (1999), Stuart-Smith (1999: 204), and Williams and Kerswill (1999: 141) all record that their informants are natives of the areas under investigation.

Similarly, Watt (1998a) and Watt and Milroy (1999) examine the speech of only native Tynesiders, and although the PVC corpus does contain two speakers of Pakistani ethnic background, these are not included in the analysis. This is presumably because they display a number of phonetic and phonological patterns which are not native to Tyneside, despite their otherwise localised mode of speech.

In order to avoid the problem of having to cater for non-native patterns in my analysis of NURSE and NORTH in TE, I exclude the non-native speakers in the TLS from my analysis and, as such, they are not discussed further in this thesis.

A number of the remaining TLS informants have also been excluded from the analysis for a variety of reasons: bad quality of recording, late discovery of recording, difficulty in determining who is speaking, etc. None of these speakers was excluded on linguistic grounds. These speakers are: G046, G211, G218, G219, G313, G319, and G510.

With the exclusion of these 7 speakers and the non-natives, the final sample to be analysed in this thesis is of 70 speakers. Table 16 lists the speaker codes for these informants.

Table 16: TLS informants included in the current analysis.

G011	G012	G016	G021	G022	G023	G024
G026	G027	G029	G033	G034	G035	G036
G041	G042	G044	G045	G047	G051	G052
G053	G054	G055	G056	G057	G058	G210
G212	G213	G214	G215	G216	G221	G223
G224	G226	G227	G228	G230	G238	G312
G316	G317	G318	G320	G321	G322	G323
G324	G325	G326	G327	G328	G329	G331
G332	G511	G515	G517	G518	G519	G520
G521	G522	G525	G526	G527	G528	G529

5.6. Social variables

In order to establish the distribution of NURSE and NORTH variants in the community, it is necessary to determine which social variables are important in affecting the distribution of linguistic variants. Since an ambitious analysis of a large number of social variables, of the kind advocated by the original TLS project, is beyond the scope of this thesis, I have chosen to concentrate on three social variables which have been shown, time and again, to be central in the explanation of linguistic variation and change: gender, age and social (socio-economic) class.[11] Even more importantly, these three variables have been demonstrated to be

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[11] Despite the criticisms in Jones-Sargent (1983), discussed above.

important in determining the distribution of linguistic variants in Tyneside English, being the three social variables used in the analysis of NURSE by Watt (1998a) and Watt and Milroy (1999). As such, a degree of comparability will be introduced if my analysis of the TLS data uses the same three social variables.

They are discussed in Sections 5.6.1 to 5.6.3, and while determining the gender and age of speakers is straightforward for all of the TLS informants, the determination of social class is complicated by the very insistence of the original TLS project on analysing 38 social variables. My method for overcoming this complication is detailed in Section 5.6.3.

5.6.1. Gender

The importance of gender[12] as a factor in the distribution of linguistic variants in the speech community was a central hypothesis of traditional dialectology, as illustrated, for example, in the statement by Orton (1962: 15), quoted in Section 2.3.4.1: "in this country men speak vernacular more frequently, more consistently, and more genuinely than women". Gender continues to play a central role, appearing as a core social variable in almost every sociolinguistic analysis. As Cheshire (2002: 425) points out, Labov (1990: 205) believes that "Among the clearest and most consistent results of sociolinguistic research in the speech community are the findings concerning the linguistic differentiation of men and women", and this centrality of gender to linguistic variation leads Labov (1990: 210, 213, 215) to establish three general empirical principles:

> **Principle I:** In stable sociolinguistic stratification, men use a higher frequency of non-standard forms than women.
>
> **Principle Ia:** In change from above, women favour the incoming prestige forms more than men.

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[12] I use the term 'gender' rather than 'sex' since, in the words of Cheshire (2002: 423) sex refers to "the physiological distinction between males and females", whilst gender refers to "the social and cultural elaboration of the sex difference". Since I am dealing with one such social and cultural factor, linguistic behaviour, 'gender' is the suitable term.

Principle II: In change from below, women are most often the innovators.

Labov (1990: 210) states that "Evidence for Principle I is uniform and voluminous". Cheshire (2002: 429) points out, however, that research by Milroy (1992), Milroy and Milroy (1993), Milroy *et al.* (1994), and Milroy and Milroy (1997) suggests that "it is misleading to say that women favour prestige forms" in all cases. Nevertheless, Cheshire (2002: 428) adds that it is "uncontroversial" that "there are likely to be gross differences between the linguistic behaviour of men in a community on the one hand, and women on the other".

One of the studies mentioned by Cheshire, Milroy *et al.* (1994) illustrates perfectly this more complex interplay of gender and innovation. In their analysis of the distribution of the glottal replacement of /t/ in the speech of children from Tyneside, Milroy *et al.* (1994: 21) reveal that there is a "clear preference by the girls for glottal stop replacement", whilst there are "much higher levels of use by the boys of glottal reinforcement of /t/" (p. 22). They suggest that glottalisation of /t/ is a traditional feature of TE, whilst glottal replacement of /t/ is a (formerly) stigmatised feature of British English which is spreading rapidly. Having analysed a number of previous examinations of glottal replacement in English, Milroy *et al.* (1994: 26) suggest that "gender-marking may override class-marking as the underlying social mechanism whereby linguistic change is implemented and diffused in the speech-community". They hypothesise that, on Tyneside, "females lead in the change, and that the establishment of the glottal stop as a middle-class form ... is dependent on, and secondary to, its establishment in the speech of females" (Milroy *et al.* 1994: 26). This process has, Milroy *et al.* (1994: 26) suggest, brought about a "reversal of the traditional low evaluation of the glottal stop". The distribution of glottalisation and glottal replacement in the data analysed by Milroy *et al.* (1994) suggests not only that Labov's Principle I is in operation in TE but, also, that although women are the innovators (in accordance with Labov's Principle II), the changes they lead need not necessarily represent "incoming prestige forms" (Labov 1990: 213).

Another very apposite illustration of the importance of gender in determining the distribution of linguistic variables in TE is revealed in the analysis of NURSE by Watt (1998a) and Watt and Milroy (1999). In Section 4.2, I discussed Watt and Milroy's

findings that [ɔ:] in NURSE is characteristic of older working-class males, whilst [ø:] is characteristic of younger females from both socio-economic groups. That is, the distribution of [ɔ:] conforms to Labov's Principle I, whilst the distribution of [ø:] fits with the finding of Milroy *et al.* (1994) that young females in Tyneside are in the forefront of change, change which is not necessarily in the direction of a prestige standard.[13] Watt and Milroy (1999: 39) find that "gender is the principal factor underlying these patterns of variation", a pattern which is shared by the other variables in their analysis (the FACE and GOAT vowels). This leads Watt and Milroy (1999: 42) to suggest that "Differentiation by gender is much sharper than differentiation by class and seems in fact to be tantamount to a sociolinguistic priority" in TE.

Given the importance of gender as a sociolinguistic variable in general, and the importance it plays in the PVC data in particular, I have chosen gender as one of the three variables in my sociolinguistic analysis of NURSE and NORTH in the TLS. It will be seen in the following chapter that this variable is also of central importance in the distribution of the NURSE and NORTH vowels in the TLS.

5.6.2. Age

In addition to being considered an important determiner of linguistic behaviour in traditional dialectology (see, for example, the discussion in Section 2.3.4), age, along with gender and social class, is one of the most frequently analysed sociolinguistic variables. Eckert (1997: 151) suggests that "historical change will inevitably be reflected in age stratification", making age key to the historical analysis of linguistic variables such as NURSE and NORTH.

As was noted in Section 4.2.2, the comparison of the distribution of linguistic variables between different age groups can allow us to view the trajectory of linguistic development in apparent-time. Labov (1994: 72) suggests that "the inferences to be drawn about change in progress from apparent-time are not negligible, and that this type of analysis can be pursued profitably when no real-time data are available". As

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[13] Watt and Milroy (1999: 40) describe [ø:] as "a supra-local variant" which has "a wider distribution in the English south and midlands".

Eckert (1997: 151-2) reminds us, however, this kind of apparent-time interpretation may be problematic, since:

> With just the evidence from apparent time, it is ambiguous whether the language patterns of the community are changing over the years or whether the speakers are becoming more conservative with age – or both. Without evidence in real time, there is no way of establishing whether or not age-stratified patterns of variation actually reflect change in progress.

Although Watt (1998a: 91) suggests that instances of such 'age-grading' appear to be rare, particularly in the phonetic/phonological domain, apparent-time interpretations of age-stratified linguistic patterns should, where possible, be backed up with real-time evidence, as Eckert suggests. In terms of my analysis of age-stratified patterns in the TLS data, the fact that these data come from a period intermediate to the traditional dialect data analysed in Chapters 2 and 3, and the PVC data discussed in Chapter 4, should provide the necessary checks on the apparent-time interpretation, not only of the TLS data itself, but of the developments hypothesised in Watt (1998a) and Watt and Milroy (1999).

As was discussed in Section 4.2.1, the PVC sample used by Watt (1998a) and Watt and Milroy (1999), in their analysis of NURSE, is divided into two age groups, younger (15-27) and older (45-67). Watt and Milroy (1999: 39) find that in addition to gender, age also has a considerable impact in determining the distribution of the three variants, with [ɔ:] characteristic of older speech, and [ø:] characteristic of younger speech. As was discussed in Section 4.2.2, this difference in apparent-time leads Watt and Milroy to suggest that [ɔ:] is recessive, whilst [ø:] is on the increase.

In order to fully understand the distribution of NURSE and NORTH in the Tyneside speech community, then, I have included age in my analysis of the TLS data. In so doing, comparison with the PVC data can be made and, it is hoped, further insight into the history of NURSE and NORTH in TE will be possible through an apparent-time analysis of the TLS data.

Age was one of the social variables collected by the TLS (see Section 5.2 above), the age of each speaker being defined by decade (e.g. 21-30). The numbers of speakers in each of the decades present in my sub-sample is given in Table 17.

Table 17: Numbers of TLS speakers in each age group.

Decade	No. of speakers
17-20	5
21-30	12
31-40	17
41-50	18
51-60	9
61-70	6
71-80	3

Although breaking down the sample into these original age groups might contribute towards establishing a detailed picture of the social make-up of the sample, using such fine-grained age categories in my sociolinguistic analysis of the TLS data is problematic for a number of reasons. Firstly, some of these age groups have relatively few members (e.g. 71-80). When age is combined with the other social factors discussed in this chapter (gender and socio-economic status), this becomes even more problematic, since speakers will be distributed across a wide range of social groups (e.g. female, 71-80, lower socio-economic group), the membership of which will be very small indeed (and, in some cases, non-existent). This problem is exacerbated by the fact that two of the age groups, 61-70 and 71-80, contain members of only one gender (male in the case of the 61-70 group, female in the case of the 71-80 group), leading to problems of non-comparability. Secondly, dividing speakers into seven age groups in this way may, in fact, hide interesting distribution patterns, not only because the figures for each group will be smaller, but also because it will be much more difficult to effectively illustrate the differences between all of these age groups in the form of graphs. Thirdly, the division of speakers into these seven age groups will make it more difficult to compare the data from the TLS with the data from the PVC (age groups 15-27 and 45-67). Clearly there is no way of comparing the age groups of the TLS and PVC exactly, but it will be possible to make

them more comparable if the TLS age groups are amalgamated into a smaller number of larger groups.

Although a number of ways of amalgamating the TLS age groups suggest themselves, some are more problematic than others. Since the TLS age groups cover just over 60 years, it might seem reasonable to divide these into three groups covering roughly 20 years each (i.e. 17-40, 41-60 and 61-80). If such a procedure were followed, however, the groups would have 34, 27 and 9 speakers respectively. However, the small number of speakers in the oldest age group is undesirable, there is no obvious naturalness to these age groupings, and they are not comparable to the PVC age groups. Rather, I have amalgamated the TLS age groups into the three larger groups detailed in Table 18.

Table 18: The amalgamated TLS age groups.

Age group	Number of speakers
17-30 ("younger")	17
31-50 ("middle")	35
51-80 ("older")	18

Dividing the speakers in this way resolves the problems listed above to some degree (the older age group has more members, and the younger and older age groups are comparable in size; the younger and older age groups are roughly comparable to the PVC age groups).

5.6.3. Socio-economic status

Ash (2002: 402) states that "Social class is a central concept in sociolinguistic research, one of a small number of social variables by which speech communities are stratified", and that this use of social class as a social variable in linguistic research "regularly produces valuable insights into the nature of linguistic variation and change. Thus, this variable is universally used and extremely productive".

An example of this use of social class is found in Watt (1998a) and Watt and Milroy (1999). Watt and Milroy (1999: 27) divided the PVC speakers into two "broadly defined socio-economic class" groups, "working" and "middle" class (see the

discussion in Section 4.2.1). Watt (1998a: 130) tells us that these groups were defined by the place of residence of the informants and the "social networks of the fieldworker's initial contacts". Two areas of Newcastle, known to be working- and middle-class respectively, were sampled. Watt (1998a: 131), in support of this categorisation, states that "Information derived from ward statistics to be found in the General Census of 1991 ... indicates that these areas differ from one another in a number of socio-economic dimensions", although he does not identify what those dimensions are. In their analysis of NURSE in the PVC, Watt (1998a) and Watt and Milroy (1999) find that socio-economic group is less important than gender or age for determining the distribution of variants. Nevertheless, there is one rather strong effect which depends upon socio-economic group. The distribution of the back variant [ɔ:] is largely restricted to older working-class males, whilst their middle-class counterparts have substantially fewer instances of this variant (see Figure 21 in Chapter 4).

In order to assess its relevance to the distribution of NURSE and NORTH variants in the TLS, and so as to allow for comparison with the PVC data, it is desirable that my analysis of the social context of variation in the NURSE and NORTH vowels in TE should, in addition to gender and age, take social class into account. Nevertheless, the definition of social class is problematic. Ash (2002: 419) suggests that "Researchers interested in linguistic variation and change have been wrestling with the problems of defining and implementing the notion of social class as long as they have been studying the social embedding of language". Since this thesis is not an investigation of the nature of social class on Tyneside, I cannot hope to resolve this problem here, and since the TLS is a historical corpus with its own methodologies for interpreting the social structure of the sample population, the kind of social analysis used by Watt (1998a) and Watt and Milroy (1999) is not possible. Rather, I use a method for analysing the social class structure of the TLS sample which has proved, in previous linguistic research, to be effective in explaining the distribution of linguistic variables in the community: the construction of a composite social scale based on a number of key social variables.

A number of well known sociolinguistic studies, for example Labov (1966) and Trudgill (1974), use precisely this method. In both of these cases, each speaker was given a score for a number of social variables; in Labov (1966), these variables were:

occupation, education and income; in Trudgill (1974), these variables were: occupation, father's occupation, income, education, locality and housing. For each of these social variables, there were a number of ranked values, and speakers were scored accordingly; so, for example, Trudgill (1974: 39-40) divides education into six values, ranked and scored as follows:

Figure 27: Index scores for education in Trudgill (1974).

		Index Score
I	Some university or college education	5
II	A-level or equivalent	4
III	O-level, C.S.E. or equivalent	3
IV	15+ at termination of education	2
V	14 at termination of education	1
VI	13- at termination of education	0

Both Labov (1966) and Trudgill (1974) combined the totals of the scores for each (equally weighted) social index to give an overall social class score for each speaker (in Trudgill's case, from 0 to 30, lower figures indicating lower social status and higher figures indicating higher social status). In both cases, the range of social scores which resulted were amalgamated into a smaller number of groups (in Labov's case, into 3 to 4 groups: lower-class, working-class, and middle-class, which was optionally divided into lower and upper subclasses; in Trudgill's case, into five groups: lower working-class, middle working-class, upper working-class, lower middle-class, and middle-class).

The wide range of social indices ideally collected for each TLS informant are listed in Appendix 4, and it is from these that particular social characteristics must be chosen in order to determine the social status of the informants. Following Labov and Trudgill, the following social variables are chosen from those supplied by the TLS as input to my composite socio-economic scale:

1) occupation
2) father's occupation
3) education
4) housing

Many of the women in the TLS sample, from all social classes, were housewives and, in many cases, they had not worked since they got married. As a result, their occupation can only be defined as whatever work they had been employed in prior to that time. Often these were low status jobs which did not reflect their socio-economic status at the time the TLS interviews took place. Similarly, many of the married women who did work only did so part-time, again often in low status jobs that failed to reflect their current socio-economic status. Without qualification, this aspect of Gateshead society in or around 1970 has the potential to lead to underestimation of the socio-economic status of women in the sample (see Trudgill 1974: 38-39 for a discussion of this problem in his Norwich sample). In order to ameliorate this effect to some degree, a fifth social variable, not in the original TLS list of variables, but one which is sometimes retrievable from the interviews themselves, is added, for married women only. This is:

5) husband's occupation

Since this variable is only known for a subset of the women in the sample, it only goes part of the way to balancing the socio-economic status of females in the sample.[14]

Each informant was given a score of 1, 2 or 3 for each of these social variables, 1 representing the lowest socio-economic value, 3 the highest. The details of this scoring system are given in Table 19.

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[14] Including reciprocal information for males (i.e. wife's occupation) is not possible since this information is almost never supplied.

Table 19: Criteria for the scoring of the social variables.

Social Variable	1	2	3
Occupation	categories IV and V on the Registrar General's classification of occupations	categories IIIN and IIIM on the Registrar General's classification of occupations	categories I and II on the Registrar General's classification of occupations
Father's occupation	categories IV and V on the Registrar General's classification of occupations	categories IIIN and IIIM on the Registrar General's classification of occupations	categories I and II on the Registrar General's classification of occupations
Education	legal minimum	some degree of further education	higher education
Housing	council	privately rented	owner occupied
Husband's occupation	categories IV and V on the Registrar General's classification of occupations	categories IIIN and IIIM on the Registrar General's classification of occupations	categories I and II on the Registrar General's classification of occupations

The occupational categories are derived from the Registrar General's Classification of Occupations (1970), where the following social class divisions are used (p. x):[15]

I. Professional, etc. occupations
II. Intermediate occupations
III. Skilled occupations
    (N) non-manual
    (M) manual
IV. Partly skilled occupations
V. Unskilled occupations

The three values for education are directly retrievable from the original TLS social variables 8 and 9 ('school leaving age' and 'tertiary and further education'). 'Some degree of further education' in the present classification signifies that the speaker remained at school beyond the legal leaving age, often to study A-levels, or was

[15] The definition of which professions are associated with which category can be found in the Registrar General's Classification of Occupations, Appendix B.1.

engaged in some form of further education at college or through work. 'Higher education' includes university education or equivalent professional qualifications.

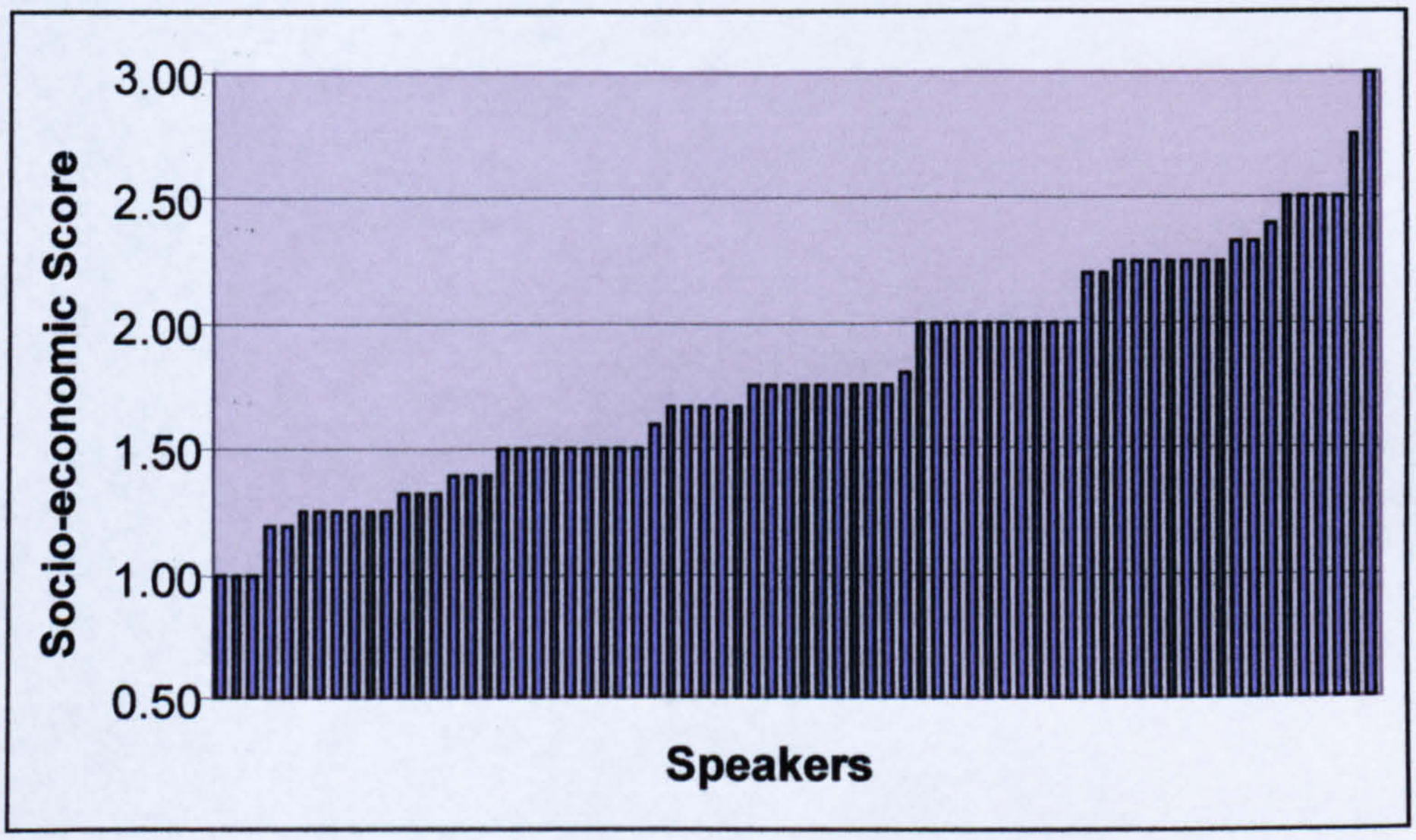
Although the social variables listed in Jones-Sargent (1983), given in Appendix 4, includes 'rateable value of dwelling', this information is not retrievable from the TLS interviews. Rather, the scoring of the housing variable is derived from a question, asked in almost all of the surviving TLS interviews, concerning the nature of the speaker's occupancy of their current property. Three options are available, and I have scored these 1 to 3: 1 for council, 2 for privately rented, and 3 for owner-occupied. Trudgill (1974: 40-41) uses these same three categories as part of his assessment of his housing social variable.

Since four variables are scored for males, whilst five are scored for some females, it is not possible to give meaningful total scores for each informant in the same way that Labov (1966) and Trudgill (1974) do. Rather, it is necessary to average the scores for each informant according to the number of variables scored, giving a final score of between 1.00 and 3.00. I return to the interpretation of these average scores below.

In Section 5.2 above, I intimated that despite the TLS interviews being designed to elicit the bulk of the social variables listed in Jones-Sargent (1983), this ideal was not always achieved for a number of reasons. Whether this was because of the garrulity of the informant, the forgetfulness of the interviewer, or, in the case of husband's occupation, because it was not part of the original list of social variables, it is sometimes the case that one or more of the values for the social variables of current interest is unknown. Rather than omit such informants from the analysis (this would considerably decimate the sample), an average score is computed for these informants according to the number of social variables used, again giving a value between 1.00 and 3.00. Clearly this reduces the absolute reliability of the socio-economic score for these informants, but this is, in my opinion, preferable to excluding these informants from the analysis or failing to establish the distribution of NURSE and NORTH variants by socio-economic class. Details of these scores are given in Appendix 6 for all of the TLS informants included in the present analysis.

Having calculated a series of socio-economic scores between 1.00 and 3.00, some method for grouping speakers in this range is required in order to make it usable. Figure 28, which ranks the speakers by socio-economic score, illustrates that no obvious groupings fall out of the composite socio-economic scoring system devised above. Rather, there is something close to a continuum of scores from lowest (1.00) to highest (3.00).

Figure 28: The distribution of socio-economic scores in the TLS.



One way of dividing this continuum would be to divide it into a number of units with equal numbers of speakers in each (for example, seven groups of 10 speakers, five groups of 14 speakers, or two groups of 35 speakers). Although such a method ensures that each socio-economic group has comparable numbers of speakers, it takes no account of the frequency of particular socio-economic scores in the community. Nor does such a method cater for the very likely situation whereby speakers with the same socio-economic score would have to appear in different groups to keep the numbers of speakers in each group equal.

In light of these problems, it is clear that the socio-economic scores of the speakers must be divided at points on that socio-economic scale, rather than by numbers of speakers, in order to best represent the social profile of the sample. The number of such divisions should be such that they contain as many speakers as possible (so that, when gender and age are factored in, we do not end up with too wide an array of social categories), whilst at the same time reflecting the continuous nature of the

socio-economic scores in the sample. In this analysis, I opt, therefore, for three groups. Since the range of social scores is from 1.00 to 3.00, the range of these three groups is from 1.00 to 1.66, 1.67 to 2.33, and 2.34 to 3.00. These three socio-economic groups are labelled 1 ('lowest'), 2 ('middle'), and 3 ('highest'). Table 20 summarises the numbers of speakers who fall into each of these socio-economic groups.

Table 20: Numbers of TLS informants in each socio-economic group.

Socio-economic group	Number of speakers
1 ('lowest')	27
2 ('middle')	36
3 ('highest')	7

Although the numbers of speakers in the two lower socio-economic groups are roughly comparable, the figure for socio-economic group 3 (the 'higher') group is very low. This low figure implies that the intention of McNeany (*no date:* 2), to supplement the sample with "a proportionately larger sample from some districts in order to uncover a reasonable proportion of non-localized varieties", was never realised, or has been disrupted due to the fragmentary nature of the surviving TLS corpus, since socio-economic group 3 appears to roughly correspond to the middle-class part of the TLS sample. Groups 1 and 2, on the other hand, correspond roughly to the working-class part of the TLS sample.

5.6.4. Summary of the sample

In order to establish the social distribution of NURSE and NORTH variants in the speech of the 70 TLS speakers analysed in this thesis, and to increase comparability with the analysis of NURSE in the PVC by Watt (1998a) and Watt and Milroy (1999), each speaker is defined in terms of three social variables: gender, age and socio-economic group. Full social details for each informant can be found in Appendix 7. Furthermore, the distribution of these three social variables in the sample is summarised in Table 21.

Table 21: The social characteristics of the TLS sample.

	Socio-economic Group						Total		
	1		2		3				
Age	M	F	M	F	M	F	M	F	M&F
17-30	1	4	5	4	2	1	8	9	17
31-50	5	10	7	10	1	2	13	22	35
51-80	3	4	4	6	1	0	8	10	18
Total	9	18	16	20	4	3	29	41	70
	27		36		7		70		

Table 22: The social groups in the TLS sample.

Social Group	No. of speakers	Abbreviation
Younger male, socio-economic group 1	1	YM1
Younger female, socio-economic group 1	4	YF1
Younger male, socio-economic group 2	5	YM2
Younger female, socio-economic group 2	4	YF2
Younger male, socio-economic group 3	2	YM3
Younger female, socio-economic group 3	1	YF3
Middle male, socio-economic group 1	5	MM1
Middle female, socio-economic group 1	10	MF1
Middle male, socio-economic group 2	7	MM2
Middle female, socio-economic group 2	10	MF2
Middle male, socio-economic group 3	1	MM3
Middle female, socio-economic group 3	2	MF3
Older male, socio-economic group 1	3	OM1
Older female, socio-economic group 1	4	OF1
Older male, socio-economic group 2	4	OM2
Older female, socio-economic group 2	6	OF2
Older male, socio-economic group 3	1	OM3
Older female, socio-economic group 3	0	OF3

Table 21 reveals that in the TLS sample of 70 speakers, there are 29 males and 41 females, 17 'younger', 35 'middle-aged' and 18 'older' speakers, and 27 speakers in the lowest socio-economic group, 36 in the middle socio-economic group, and 7 in

the highest socio-economic group. The combination of these social variables results in 18 social groups, the speakers within each sharing the same social characteristics. These groups, the numbers of speakers in each, and the abbreviations used for them in the remainder of this thesis, are summarised in Table 22.

Some of these groups (e.g. MF1, MF2, both with 10 members) are well represented in the sample, whilst others are very poorly represented (e.g. YM1, YF3, MM3, OM3, all with only one member), and one group, OF3, has no members at all.

Although there is clearly a wide range of social types in this sample, it is immediately apparent that the TLS sample is far from being a perfect sample in terms of the equal distribution of speakers across the three social variables. There are probably a variety of reasons for this: the varying proportion of the various social types in the population, variation in the social types which were selected in the TLS sampling procedure, and (not least) variation due to the fragmentary nature of the surviving TLS corpus. A comparison of the social make up of the surviving TLS sample with the social make up of the whole Gateshead population at the time (as revealed in the 1971 census) provides some insight into its representativeness. The tables below compare the percentages of the two populations in terms of gender, age and social class.

Table 23: Numbers of males and females in the 1971 census and the TLS sub sample compared.

	1971 Census (Gateshead)	TLS sub sample
Males	33040 (47%)	29 (41%)
Females	37035 (53%)	41 (59%)

Table 24: Numbers of the three age groups in the 1971 census and the TLS sub sample compared.

	1971 census (Gateshead)	TLS sub sample
16-29	18030 (26%)	17 (24%)
30-49	22335 (32%)	35 (50%)
50+	29710 (42%)	18 (26%)

Table 25: Numbers of the three social groups in the 1971 census (10% sample) and the TLS sub sample compared.

	1971 census (Gateshead)	TLS sub sample
1	831 (30%)	27 (39%)
2	1513 (55%)	36 (51%)
3	340 (12%)[16]	7 (10%)

The comparison of the age groups is complicated by the slightly different decades used in the census and the TLS and, more importantly, by the grouping together of all 70+ speakers in the census, such that the oldest age group is somewhat inflated compared with the TLS. The comparison of the social class groups in the census and TLS is complicated by the composite nature of the TLS category, whilst the census groups are derived solely from the Registrar General's occupational class groupings (1 = IV and V, 2 = IIIN and IIIM, and 3 = I and II).

Despite this, and despite the convoluted history of the TLS sub-sample analysed in this thesis, the figures compared reasonably well. Although there is an imbalance in favour of females in the sample, and while the oldest age group is somewhat underrepresented, the youngest age group and all of the social groups are represented in roughly the proportions they appear in the 1971 census. That is, the TLS sample is reasonably representative of the population of Gateshead at the time of its collection, in or around 1970.

That said, there are a number of key problems remaining. Regardless of how representative the TLS sample may or may not be from a social perspective, conclusions as to the linguistic behaviour of certain groups in the population can only be tentative, given their scarcity in the TLS sample. For example, the small number of speakers in socio-economic group 3 means that any conclusions drawn as to the distribution of NURSE and NORTH variants for that group are less robust than those drawn for socio-economic groups 1 and 2, which are better represented in the sample. This problem is increased when the smaller social groups listed in Table 22

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[16] The remaining 3% are classified as either "Armed Forces" or "inadequately described" in the census.

are considered, since many of these groups have low numbers of speakers. These problems must be borne in mind at each point in the presentation of the data in Chapter 6.

5.7. The phonetic analysis of the TLS data

Of the present-day mergers and near-mergers surveyed in Chapter 1, most (the NORTH-FORCE merger, the MEAT-MEET merger, the FOOT-GOOSE merger, the /ʍ/-/w/ merger, the /w/-/v/ merger, and the MEAT-MATE near-merger) were subjected to auditory analysis, whilst others (the NORTH-FORCE merger, the NEAR-SQUARE merger, the SAUCE-SOURCE near-merger and the LINE-LOIN near-merger) were analysed acoustically. In this section, I examine the pros and cons of auditory and acoustic analysis in order to determine how useful each method is for analysing mergers and near-mergers. I concentrate in particular on the analysis of vowels. In light of this, I outline the methods of phonetic analysis conducted on the TLS data in this thesis. It is clear from the discussion in Chapter 1 that the different ways in which merger develop and the different kinds of merger (or near-merger) which result require different kinds of analysis.

5.7.1. Auditory analysis

Auditory transcription involves a phonetician listening to a (human speech) sound, determining how such a sound is produced (often by imitating the sound), and defining where it lies, both in terms of its articulation and auditory characteristics, in relation to some predefined scheme of phonetic categorisation. The most commonly used scheme is the International Phonetic Alphabet (IPA), which also gives the phonetician some means of symbolising the sound under analysis. Hayward (2000: 4) notes that this involves concentrating "on the proprioceptive (tactile and kinaesthetic) sensations associated with producing speech". If, through training, one knows what configuration of the vocal tract produces a particular sound, then one can use this as an anchor point for comparison with other sounds which will be more or less similar to that fixed point.

One example of this (not without its critics – see Butcher 1982) is the cardinal vowel system, as defined by Daniel Jones (Jones 1917a, b). Taking the cardinal front

vowels (from highest to lowest, [i], [e], [ɛ] and [a]) as an example, one can, if the relative tongue, jaw and lip configurations are known for each cardinal vowel, determine how high a particular vowel token is in the vowel space, relative to these fixed points. Using such an interconnected set of fixed points, any intermediate sound can be located and symbolised using modifying diacritics to indicate its precise location in the vowel space (e.g. a vowel slightly lower than [e] can be symbolised as [e̝], and one slightly higher than [ɛ] as [ɛ̝]. Thus auditory phonetic categories are relative rather than absolute measurements. How fine-grained a particular phonetician can go with such a system depends upon training and practice, but there inevitably comes a point where the search for detail in analysis is met with diminishing returns in terms of accuracy of results.

5.7.1.1. Pros of auditory analysis

One of the chief advantages of auditory analysis is that it can be done fairly quickly, allowing the researcher to analyse a large number of tokens in the time available, something which is especially important if reliable statistical testing is desired (as noted by Milroy and Gordon 2003: 151). Certainly, my own experience is that auditory transcription is much quicker than acoustic analysis of even the first two formants of a vowel. By listening to a vowel token a number of times, a phonetician attempts to determine its height, frontness/backness, roundedness, length, status as a monophthong, diphthong or even triphthong, and looks out for other features such as rhoticity and phonation characteristics. It follows from this that auditory phonetic transcription is (or at least can be) global – a large number of phonetic parameters can be analysed rather than just one or two (although it is also possible, as I discuss below, to isolate one or two important phonetic parameters for analysis once the phonetician is confident that no other variable is at play). As Milroy and Gordon (2003: 150) put it, "the coder makes judgements about vowel quality based on the entire speech signal – that is, using the same input available to the listeners in the community being investigated". If we were to consider all of these characteristics in acoustic analysis, the cost in time might well be ruinous if more than a handful of tokens were to be analysed.

Another factor in favour of auditory analysis that it has been proven to work by a wide range of researchers – indicating its robustness as a classificatory tool (although this

should not blind us to new methodologies which might work even better). For example, Milroy and Harris (1980) were able to determine that the MEAT-MATE merger was, in fact, a near-merger using auditory analysis alone, and Milroy (1976, 1982) was able to provide a sophisticated analysis of the complex phonetics of low vowels in Belfast Vernacular using only auditory analysis. Similarly, much important sociophonetic analysis of TE (e.g. Milroy, Milroy and Hartley 1994, Milroy, Milroy, Hartley and Walshaw 1994, and Watt and Milroy 1999) is exclusively auditory in approach. The technique has even been crucial in cases where acoustic analysis has been employed, at least in an exploratory role. For example, Di Paolo and Faber (1990: 160), in their preliminary auditory analysis of vowels before /l/ in Salt Lake Valley, "noticed that some of the vowels had a voice quality resembling that of creaky vowels", suggesting to them that phonological distinctions were being maintained by phonation type rather than by vowel quality (something later confirmed by their acoustic analysis).

5.7.1.2. Cons of auditory analysis

The cons of auditory analysis have been much discussed, and are surveyed in, for example, Butcher (1982), Kerswill and Wright (1989, 1990), Cucchiarini (1993: 9-13), and Milroy and Gordon (2003: 151-152). Milroy and Gordon (2003: 151) sum up the chief problem with auditory transcription as follows:

> The major concerns with auditory analysis involve questions of reliability. In contrast to the objectivity which is a principle benefit of instrumental measurement, auditory judgements are open to greater subjectivity.

Since auditory analysis relies upon the phonetician's judgement (using proprioceptive and kinaesthetic techniques) as to where a particular sound lies in relation to some predefined scheme, it follows that different phoneticians will have somewhat different appreciations of the same sound. As Gordon and Milroy go on to note, this is more of a problem with continuous variables than with discrete ones, since with discrete variables it is an either/or choice, but with continuous variables phoneticians must place tokens on some scale relative to each other. Anyone who has done phonetic analysis will doubtless have encountered a situation where exactly the same sound is appreciated (and subsequently transcribed) differently by two phoneticians.

Furthermore, it is undoubtedly the case that no matter how hard one tries, or how good one is at phonetic transcription, there will be features in the auditory signal which are not picked up, either because they are not noticed (as important), or because they are below the threshold of our ability to discriminate consciously. For example, Labov (1994: 378) suggests that F2 differences of less than 200 Hz "are most likely to be heard as 'the same'", even if they are statistically significant.

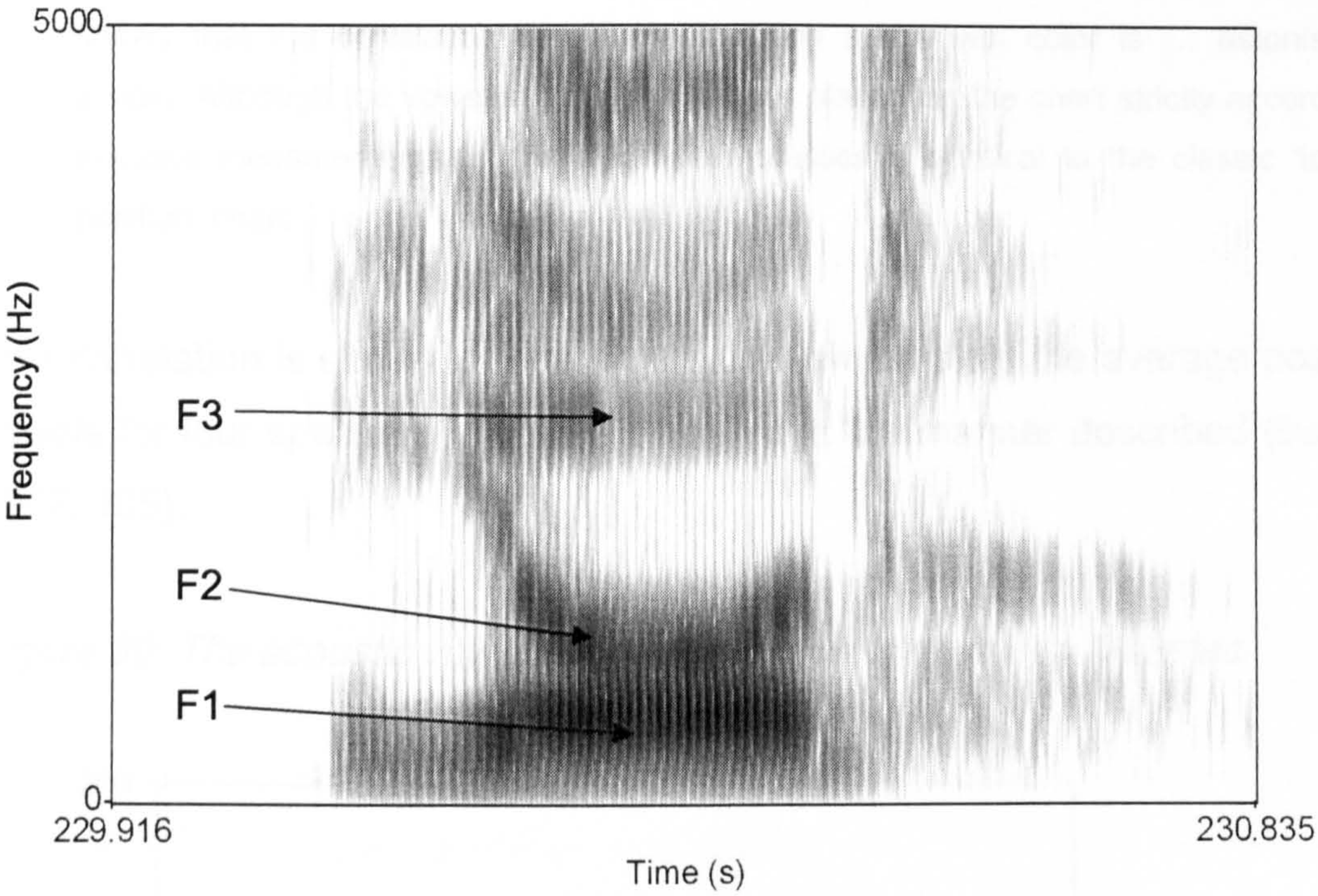
In Section 5.7.4.5 below, a number of techniques are described for constraining the subjectivity of auditory phonetic transcription. It is important to point out, however, that subjectivity does not just affect auditory transcription – it is also something which phoneticians struggle to minimise in acoustic analysis. For example, the measurement of F1 and F2 for a vowel depends upon the phonetician deciding what the best time point of analysis is. If, for example, we decide to measure vowels at the mid-point, we have to decide where that mid-point is. I return to these issues in Section 5.7.2.

5.7.2. Acoustic analysis

Modern acoustic analysis software, such as PRAAT (Boersma and Weenink 2007) converts audio data into spectrograms which can then be analysed in order to determine the phonetic characteristics of the data (see Ladefoged (1996, 2003), Johnson (1997) and Hayward (2000) for details of this process). Spectrograms represent the acoustic signal visually, as illustrated in Figure 29 below.

Spectrograms reveal the multidimensionality of acoustic objects such as vowels. The three basic measurements in any spectrogram are time (in seconds, on the X axis), frequency (in hertz, on the Y axis), and amplitude (in decibels, indicated by the shading in the spectrogram, with higher amplitudes indicated by darker shading). Depending upon our aims, we might want to measure some or all of these variables and we must, if we wish to say anything useful about the spectrogram, decide where to measure on each of these scales so that we can, for example, give a characterisation of a vowel which is not as complex as the spectrogram itself.

Figure 29: A PRAAT spectrogram of the word 'yard' as read by a speaker from Tyneside.



An important characteristic of vowel acoustics is the concentration of energy in particular frequency ranges (some of these are indicated by the labels F1, F2 and F3 in Figure 29). These bands of energy, or formants (again see Ladefoged (1996, 2003), Johnson (1997) and Hayward (2000) for details), are of particular importance in the acoustic categorisation of vowels. Measurement of the frequency of these formants is typically made at the point of greatest amplitude – the formant peak.

Joos (1948: 50-57) discussed the correlation between the frequency of these formants (particularly the first and second formants, henceforth F1 and F2) and vowel articulation. Joos noted that the higher the F1 value, the lower the vowel, and the higher the F2 value, the further front the vowel, in articulatory terms. That is, the value of F1 is negatively correlated with the height of vowels, and the F2 is correlated with the frontness/backness of vowels.[17] Plotting F1 on the Y axis in reverse order,

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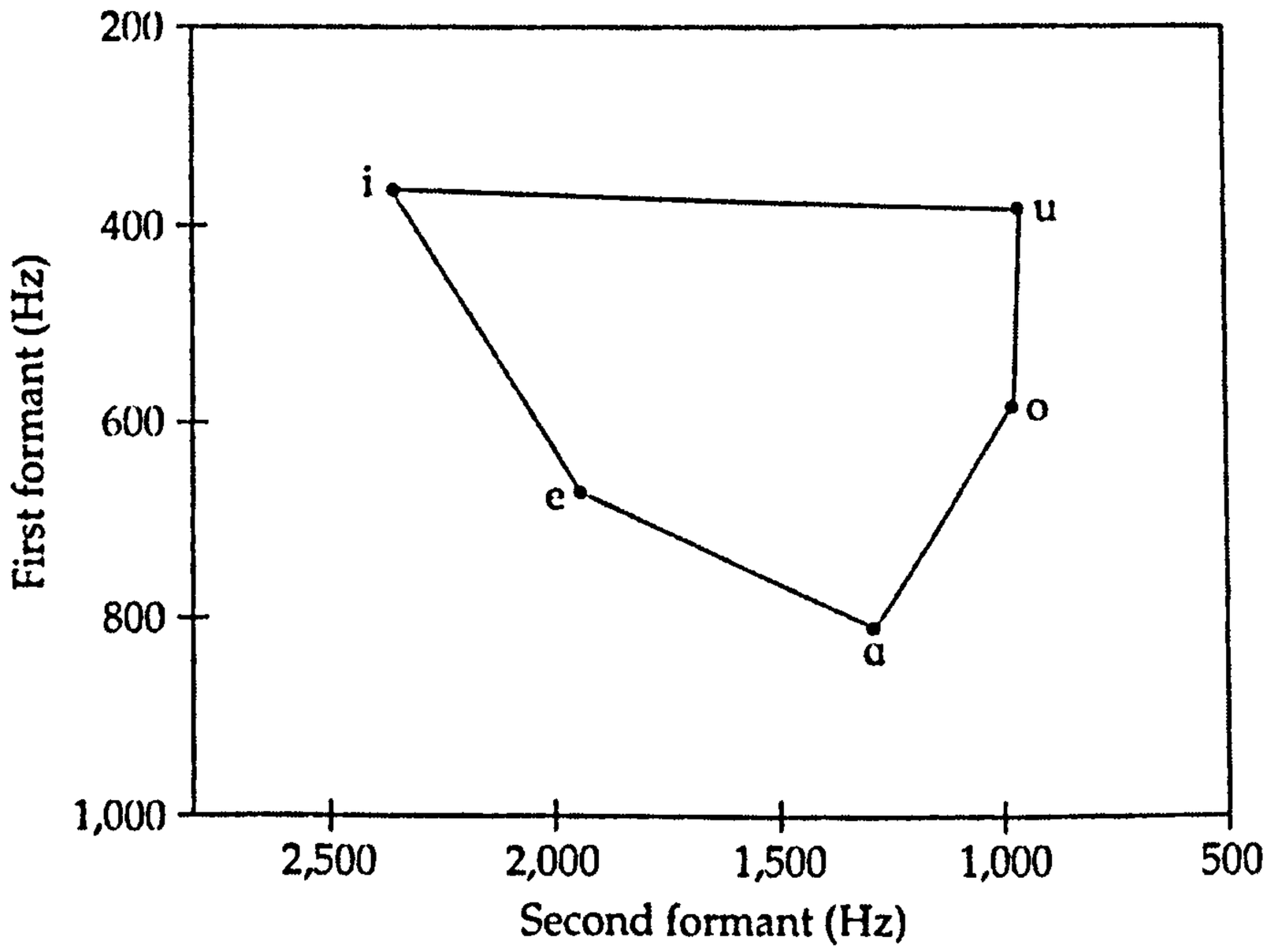
[17] Not negatively in this instance. Values on the X axis normally increase from left to right, such that high F2 values (corresponding to front vowels) appear further right than low F2 values (corresponding to back vowels). This is the opposite pattern for vowels in the vowel quadrilateral, where front vowels appear on the left and high vowels on the right. This is, however, nothing more than an accident of

and F2 on the X axis, again in reverse order, gives us a vowel plot which, in the words of Joos (1948: 53):

> shows that the correlation between articulation and vowel color is ... astonishingly simple. Although the vowel samples have been placed on the chart strictly according to acoustic measurements ... the diagram is practically identical to the classic 'tongue-position' chart.

This correlation is shown in Figure 30 below, which plots the average position of five vowels for four speakers of Jalapa Mazatec in the manner described (from Johnson 1997: 105).

Figure 30: The acoustic vowel space of the vowels of Jalapa Mazatec.



Although the values for F1 and F2 do approximate well to the articulatory categories of height and frontness, there is only so much information that can be captured in a two-dimensional characterisation of vowels. For example, vowel roundness is not accounted for, and here we must consider other characteristics of the vowel spectrogram, in particular the third formant (F3), which is associated with precisely

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history – it just so happens that we represent the vowel chart that way around and not vice-versa, and likewise the X axis as described rather than the other way around.

this characteristic (and other acoustic characteristics such as rhoticity) – see Ladefoged (2003: 105, 131-132, 149-150). In fact Joos (1948: 50) describes F1 and F2 measurements as the "barest essentials" for vowel identification, and gives a long list of other acoustic parameters which may also be important for identifying vowels: overall loudness, pitch, relative formant strength, formant breadth, details of third and fourth formants (F3 and F4), and extra resonances between the usual values of F1 and F2 (and other formants). In their study of vowel distinctions before /l/ in Utah, Di Paolo and Faber (1990) found that a number of these parameters, particularly pitch, were important for distinguishing between vowels which were not differentiated by F1 and F2. In other words, F1 and F2 give us a fairly good if rather minimal way of characterising vowels in such a way as to relate them to the articulatory parameters of height and frontness, but they are not foolproof. That they are generally sufficient for characterising vowels is shown by their use in a number of the studies of merger discussed in Chapter 1, including those of Labov (1972, 1994), Thomas (2001), Warren and Hay (2005), and Hay *et al.* (2006).

A further issue in acoustic analysis of speech is that because acoustic signals are the result of air passing through the vocal apparatus, and because the size of speakers' vocal tracts are not all the same, the frequency of the sounds produced by different speakers are often rather different. What we hear as the same vowel sound produced by a child, an adult female and an adult male almost certainly are, in reality, rather different acoustic objects (see Hayward 2000: 169-170, Milroy and Gordon 2003: 149). These differences are normalised by our (biological) auditory systems, but spectrograms represent actual frequency values without any inter-speaker normalisation. This means that the formant measurements we make for one speaker may not be directly comparable to those of another. This tricky issue requires that we use some sort of normalisation algorithm if we wish to compare different speakers to each other (see, for example, the technique described in Labov *et al.* 2006: 39-40). I do not pursue this matter further here since no inter-speaker comparisons are made in this thesis and, as a result, no normalisation of the acoustic measurements has been necessary.

Although it was noted above that the peaks in frequency of the first two formants (F1 and F2) are particularly useful for characterising the quality of vowels, and this allows

us to control for amplitude (the formant peaks only) and frequency (F1 and F2 only), we must still decide which time point or time points are most suitable for analysis. For diphthongs and triphthongs we must, if we wish to capture their dynamic nature, measure at more than one time point. For monophthongs, measuring at one time point only is generally considered sufficient for categorising the vowel, at least in terms of F1 and F2. Since the measurements made in this thesis are of monophthongs, I discuss only single point measurements here.

Ladefoged (2003: 105) states that:

> Ideally you want to make measurements at a time when all three formants, or at least the first two, are comparatively steady. Unfortunately it very often happens that the most steady-state time of the first formant is not the best time for measuring the second formant, and this means that there is no simple way of defining the interval that best characterises vowel quality.

As a result of this problem, different methods have been employed. Labov *et al.* (1972: 29) measure the "point of inflection – the local maximum – of the first formant" or, if the first formant does not have a point of inflection, "the point of inflection of the second formant". If the second formant also does not show a point of inflection, "the centre of the steady state of the first formant is chosen". Torgersen, Kerswill and Fox (2006: 254) simplify this procedure and measure "the middle of the steady state portion of each vowel", whilst Thomas (2001: 12) simplifies even further: "Measurements were taken in the center of the vowel for monphthongs". Each of these approaches has its pros and cons. It is not always obvious where the point of inflection of a formant is, especially if it is not sharp, and the inevitable result is that subjectivity is introduced. Likewise, it is not clear that the steady state of a vowel formant is segmentable, such that its exact mid-point can be determined. Measuring at the mid-point of the vowel, as Thomas does, appears to be the least subjective approach, although even here there are problems. Turk *et al.* (2006) show that it is easier to determine the boundary between some consonants and vowels than others.[18] In particular, they suggest that oral stops, sibilant fricatives and affricates can most reliably be segmented, whereas segmentation of approximants (including

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[18] See also Peterson and Lehiste (1960).

laterals), voiced fricatives and /h/ should be avoided as it is difficult to determine where the boundaries between them and adjacent vowels lie. Other consonants fall somewhere between these extremes. If we wish to analyse a sufficient number of vowel tokens in conversational data, we may well not have the luxury of measuring only those which fall between some combination of oral stops, sibilant fricatives and affricates. As such, subjective decisions must be made as to where the vowel begins and ends so that the mid-point can be measured, and this is even more true for conversational data and low quality recordings, where consonant boundaries are likely to be less clear (see Figure 31 below for an example).

In light of this introduction to acoustic analysis, particularly of F1 and F2, I examine, in the following sections, the pros and cons of the method.

5.7.2.1. Pros

There are two main advantages to using acoustic analysis rather than auditory analysis. The first of these is that acoustic analysis is, at least potentially, objective. As long as explicit procedures are consistently followed for where the measurements are made and what features of the spectrogram are analysed, the amount of subjective decision on the part of the analyser should be reduced. Programs such as PRAAT give us precise measurements of the points of interest at the particular time we sample (e.g. formant peaks). There are difficulties here which inevitably make the process less objective than we would like (see the discussion immediately below), but in acoustic analysis we are at least measuring something rather than offering our (educated) opinion on it, as we must in auditory analysis.

Closely related to the objectivity of acoustic analysis is the fact that it should, if proper procedures have been followed, be repeatable. That is, another phonetician should be able to arrive at the same (if not identical then at least not significantly different) results when conducting an independent analysis of the same data using the same procedures. This is a distinct advantage over auditory transcription which is well known to present problems of repeatability (as noted above). Key to the accurate replication of acoustic analyses is the establishment of exact criteria for measurement and, in as much as it is not possible to be exact in such matters, repeatability will be compromised to a greater or lesser degree.

Perhaps the most obvious advantage of acoustic analysis is that it can be extremely accurate. Whereas an auditory transcription may indicate a vowel as short, mid-length or long, an acoustic analysis of the same vowel can tell us exactly how long (in milliseconds or parts thereof) that vowel is. Similarly, acoustic measurements can tell us exactly what the frequency of the formants of vowels are in a way that we cannot precisely determine the height of vowels in an auditory analysis. This accuracy of acoustic analysis has its advantages and disadvantages, but it is clear that it has the potential for greater rigour than auditory analysis could ever have.

5.7.2.2. Cons

Although acoustic analysis offers many advantages over auditory analysis, it should not be assumed that it is without (quite serious) problems itself, and a number of these are discussed in Milroy and Gordon (2003: 148-152). An important point that we need to remember in doing acoustic analysis is that programs such as PRAAT do not analyse vowels for us – rather they translate the audio signal into a visual representation (in terms of time, frequency and amplitude) which the analyser must then interrogate in order to establish the character of the vowel. That is, what was a case of auditory judgement in auditory analysis becomes a case of visual judgement in acoustic analysis. In order to measure a vowel acoustically, we must *decide* what to measure and where to measure, and (as noted above) this decision will depend upon a variety of factors, not least our personal judgement. As was discussed above, for instance, the ease of establishing the boundaries of vowels depends upon the kinds of consonant which flank them (Turk *et al.* 2006) – when a vowel is preceded by an approximant, for example, how do we decide where the approximant ends and the vowel begins? Similarly, if we chose to measure vowel formants at one or two points, we must decide where to do so, and this may involve us deciding where the vowel begins and ends, or where its steady state begins or ends, for example. Figure 29 above clearly highlights this problem – although it is a good quality spectrogram, it is not at all clear where the initial [j] ends and the vowel begins, nor where the steady states of F1 and F2 begin or end.

Related to this problem is the issue of how many points we measure in order to characterise a particular vowel. It is commonplace to measure monophthongs at one time point (as is the case in Labov (1972), Thomas (2001) and Torgersen, Kerswill

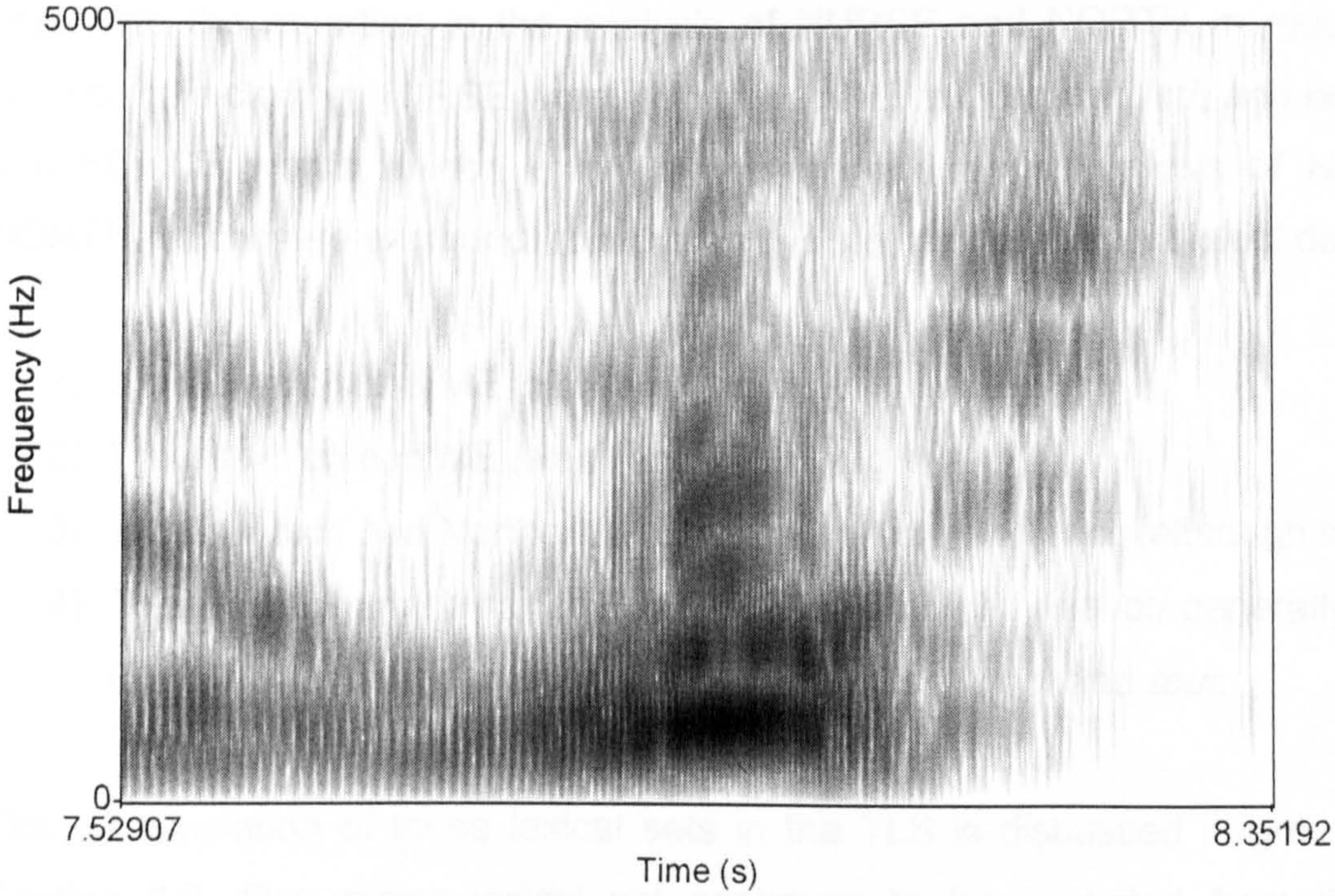
and Fox (2006)) and diphthongs at two points (see Thomas 2001: 12 for example). But is it the case that we capture enough information to characterise a vowel by measuring its acoustic characteristics at one or two time points? Even for monophthongs, formants need not be steady, and this is invariably the case next to adjacent consonants (see Ladefoged 2003: 159-165). The question arises as to whether a single measurement of F1 and F2 is sufficient to characterise a vowel in such a case – as was discussed above, other acoustic parameters may be important for identifying the vowel (as Di Paolo and Faber's research reveals), and, even within F1 and F2, movements of the formants may contain important information on the identity of the vowel involved (but see Harrington and Cassidy (1994) for evidence that mid-point measurements are sufficient, at least under experimental conditions). Indeed, research has found that acoustic information from throughout the syllable and beyond is used for the identification of vowels (see Strange, Verbrugge, Shankweiler and Edman 1976, Strange, Edman and Jenkins 1979). As Diehl and Kluender (1987: 226) state:

> Within certain limits of time and frequency, there is almost no significant aspect of acoustic structure that is irrelevant to phonetic categorisation ... Experienced listeners make use of *all* potentially relevant cues for phonetic categories, provided these clues are detectable ... Relatively localized (e.g. syllable-sized) portions of the acoustic signal generally do not contain sufficient information to specify phonetic categories unambiguously.

This brings us back to the point, made in Section 5.7.1.1 above, that acoustic analysis can be very time-consuming indeed if we wish to analyse more than, let's say, the mid-point of F1 and F2 (and even then it is probably slower than auditory analysis). There is a danger, in acoustic analysis, that we end up with so much detail, as Milroy and Gordon (2003: 149) point out, that we are unable to analyse more than a handful of tokens gathered under experimental conditions rather than from naturalistic speech. If we add to this the problem of normalisation between speakers, the prospects of characterising the speech of a large number of tokens for a large number of speakers is daunting in the extreme. It is for this reason that many researchers narrow the analysis to only one or two acoustic parameters (most typically F1 and F2).

All of these difficulties are great enough when one has high quality recordings and spectrograms to work with. As Figure 29 above shows, high quality spectrograms allow us to identify, in so far as this is possible, consonant boundaries, formant peaks, steady states and formant transitions. All of these identifications become much more difficult when the recordings (and resultant spectrograms) are of lower quality, as Figure 31 illustrates. In Figure 31, it is not clear where the consonants end and the vowels begin, and not only because one of the consonants is an approximant. Likewise, it is not obvious which of the dark bands represent F1 and F2, and there are breaks in the formants which make measurement of their peaks difficult. The best we can do in such cases is determine the peaks of the (apparent) formants where this is possible, and seek to determine whether they fall inside the ranges expected for the kinds of vowel under analysis. Thankfully not all vowels in the TLS are as obscure as the one represented in Figure 31, but many of the problems with it are recurrent. And the more interpretation necessary on the part of the analyser, the less objective the results will be.

Figure 31: A PRAAT spectrogram of the phrase 'the worst', as excerpted from the TLS interview with G044.



So although acoustic analysis does offer another means of analysing vowel which is, potentially at least, more objective than auditory analysis, it is not without significant problems of its own.

5.7.3. Tokens analysed

Before turning to the details of the phonetic analysis of NURSE and NORTH, it is necessary to determine what exactly the object of this analysis is. The answer to this question might seem obvious; after all, a major purpose of this thesis thus far has been to determine the identity of the NURSE and NORTH lexical sets in TE. But since the data from the TLS are of quite a different nature to the traditional dialect data surveyed in Chapters 2 and 3 (it has been extracted from conversational audio data, and comes from a wide range of speaker types), a number of decisions as to what counts as data must be made.

Although the membership of NURSE and NORTH (including FORCE) was made explicit in Chapters 2 and 3, a number of minor lexical sets, excluded from the analysis of the traditional dialect data since they did not take part in the 'NURSE-NORTH Merger' at all (e.g. those subsets including words like *course* and *ward*), enter into the equation in the analysis of NURSE and NORTH in modern TE. In addition to including NURSE words which had ME /ɪr/, /ʊr/ and /ɛr/, and both NORTH and FORCE words, minor lexical sets included in this analysis of NURSE and NORTH which were excluded from the analysis of the traditional dialect data are:

1) Words which had ME /ɔur/, e.g. *fourteen*;
2) Words which had ME /war/ (and /wer/), e.g. *warm*;
3) Words which had Northern ME /a:r/, e.g. *more* and *sore* (although see below);
4) Those words which had ME /o:r/ and /u:r/, which have /ɔ:/ generally in modern English varieties, e.g. *course* and *door*, but not *poor* and *tour*.

The pronunciation of these lexical sets in the TLS is discussed in greater detail in Section 6.2. One major lexical set continues to be excluded from the analysis however – the THOUGHT lexical set. This lexical set has a completely different history than NURSE and NORTH in English, including the northeast of England, the vowel in this set being chiefly derived from the ME sequences /au/ and /ɔux/ (see

Wells 1982: 144-146). In the traditional dialects of the northeast of England, /au/ typically became a vowel such as [a:] or [æ:], and, occasionally, [œ:] (see, for example, the entries *fall*, *talk* and *walk* in Rydland 1998), whilst /ɔux/ typically became a diphthong such as [œʊ], [ɔʊ] or [aʊ], and, occasionally, [œ:] (see, for example, the entries for *bought* and *daughter* in Rydland 1998). Although an [œʊ]-type diphthong in words such as *bought* and *daughter* is now very rare in TE, [a:] in words like *fall*, *talk* and *walk* can still be heard fairly regularly in the speech of working-class males (see Watt and Milroy 1999: 28). The extent to which the vowel [œ:],[19] which is never recorded in NURSE or NORTH in the traditional dialect data, survives in THOUGHT is not known, but any such survivals may well give the impression that some NORTH words have a front rounded vowel if THOUGHT is grouped with NORTH in the analysis. Because of this, and since these words were not historically involved in the 'NURSE-NORTH Merger', they are not considered further.

Within NURSE and NORTH themselves, it has been necessary to exclude a number of other items from the analysis. Some words which belong to NURSE and NORTH occur most frequently in unstressed position, with reduced schwa-like vowels, e.g. *for*, *her*, *(of) course* and *were*. Watt (1998a: 202) and Watt and Milroy (1999: 34) exclude these unstressed forms from their analysis (of NURSE); since most of these words are omitted from my analysis of the TLS data for other reasons (see below), only a small number of words of this sort, which appear in set phrases, remain (chiefly *(of) course* and *sort (of)*, frequently pronounced [əv kəs] and [sər ə]). These are excluded from the analysis of the TLS data, regardless of their pronunciation, since the frequent appearance of a central vowel in such forms gives a false impression of the distribution of pronunciation variants in the NURSE and NORTH lexical sets.

A perhaps more serious decision, in terms of the potential number of tokens analysed, was made to exclude not only NURSE and NORTH words susceptible to

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[19] This [œ:] vowel appears, from its lexical distribution, to be a localised development of non-local /ɔ:/ in THOUGHT, and is the result of the general fronting of non-high back rounded vowels in traditional Northumberland and north Durham dialects (cf. [dœ:g] for *dog* and [kø:l] for *coal* in the OC (Rydland 1998).

reduction in unstressed position but also all NURSE and NORTH words in which the vowel occurs in final position (i.e. no coda consonant is present), e.g. *door* and *fir*. A number of factors conspired to make phonetic analysis of such words difficult and to reduce their comparability with other NURSE and NORTH words. Since TE is non-rhotic, vowel final NURSE and NORTH words are very often followed by words beginning with another vowel. A frequent strategy employed by non-rhotic accents to avoid a sequence of two vowels is the insertion of an /r/, not only in cases where it is historically justified, but also in cases where it is not (so-called 'linking-r' and 'intrusive-r' respectively – see Wells 1982: 222-227 for discussion of this phenomenon). Words which behave in this way may pattern in the same way as words such as *furry* or *story*. Watt and Milroy (1999: 31) suggest, however, that in TE English, "Linking and intrusive R are relatively rare in comparison with other accents in England" (see Foulkes 1997a and 1997b for details). Watt and Allen (2003: 268) suggest, rather, that "insertion of [ʔ] to 'break up' any V = V juxtaposition across a word boundary ... is characteristic of TE". Although my initial investigation of the TLS data did reveal instances of this insertion of [ʔ] between vowels across word boundaries, it was only one of several strategies employed. It is often the case, for example, that speakers in the TLS sample coalesce, to one degree or another, juxtapositions of final and initial vowels across word boundaries, with a range of results, including elision of one of the vowels completely, diphthongs which derive from the two vowel qualities, and vowels of intermediate quality to the two underlying vowels. Hence, the first part of the sequence *more or less* may be pronounced [mɔːɹəl], [mɔɹəl], [məɹəl], [mɔːʔəl], [mɔʔəl], [mɔːəl], [mɔəl], [mɔːl], [məːl], or [mɵ̈ːl] (other pronunciations are also possible). These examples also illustrate what appears to be another common problem with analysing vowel final NURSE and NORTH words in the TLS: such words are often subject to phonetic reduction (either shortening or loss of peripherality), even when pre-pausal or before a word beginning with a consonant.

Including variation of the sorts described above in my analysis of NURSE and NORTH in the TLS would clearly complicate it unnecessarily, and, as such, I do not consider any words with a final vowel further. Although this has the unfortunate effect of reducing the numbers of NURSE and NORTH tokens somewhat, I suggest that

this is preferable to the inevitable confusion that inclusion of such words would bring to our understanding of the development these lexical sets in TE.

After the inclusions and exclusions described above, the total number of NURSE and NORTH tokens examined in my analysis of the TLS sample is as follows:

Total number of tokens: 3510

Total number of NURSE tokens: 2316

Total number of NORTH tokens: 1194

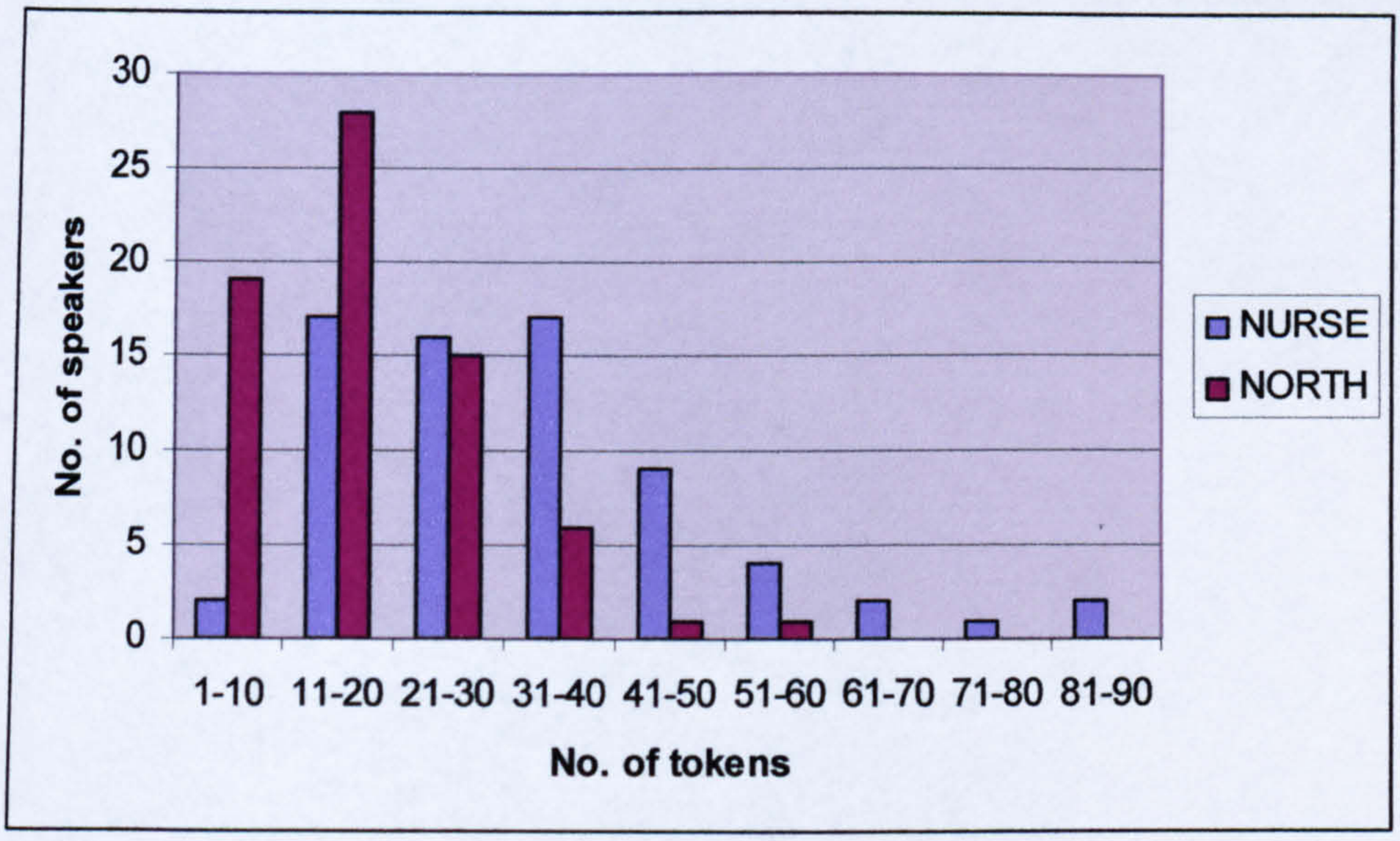
The average number of NURSE and NORTH tokens per speaker are as follows:

Average NURSE tokens per speaker = 33

Average NORTH tokens per speaker = 17

Figure 32 illustrates both the frequencies and the variance in numbers of tokens of NURSE and NORTH in the TLS sample. It reveals that in addition to NURSE tokens being more common than NORTH tokens in the TLS sample, there is considerably more variance in the number of tokens used by each speaker (most speakers have somewhere between 11 and 50 NURSE tokens). There is, on the other hand, a high frequency of speakers who have rather few NORTH tokens (for example, 19 speakers with 10 or less). This low number of NORTH tokens at the level of the individual speaker is clearly problematic in terms of extrapolating from the data to the overall distribution of NORTH in the speech of those speakers, and will be borne in mind in both the analysis and interpretation of the TLS data. As Watt and Milroy (1999: 34) point out, however, this problem is less acute when the figures for individual speakers are aggregated (for example by gender, age or social class, or by the smaller social groups detailed in Table 22 above), such that we can be more confident that the distribution of variants of NURSE and NORTH is representative of the speech of the Tyneside community.

Figure 32: The frequency of NURSE and NORTH tokens in the TLS sample.



5.7.4. Auditory analysis of NURSE and NORTH

The phonetic analysis in this thesis is primarily auditory, with some supporting acoustic analysis of crucial cases. The reasons for making this decision were various: restrictions on time; global appreciation of the NURSE and NORTH vowels; quality of the recordings (it is often easier to form an auditory impression of a vowel in a low quality recording using all of the auditory cues available than to get a reliable formant reading); comparability with earlier (traditional dialectology) and later (Watt and Milroy) research; and, finally, ease of quantification and cross speaker comparison. Acoustic analysis has been reserved for cases where the precise relationship of NURSE and NORTH is hard to determine because there is a substantial overlap or apparent identity of the two lexical sets. Since the 'NURSE-NORTH Merger' appears to have developed by approximation/drift, it is important to determine whether these speakers have complete (phonetic) merger of NURSE and NORTH or whether they have, in fact, near-merger of the two lexical sets. It is felt that this combination of auditory analysis wholesale and acoustic analysis for important cases gives us the best overall impression of the phonetic distribution of NURSE and NORTH in the TLS.

5.7.4.1. The phonetics of the NURSE vowel

The most striking thing about the NURSE vowel in the TLS is the huge amount of variation in its phonetic realisation. Although this kind of variation, from a fully front

vowel (rounded or unrounded) to a back (rounded) vowel is reported by Watt and Milroy (1999), the extent to which the phonetics of the NURSE vowel vary from speaker to speaker, and within the speech of individual speakers, is often enormous. My analysis of the NURSE vowel in the TLS reveals pronunciations ranging from a fully back rounded [ɔ:] to a fully front vowel, rounded or unrounded, e.g. [ø:] and [e:], and everything in between.[20] Although the variation in the NURSE vowel appears to be mostly on the front/back dimension, front pronunciations of NURSE can be rounded to a greater or lesser degree. In comparison, there is considerably less variation in the height of the NURSE vowel – only rarely do pronunciations approach the high mid point in the vowel space, or go much lower than the low mid point – whilst variations in length appear to be dependent upon factors such as stress, position within the foot, and the nature of the following consonants. Diphthongal pronunciations of NURSE are very rare. When they do occur, they consist of a vowel on the same front/back dimension as the monophthongs with a schwa-like off glide.

5.7.4.2. The phonetics of the NORTH vowel

Watt (1998a) as well as Watt and Milroy (1999) suggest that there is not a great deal of variation in this vowel, uniformly transcribing it as [ɔ:]. Although my analysis of the TLS data suggests that phonetic variation in the NORTH vowel is minor in comparison with the variation recorded in the NURSE vowel, not all instances of NORTH can be subsumed under the symbol [ɔ:]. In most cases, the NORTH vowel is indeed a back rounded vowel, located somewhere near the low mid part of the vowel space (more or less [ɔ:]). However, there is some degree of variation in pronunciation of this lexical set on the front-to-back dimension, such that centralised mid back rounded pronunciations (for example [ɔ̈:]) also occur with some frequency, whilst pronunciations of NORTH near the centre of the vowel space (e.g. [ɞ:] or even [ɜ:]) are occasionally recorded. It should be noted that these centralised variants of NORTH have not been recorded in TE before, and their potential significance is discussed in Chapters 7 and 8. As is the case with NURSE, there is less variation in the height of the NORTH vowel, and, again, variations in length appear to be dependent upon factors such as stress, position within the foot and the nature of the

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[20] Survival of [ɑ:] in NURSE in the TLS is discussed in Section 6.2.2.

following consonants. Diphthongal pronunciations of NORTH are also very rare, again consisting of a vowel on the same front/back dimension as the monophthongs with a schwa-like off glide.[21]

5.7.4.3. Phonetic parameters of the analysis

Since the frontness/backness dimension is the most important parameter of variation with respect to NURSE and NORTH, I focus on this parameter of variation in this thesis with the result that variation in height, which is (relatively) minimal, is ignored in the analysis. Perhaps more seriously, variation in roundedness of front pronunciations of NURSE is also not analysed here. Although variation in roundedness of this vowel may have interesting linguistic and sociolinguistic implications, it is felt that including this parameter would overly complicate the analysis. In any case, since the primary concern of this thesis is the similarity and divergence of the NURSE and NORTH lexical sets, the exact phonetics of front pronunciations of NURSE are not crucial for the purposes of this investigation, since NORTH is never found in this part of the vowel space.

It is precisely this front/back dimension of variation in NURSE that is analysed by Watt (1998a) and Watt and Milroy (1999). Although their cover symbols, [ø:], [ɜ:] and [ɔ:], indicate that roundness also varies, this is not analysed by Watt and Milroy (recall the comment by Watt and Milroy 1999: 45 that [ø:] "is variably rounded, such that NURSE may be perceptually very close to [e:] or [ɛ:]").

5.7.4.4. Discretising the continuum

I noted in Section 4.2.1 that Watt and Milroy (1999: 32), in their analysis of the NURSE vowel, find that:

> Tokens of NURSE ... though scattered across the vowel space in a continuous fashion, appear to cluster around certain points in the space, with the result that we can with reasonable ease distinguish three variant categories associated with each cluster.

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[21] Although see Section 6.2.3 for a discussion of the vowel in words derived from ME /ɔʊr/ in the TLS.

In Section 4.2.4, I suggested that Watt and Milroy's broad phonetic categories may, in fact, hide interesting and relevant patterns of distribution that a more detailed phonetic analysis could uncover. My analysis of the TLS data suggests that, although tokens of NURSE are "scattered across the vowel space in a continuous fashion", these do not necessarily cluster around the three categories identified by Watt and Milroy, nor indeed cluster in one part of the vowel space at all.

Although Watt and Milroy's fairly coarse granulation of the continuum of pronunciations from front to back certainly increases clarity and ease of analysis, it also brings with it a number of problems. Firstly, these broad categories are a considerable abstraction from reality. Presented with a large number of NURSE and NORTH tokens located in the phonetic no-man's land between Watt and Milroy's [ɜ:] and [ɔ:], as is frequently the case in the TLS data for example, it is difficult to determine which of these broad categories a particular token belongs to; at what point does a vowel belong to the [ɔ:] category rather than the [ɜ:] category for instance? Combined with the potential that such a broad categorisation of variants has to obscure crucial patterns of distribution, then, a more detailed phonetic analysis is not only desirable, but also necessary if we wish to give a satisfactory account of the NURSE and NORTH lexical sets in both synchronic and diachronic terms.

Although none of these problems can be fully overcome, it was felt that the analysis of the NURSE and NORTH vowels in the TLS would benefit from a more fine-grained categorisation of the variants on the front/back dimension. In deciding the level of detail at which to analyse these vowels, one is faced with a conflict of interest between the desire to capture as closely as possible the phonetic reality on the one hand, and the abilities of the transcriber and data handler on the other. After some experimentation, it was decided that five categories could reasonably be distinguished in the continuum of pronunciations on the front/back dimension, and would be manageable in terms of quantification. It was felt that this number of categories would bring the desired level of detail without becoming cumbersome or overly prone to error in judgement. These categories are, from front to back, as follows:

front (F)

central front (cF)

central (C)

central back (cB)

back (B)

Since only the front/back dimension of these vowels is being analysed, cover symbols (given in parentheses) rather than phonetic symbols are used to represent these abstract categories. In so doing, no commitment is made as to the precise degrees of height, roundness, or length of these vowels; rather, they indicate only where (approximately, relatively) the token occurs on a measurement on the front/back dimension.

5.7.4.5. Validating the auditory analysis

The inherent subjectivity of auditory analysis discussed above requires that some checking mechanism is put in place in order to confirm the validity of the transcriber's judgements. This is even more necessary when fine phonetic categories are used, although it is important to remember that the effect on the overall data patterns of assigning any particular token to the wrong phonetic category is going to be smaller than the assignment of a particular token to the wrong phonetic category in a broader analysis, such as that conducted by Watt and Milroy (1999).

In order to check the validity of my phonetic judgements, three procedures were adopted. Firstly, the initial transcription was conducted using the Creative Wave Studio software program, which enabled repeat listens to each token, such that a considered judgement could be made as to the phonetic category of the vowel in that token. Secondly, all of the data were transcribed on two separate occasions, several months apart, whilst a subset of the data was transcribed a third time, again, several months later. On each occasion following the first, the data were transcribed blind, i.e. with no reference to the original transcription. As Watt (1998a: 136) points out, re-transcribing in this way helps to "neutralise the effect of familiarity with the material and associations of particular phonetic forms with individual speakers". The fact that there was a high degree of congruence between the transcriptions indicates the consistency of the transcriber's judgements – in cases where judgement differed

between transcriptions, the majority variant was used, or, where there was no majority variant, the final transcription was taken as definitive.[22] Thirdly, a subset of the data was submitted to acoustic analysis of the first and second vowel formants. This analysis, described in the following section, not only provides us with additional data for the pronunciation of NURSE and NORTH, but also provides a useful check on the auditory judgements of the transcriber. Details of the comparison of the auditory and acoustic data are given in Section 5.7.6 below.

It should also be noted that Milroy and Gordon (2003: 151) suggest that subjectivity can be minimized or at least constrained by analysing a large number of tokens, such that "the statistical impact of two or three mislabelled tokens is much less". As was discussed in Section 5.7.3 above, 3510 tokens of NURSE and NORTH have been analysed in the TLS, a number which should be big enough to avoid skewing by incorrectly transcribed data.

Finally, the efficacy of this five-way division of the NURSE and NORTH vowel continuum and the accuracy of the transcriber's phonetic judgements are demonstrated in the analysis of the results in Chapter 6. The extent to which the data conform to the known patterns of distribution of NURSE and NORTH (as in Watt and Milroy 1999) and reveal meaningful patterns of social distribution will suggest the relative success of this auditory analysis.

5.7.5. Acoustic analysis

As was noted above, it was felt that some acoustic analysis of the TLS data was desirable. As was suggested there, the degree to which the acoustic and auditory analyses produce similar results will provide a useful validation for each method. Additionally, the issue of whether the 'NURSE-NORTH Merger' is a merger or a near-merger is one which might not be resolvable with recourse only to auditory judgement. Since the merger appears to have developed, in part at least, through approximation, it is possible that the two merging phonemes have not, in fact, become identical in their phonetic distributions, but are, instead, subtly distinct.

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[22] See Appendix 8 for example transcriptions.

Acoustic analysis of the first and second formants of all NURSE and NORTH tokens for a subset of eight of the TLS informants was conducted using PRAAT version 4.2.04 (Boersma and Weenink 2007). The selection of these eight informants depended upon three factors: (1) that the quality of the recordings was sufficiently good for reliable readings of F1 and F2 to be made; (2) that the eight informants included speakers for whom NURSE and NORTH were most similar, since the issue of the identity or otherwise of the two lexical sets lies at the centre of this phonetic analysis and this thesis; and (3) that a number of speakers representing other common distributions of NURSE and NORTH should be included. The speakers for whom this acoustic analysis was conducted were G035, G044, G052, G054, G223, G331, G519 and G522.

Since the vowels being analysed were, in almost every case, monophthongs, it was decided to measure F1 and F2 at the mid-point of each vowel in order to minimize subjectivity (see the discussion in Section 5.7.2 above). In practice, however, the conversational nature of the data and the quality of the recordings meant that it was not always possible to determine the exact mid-point of the vowels. As was discussed above, it may be difficult to determine the mid-point of the vowel accurately in good quality spectrograms because of the uncertainty of defining the boundaries of certain consonants types. As a result, the approximate mid-point of each vowel was measured, at a point which was characteristic of the steady state of the vowel and at which a reliable formant reading could be made. This point was as near to the mid-point (in as much as this could be established) as possible.[23] In those cases where the vowel was a diphthong (only a few instances, all with centring off-glides), the measurement was made in the steady state or peak of the first component of the diphthong.

The measurements of F1 and F2 were made using PRAAT's formant listing function, with a dynamic range of 50.0 dB and a window length of 0.005 seconds (PRAAT's standard settings). Where reliable readings of F1 and F2 were not retrievable in this way, the token was excluded from the analysis. Since no attempt has been made to

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[23] It might be suggested that this lack of precision is problematic since strict replicability is not possible. As is clear from the discussion in Section 5.7.2.2, however, this problem is inherent in acoustic analysis, and to pretend otherwise is to assume a rigour which may not be justified.

compare the acoustic analyses with each other, no further normalisation of these measurements was required, and they are plotted as described in Section 5.7.2.

5.7.6. Comparison of the auditory and acoustic analyses

When employing two radically different methods of analysis of vowels (auditory and acoustic analysis) an obvious question which arises is *How similar are the results of each of the analyses to each other?* This is an interesting question for two reasons. Firstly, it is hoped that one is attempting to uncover the same phonetic reality using each method and, as such, the results of one should, if interpreted correctly, be comparable to the other. Secondly, the independence of the two analyses will give us a means of assessing how successful they have been if, provided we can compare them in some way, they give similar results. That is, the validity of the auditory analysis will be increased if it gives similar results to the (independent) acoustic analysis of the same data, and vice versa.

As was discussed in Section 5.7.2 above, there is a clear correlation between vowel frontness/backness and F2 (higher F2 correlates with front vowels, lower F2 with back vowels), and a (negative) correlation between vowel height and F1 (the higher the vowel the lower the F1 value). As such, F1 and F2 measurements can be plotted in such a way as to give us an indication of the relative positions of the vowel tokens in the vowel quadrilateral (see Section 5.7.2 above, and Appendix 12 for examples).

This being the case, it is possible to plot F1 and F2 measurements for each token as before, but categorised by the auditory categories given to them in the auditory analysis rather than by lexical set. In such an analysis, we would expect, if the auditory and acoustic analyses are giving us the same results, that tokens identified as F would have higher F2 values than those identified as cF, which is turn would have higher F2 values than tokens identified as C, and so on. We cannot expect the match to be perfect, of course, given the quality of the data and the vagaries of auditory and acoustic analysis, but the over all patterns should be clear. Precisely this approach is taken in Section 6.4 of the next chapter, and will provide an important validation of the results of both analyses.

5.8. Statistical analysis

The discussion, in this thesis, of mergers in general, and of the 'NURSE-NORTH Merger' in particular, suggests that these are not, in most cases, categorical phenomena. Rather, the linguistic variables of interest are, in all likelihood gradient, and may correlate, to varying degrees, with a variety of social factors.

In order to make sense of the vast amount of TLS data analysed, it is necessary to use some means of summarising and interpreting these data. In the main, this can be done by means of tables and figures (particularly graphs), and in most cases the distributions of the linguistic variants, and the relationships that hold between these and between the linguistic and social variables, will be obvious. This approach is adopted throughout Chapter 6.

In a number of instances, however, the relationship between parts of the data are more crucial, such that a purely descriptive approach fails to give the necessary degree of confidence required to correctly interpret the data. In particular, instances of merger and near-merger need not be readily interpretable on inspection. The discussion in Section 1.4 suggested that relatively minor frequency differences assume considerable importance in precisely such cases. As such, the analysis of the TLS NURSE and NORTH data at the level of the individual speaker will have recourse to formal statistical techniques. Because the crux of the present research is whether NURSE and NORTH are identical for those speakers who have very similar distributions of the two lexical sets, formal statistical analysis is only used for a subset of the TLS individual speaker data. It will be seen in Chapter 6 that the number of speakers for whom the distribution of NURSE and NORTH is sufficiently close to warrant recourse to formal statistical testing is small, and in the vast majority of cases, an inspectional approach to the data is adequate.

Two kinds of data presented in this analysis of the TLS potentially warrant formal statistical analysis: those instances in the individual auditory analysis where the distribution of NURSE and NORTH is close, and likewise, those instances in the individual acoustic analysis where the distribution of NURSE and NORTH is close. The kind of data involved determines the kinds of statistical analysis that can be performed on that data. In the case of the auditory analysis, the data is ordinal (see

Coolican 1999: 218-219, 222-223 and Pagano 2001: 24-25). Although the auditory data is scalar (front to back), and hence the order of the categories is important, it is not a numerical scale. It is not the case, for instance, that C is three fifths of the value of B, and hence the auditory data is not ratio data. And although it is the intention of the transcriber that the phonetic difference between F and cF, cF and C, etc. is equal, no true numerical measurement is involved, and hence, the data is not interval data either. By contrast, the values of F1 and F2 derived from the acoustic analysis are numerical, and, as there is an absolute zero on the Hertz scale, they are instances of ratio data (see Coolican 1999: 219-220, 224 and Pagano 2001: 25-26).

Having identified a number of such cases where formal statistical testing might be usefully employed, as well as identifying in statistical terms the nature of the data to be tested, a suitable statistical test must be chosen according to the aims of the analysis and the type of data being analysed. Since the crucial issue in examining the distribution of NURSE and NORTH in the speech of individual speakers is whether the two lexical sets are pronounced the same or differently, the statistical test used must determine whether the distribution of the tokens of the two lexical sets is significantly different. And since there is no necessary correlation between the pronunciation of NURSE and NORTH (the membership of NURSE and NORTH is the result of historical accident), a test which compares independent samples is required. Ideally, a *t* test for independent groups would be used in this case (see Pagano 2001: 326-337, 472), but the use of the *t* test makes certain assumptions about the data being compared which may or may not hold in any given case. In particular, the *t* test assumes three things:

1) The data are ratio or interval
2) The data are normally distributed
3) There is homogeneity of variance

In addition, the *t* test is most reliable with samples ≥ 30. In cases where the data are not normally distributed, or there is no homogeneity in variance, but where the sample is ≥ 30, the *t* test may still be used, since "The *t* test is relatively insensitive to violations of normality and homogeneity of variance, depending on sample size and the type and magnitude of the violation" (Pagano 2001: 334). In cases where the

violations of the assumptions of the *t* test are extreme, an alternate test, the Mann-Whitney *U* test, should instead be used.

Although the acoustic analysis data is ratio data, the auditory data is neither ratio nor interval, and hence cannot be analysed using the *t* test. In Chapter 6, I present evidence that not all of the acoustic data I wish to submit to statistical testing fulfils the assumptions of the independent *t* test either. That is, some of the data is skewed in its distribution, whilst comparisons of NURSE and NORTH reveal that, in a number of cases, NURSE has a greater variance than NORTH. Perhaps more crucially, the number of tokens, particularly of NORTH, is substantially less than 30 for some speakers, such that the data is in extreme violation of the assumptions of the *t* test (see Section 5.7.3 above for a discussion of the number of tokens of NURSE and NORTH per speaker in the TLS data).

As such, I use the Mann-Whitney *U* test in order to determine whether the distribution of NURSE and NORTH is significantly different for particular speakers in the TLS (see Pagano 2001: 436-442, 472). Pagano (2001: 442) states that since the Mann-Whitney *U* test "only uses the ordinal property of the scores, it is not as powerful as the *t* test for independent groups, which uses the interval property of the scores". Despite this, Pagano (2001: 436) suggests that the Mann-Whitney *U* test is a "powerful" nonparametric test, and since it only uses the ordinal property of scores, it can be used equally well for the auditory analysis data and the acoustic analysis data.

In addition, the Mann-Whitney *U* test does not make the same assumptions about the normality of the distribution of the data, nor of the degree of variance. Rather, it assesses the difference between the sums of two sets of ranks of measurements (in this case the relative positions of NURSE and NORTH tokens on a front/back scale, or on the F1 or F2 dimensions).

In Chapter 6, I use the Mann-Whitney *U* test to test the following Null Hypothesis:

The Null Hypothesis (H_0): Differences in the distribution of the NURSE and NORTH lexical sets for any given speaker are the result of chance; i.e. membership of one or other of these two lexical sets produces no significant difference in pronunciation.

The Null Hypothesis may be reformulated as the following Alternative Hypothesis:

The Alternative Hypothesis (H_1): Differences in the distribution of the NURSE and NORTH lexical sets for any given speaker are not the result of chance; i.e. membership of one or other of these two lexical sets produces a significant difference in pronunciation.

Hence, where a significant difference is discovered between the distribution of NURSE and NORTH, the Mann-Whitney *U* test predicts that the Null Hypothesis is false, whilst the Alternative Hypothesis is true. Where no significant difference is found between the distribution of NURSE and NORTH, the Mann-Whitney *U* test predicts that the Null Hypothesis is true, whilst the Alternative Hypothesis is false.

The statistical analysis described above uses SPSS for Windows, version 11.0.0.[24]

5.9. Summary

In Chapter 4, I argued that neither the traditional dialect data nor the more recent PVC data as presented in Watt (1998a) and Watt and Milroy (1999) were sufficient to determine the status of the 'NURSE-NORTH Merger', nor to explain the apparent reversal of the 'merger'. I suggested that in order to fully understand the history of the NURSE and NORTH lexical sets in TE, detailed analysis of another data source was needed, so that the following criteria might be fulfilled:

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[24] See <www.spss.com>.

1) The data must allow us to examine the NURSE and NORTH lexical sets in the social context in which they occur;
2) The data should be of such a date that they contain a wealth of data on the NURSE and NORTH lexical sets and all of their variant pronunciations;
3) The analysis of the data should involve NORTH as well as NURSE;
4) The analysis of the data should be conducted at both the level of the social group and at the level of the individual.

In this Chapter, I have proposed to use the surviving part of the TLS for this purpose. I described, in Section 5.3.1 above, how the TLS (Phase 3) sample was designed as a random stratified sample of the adult population of Gateshead, with extra speakers picked from higher status areas to ensure coverage of rarer non-local speech types. The projected sample of 150 represented approximately 0.2% of the Gateshead population at the time. Because of the fragmentary nature of the TLS data, the exclusion of non-native speakers from my analysis, and the exclusion of a small number of other recordings for a variety of reasons, the sample of the TLS analysed in this thesis stands at 70, i.e. almost exactly 0.1% of the population of Gateshead at the time. I suggested, in Section 5.6.4, that whatever the original design of Phase 3 of the TLS, that part of the surviving sample analysed in this thesis is skewed towards the lower end of the socio-economic scale, such that the majority of speakers are working-class rather than middle-class. This feature of the sample, together with the larger size of the sample and the early date at which it was collected (in comparison with the PVC), makes it much more likely that the TLS sample will include speakers who are nearer, in their linguistic behaviour, to those sampled in traditional dialect surveys such as the SED, than is the case in the PVC sample.

Although the TLS sample is skewed towards the lower end of the social scale, the analysis of the distribution of the three social variables (gender, age and socio-economic class) in this sample suggests that a valid account of the social distribution of NURSE and NORTH variants remains possible using these data. As such, it will be possible to assess the extent to which the traditional dialect data are representative of the linguistic situation that obtained at their time of collection, to determine the extent to which the apparent-time inferences from the PVC data drawn by Watt and

Milroy (1999) are correct, and ultimately to determine the status of the 'NURSE-NORTH Merger' and its apparent reversal in TE.

Finally, I proposed to analyse both the NURSE and the NORTH lexical sets, at the level of the social group and the individual. It is to the presentation of the results of my analysis of the TLS data, and the interpretation of their meaning that I now turn, in Chapter 6.

Chapter 6: Results of the Auditory and Acoustic Analyses of the TLS

6.1. Introduction

In this chapter, I present the results of my auditory and acoustic analyses of the NURSE and NORTH lexical sets in the TLS. Following some necessary preliminaries, which discuss the survival of historical lexical subsets in the data, I present first the auditory analysis data. The results of the latter analysis are interpreted in three ways, the combination of which allows for a fuller understanding of the distribution of NURSE and NORTH variants in the TLS sample: firstly, the distribution of the NURSE and NORTH variants is examined across the whole sample, in terms of the social factors described in the previous chapter (gender, age and socio-economic class); secondly, the distribution of NURSE and NORTH variants is examined in terms of the social cells described in Section 5.6.4 above; thirdly, the distribution of NURSE and NORTH variants are examined for each speaker individually. The combination of these three approaches allows us to understand the distribution of the merger in the speech of the community as a whole, the social distribution of the merger, and the behaviour of individual speakers in that community.

Following the results of the auditory analysis, I present the results of the acoustic analysis of NURSE and NORTH for eight speakers from the TLS sample. Since this acoustic analysis is limited to an examination of the behaviour of a small number of individual speakers, it complements and reinforces the individual auditory analysis and, it is hoped, adds extra credence to the preceding auditory analysis as a whole. The extent to which it does so is also assessed in Section 6.4, where a comparison of the auditory and acoustic analyses results for these eight speakers is made. It is my contention that this comparison, which checks distributions of NURSE and NORTH variants in the auditory and acoustic analysis against each other, provides strong support for the validity of the auditory analysis results and a particularly effective means of assessing the relationship of NURSE and NORTH in the TLS.

6.2. Preliminaries: the survival of minor historical lexical distinctions in the TLS

In Chapters 2 and 3, I discussed the historical lexical sets which contributed to NURSE and NORTH, and it was revealed that a number of historical lexical sets which contributed to the NURSE and NORTH lexical sets in StE behave somewhat differently in traditional TE, and particularly traditional Northumberland English. As Watt and Allen (2003: 269) very rightly point out: "The distribution of vowel qualities across the lexicon in TE should therefore not be assumed to adhere to the same patterns found even in neighbouring accents, let alone in British Received Pronunciation". The extent to which any of these phonologically divergent developments survive in the TLS sample presents problems for the analysis of NURSE and NORTH vowels along the single front/back phonetic dimension described in Section 5.7.4.3. I discuss each of these divergent developments, the extent to which they survive in the TLS, and how I deal with them in the analysis, in turn below. Survival of these divergent developments is interesting not only in and of itself, but also in the way that they interact with the wider development of the NURSE and NORTH lexical sets, their potential merger, and apparent de-merger.

6.2.1. Possible survival of [eɵ]-type pronunciations in NURSE words

As discussed in Chapter 3, [eɵ]-type pronunciations of NURSE words are recorded in traditional NbTE in some words deriving from ME /ɪr/, in some words with ME /ɛr/,[1] and in a few other lexical items, most obviously *girl*. Around the Tyneside area, [eɵ] is restricted to *girl* and a few dialect words, but generally no survival in words from ME /ɛr/ and /ɪr/ is recorded. This [eɵ]-type diphthong is the same diphthong that appears in the SQUARE lexical set (see, for example, *hare*, *square* and *stare* in Rydland 1998).

Watt and Milroy (1999: 27) record the SQUARE vowel as a monophthong, [ɛ:] or [e:], in TE in the 1990s, and if the SQUARE vowel has survived in these minor NURSE subsets, it ought to be the case that they are also pronounced with [ɛ:] or [e:] rather

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[1] Throughout this and the next chapter, I refer to those members of NURSE which derive from ME /ɛr/ as the SERVE lexical subset.

than [eɞ]. Since they report that front pronunciations of NURSE "may be perceptually very close to [e:] or [ɛ:] in the speech of some Tynesiders" (p.45), survivals of this vowel in NURSE words in the TLS sample would, if they exist, create problems, since they fall on the front/back phonetic dimension of the analysis. Where speakers have front pronunciations of NURSE anyway, survivals of archaic front pronunciations are likely to be hidden. Where speakers have back pronunciations of NURSE, front pronunciations might give the impression that the speakers concerned have partially shifted their pronunciation of NURSE to the front part of the vowel space, when in fact these front pronunciations would represent archaic survivals.

The survey of other divergent historical developments of NURSE and NORTH below suggests that they are, by and large, restricted to speakers whose speech is rather localised and traditional. If this is also the case for [eɞ]-type pronunciations, then we need only be concerned with the speakers who display traditional pronunciations of NURSE generally, i.e. those with back pronunciations of NURSE. That said, it may often be difficult to determine whether front pronunciations of NURSE words are that way because that is a possible pronunciation for all NURSE words for that particular speaker, or whether front pronunciations of NURSE words are so because they represent archaic survivals in a particular informant's speech.

In this section, I present the data for those speakers who seem to evidence archaic front pronunciations of certain historical lexical subsets. I also briefly discuss the consequences this has for my analysis of NURSE on a front/back phonetic dimension.

Speakers who appear to have a lexically distinct set of NURSE words with characteristically front pronunciations are G041, G327, G332, G519 and G522. In addition, speakers G022, G036, G045, G057, G318, G320, G322, G325 and G328 may have such a distinction, but the general distribution of their NURSE tokens makes this uncertain. Rather than attempt a lengthy and potentially inconclusive examination of all of the tokens involved, I concentrate here on those speakers with front pronunciations of certain NURSE words against a general distribution of NURSE in the back part of the vowel space, by way of illustration.

G041 has 20 NURSE tokens. These are distributed along the front/back phonetic dimension as follows:

F: *girls*

cF: *learnt*

C: *earth* (WL),[2] *firm* (n.), *first*, *learn* (x2), *work* (n.), *world* (x2)

cB: *firm* (n.), *words*, *work* (n.) (x2), *worked* (x2), *worker*, *working* (x2)

B: *working*

Although G041's NURSE tokens are concentrated in the centre and back part of the vowel space, *girls* and *learnt* are pronounced with front vowels.

G327 has 58 NURSE tokens, excluding the archaic variant [ɑ:] discussed in Section 6.2.2. These are distributed along the front/back phonetic dimension as follows:

cF: *thirteen*, *thirty* (x2)

C: *Birtley*, *birthday*, *churches*, *Herbert* (x2), *learn*, *purse* (x2), *shirts* (x2), *surplus* (x2), *thirties*, *turn*, *work* (n.) (x3), *work* (v.) (x3), *works* (n.) (x3), *worse*

cB: *birds* (x4), *curtailed*, *dursn't*, *firm* (n.), *further*, *heard* (x2), *Herbert*, *turned*, *work* (v.) (x2), *worked* (x3), *working*, *works* (v.)

B: *blackbirds*, *firm* (n.), *first*, *worked* (x2), *working*, *works* (n.) (x2), *works* (v.) (x4)

Although G327's NURSE tokens are fairly widely distributed, the furthest forward pronunciations occur in the words *thirteen* and *thirty*, a feature shared by G332, G519 and G522.

G332 has 29 NURSE tokens, excluding the archaic variant [ɑ:] discussed in Section 6.2.2. These are distributed along the front/back phonetic dimension as follows:

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[2] In the wordlist (see Section 5.3.2)

F: *thirty* (x4)

cF: *first* (x2), *thirty*, *working*

C: *Conservatives*, *Dunkirk* (x2), *earth* (WL), *further*, *nurse*, *served*, *word* (x2), *work* (n.) (x3), *work* (v.), *worked* (x2), *working*, *works* (n.), *world* (x2)

cB: *heard*

B: *working*

As with G327, G332's tokens are fairly widely distributed, but once again the front part of the vowel space is dominated by the word *thirty*.

G519 has 49 NURSE tokens, excluding the archaic variant [ɑ:] discussed in Section 6.2.2. These are distributed along the front/back phonetic dimension as follows:

F: *thirty* (x9)

cF: *thirteen* (x2)

cB: *birch*, *circumstances*, *firm* (n.) (x4), *firms*, *first*, *firstly*, *girders*, *person* (x2), *thirty*, *work* (v.) (x2), *worked* (x7), *worker*, *workers*, *working* (x3), *works* (v.), *worst*

B: *Conservative*, *girders*, *heard*, *work* (v.) (x3), *worked* (x3)

Of the ten tokens of *thirty* and the two tokens of *thirteen*, only one is not found in the front part of the vowel space. The front pronunciations of these words are separated by some phonetic distance from the other NURSE tokens. It is clear that for G519, like G327, G332 and G522, the minor lexical set *thirteen* and *thirty* is acting differently than the wider NURSE lexical set.

G522 has 87 NURSE tokens. These are distributed along the front/back phonetic dimension as follows:

F: *girl* (x3)

cF: *thirteen*

C: *Birtley* (x3), *service* (x4), *thirteen* (x2), *thirty* (x9)

cB: *Birtley* (x4), *birthday*, *dursn't*, *first* (x7), *first-aid*, *hurt* (x2), *learn* (x2), *learning*, *nurses* (x2), *serve*, *served*, *service* (x2), *serving*, *third*, *turn* (x4), *turner* (x3), *turners*, *turns*, *work* (n.), *worth*

B: *church*, *first* (x4), *first-aid* (x6), *hurt* (x2), *infirmary* (x4), *turner*, *work* (n.) (x6), *working*, *works* (n.), *world*

It is immediately obvious that *girl*, for G522, is acting differently to other NURSE lexical items, with its consistent F pronunciation. Likewise, the words *thirteen* and *thirty* appear to be distributed differently from most of the other NURSE lexical items; although in G522's case they are often pronounced in the central part of the vowel space rather than the front, they are pronounced further forward than the vast majority of NURSE words.

Despite the intriguing patterns present in these data, they are not easily interpretable. It is not immediately clear that they represent survivals of older lexical contrasts. Perhaps the clearest case of survival of an older lexical distinction is the word *girl* which is pronounced with a front vowel, typically [ɛː], for those speakers who use it and for whom NURSE is not pronounced so far forward as to mask the distinction. Although *girl* is recorded with an [eɵ]-type diphthong in traditional TE (see Rydland 1998), it seems likely that [ɛː] is the representative of this pronunciation in the TLS, as noted above.

Evidence for the continued pronunciation of SERVE words with an [eɵ]-type diphthong (or an equivalent [ɛː] monophthong) is sparse. Granted, some speakers, such as G522, illustrated above, appear to treat certain SERVE words differently from other NURSE words, but the reasons for this are uncertain. Whether it represents a continuation of the older lexical distinction, or a new development is unclear (but see Section 7.5 for further discussion).

The behaviour of the words *thirteen* and *thirty* is perhaps most surprising of all. Despite the existence of an [eɵ]-type diphthong in these words in some varieties of Northumberland English, traditional TE is only ever reported to have an [ɔː]-type vowel in these words and other words which have developed from ME /ɪr/ (see, most particularly, Rydland 1998 and Viereck 1966). The fact that these pronunciations of *thirteen* and *thirty* in the front part of the vowel space are most typical of older working-class speakers of TE who otherwise have many traditional features in their

speech[3] suggests that they might well represent survivals of older lexical distinctions which have not been recorded in traditional dialect surveys of the area.

Any attempt to exclude front pronunciations of NURSE words from the analysis of the TLS data where there is a suspicion that they derive from older lexical distinctions would inevitably lead to problems, however. Firstly, we cannot be certain that these front pronunciations of NURSE words do represent survivals of older distinctions. They might, in fact, represent innovations, although the frequency with which they occur in the speech of the most traditional speakers and their lexically specific nature suggest otherwise. Secondly, there is no way of knowing where to make the cut off point; trying to decide which tokens for which speakers represent older front pronunciations in the broad continuum of NURSE variation would be an entirely subjective task. For these reasons, front pronunciations of NURSE, even where there is suspicion that they derive from older lexical distinctions, are included in the auditory analysis. When I examine the distribution of NURSE variants in the TLS sample as a whole, and in the speech of individuals, this decision needs to be borne in mind. The treatment of these lexical items in the acoustic analysis is described in Section 6.4.

6.2.2. Survival of [ɑ:] in SERVE in the TLS

In Chapter 3, it was found that of all the historical lexical sets which contributed to the NURSE lexical set in traditional TE, only SERVE remained distinct, and then only partially or variably, as [ɑ:] (or the like). The other historical lexical sets merged (along with NORTH, and SERVE partially or variably) in an [ɔ:]-type vowel. Possible [eə]-type pronunciations are discussed in Section 6.2.1. As far as survivals of the pronunciation of SERVE as [ɑ:] in the TLS are concerned, my analysis of the tokens along a front/back dimension, explained in Section 5.7.4, fails to cater for them. In addition, although such pronunciations of SERVE words are found in the TLS, they are very rare. As a result, I discuss these survivals here and exclude them from the subsequent analysis.

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[3] G519, the speaker who is most consistent in pronouncing *thirteen* and *thirty* with a front vowel, speaks a very traditional form of TE, and is one of the very few speakers in the TLS who still uses the Northumbrian Burr, albeit variably.

[ɑ:]-type pronunciations are found in the speech of five TLS informants, G044, G052, G327, G332 and G519. These are:

G044: ten SERVE tokens, of which 6 are pronounced with [ɑ:]: *learn* (x4), *learnt* (x1) and *served* (x1).
G052: seven SERVE tokens, of which one is pronounced with [ɑ:]: *nerves*.
G327: nine SERVE tokens, of which 3 are pronounced with [ɑ:]: *served* (x3).
G332: five SERVE tokens, of which 1 is pronounced with [ɑ:]: *reservist*.
G519: five SERVE tokens, of which 1 is pronounced with [ɑ:]: *served*.
It is no accident that, of these speakers, G044, G052, G327 and G519 are some of the most conservative in their pronunciation of NURSE generally in the TLS sample (see Section 6.3.3.2 below).

6.2.3. Survival of [ɔʊə] in *four* in the TLS

In Section 3.2, I noted that although the ME sequence /ɔur/ (in, for example, *four*, *fourteen* and *forty*) contributed to the combined NORTH-FORCE lexical set in StE, it became an [ɔʊə]-type triphthong in NbTE. As a result, this minor lexical set was excluded from the historical analysis of NORTH-FORCE.

Despite its independent development in traditional NbTE, this minor lexical set is, in almost every case, indistinguishable from the larger NORTH-FORCE lexical set in the TLS. As such, words derived from ME /ɔur/ are included along with NORTH-FORCE for the purposes of this analysis (see Section 5.7.3). Only four tokens have been recorded with the [ɔʊə]-type triphthong in the TLS (see below for details), and since three of these tokens are instances of the word *four*, they are already excluded from the present analysis (since the vowel is word final – see Section 5.7.3). The remaining token with the [ɔʊə]-type triphthong is also omitted, since this pronunciation cannot be analysed on the front/back scale described in Section 5.7.4.3.

[ɔʊə]-type pronunciations are found in the speech of four TLS informants, G036, G041, G045 and G324. These are:

G036: three *four* tokens, only one of which is pronounced with the [ɔʊɵ]-type diphthong.

G041: four *four* tokens, of which none are pronounced with the [ɔʊɵ]-type diphthong. However, one instance of the [ɔʊɵ]-type diphthong does occur in *northeast*, a perhaps unexpected pronunciation, but one which is recorded for Northumberland in Rydland (1998).

G045: six *four* tokens, of which one is pronounced with the [ɔʊɵ]-type diphthong.

G324: one *four* token, pronounced with the [ɔʊɵ]-type diphthong.

6.2.4. Survival of [ɑ:] in the TLS in words which had ME /war/

As was discussed in Chapters 2 and 3, traditional NbTE, in common with many other English dialects, did not round /a/ after /w/ and, as a result, words such as *quarter* and *war* do not constitute part of NORTH. Rather, they consistently have an [ɑ:]-type vowel (part of the START lexical set). My analysis of the TLS data reveals that very few speakers distinguish words like *quarter* and *war* from NORTH and, as a result, words which had ME /war/ are included in the analysis of NORTH in the TLS. Those speakers that do distinguish ME /war/ from NORTH, at least some of the time, are G044, G052, G054, G318, G519, G522 and G526. The relevant tokens are:

G044: one instance of *quarter*, pronounced with [ɑ:]; one instance of *war* and one instance of *Wardley*, neither pronounced with [ɑ:].

G052: three instances of *war*, all pronounced with [ɑ:].

G054: four instances of *war*, of which one is pronounced with [ɑ:]; one instance of *quarter*, pronounced with [ɑ:]; two instances of *warnings* and one instance of *warm*, none with [ɑ:].

G318: four instances of *war*, of which one is pronounced with [ɑ:].

G519: a single instance of *towards*, pronounced with [ɑ:].

G522: four instances of *war*, of which three are pronounced with [ɑ:].

Since the word *war* is already excluded from the analysis because of its final vowel (see Section 5.7.3), this leaves us with only three tokens with [ɑ:], which are excluded from further analysis.

6.2.5. Survival of [eɘ] in *more* and *sore* in the TLS

Although the words *more* and *sore* are usually recorded with an [eɘ]-type diphthong in traditional NbTE (see Chapter 3), and although such pronunciations can still be heard (if rarely) on Tyneside, no pronunciations of this type are recorded in the TLS sample.

6.2.6. Survival of [uɘ] in FORCE in the TLS

Although FORCE words, of various origins, are often recorded with an [uɘ]-type diphthong in traditional Northumberland English, and to a lesser extent traditional TE (see Chapter 3), no pronunciations of this type are recorded in the TLS sample.[4]

6.2.7. Summary

In most cases, survivals of older lexical distinctions in NURSE and NORTH are so rare in the TLS data that they can safely be excluded from the analysis. In only one case is the potential survival of older lexical distinctions problematic for the analysis of NURSE: the lexical subset containing the words *girl*, *thirteen* and *thirty* (which I henceforth call THIR-). It will be seen in both the auditory and acoustic analyses below that the inclusion or exclusion of this lexical subset from NURSE can make a significant difference to the relationship between NURSE and NORTH for some speakers.

6.3. The results of the auditory analysis

In this section, I present the results of my auditory analysis of NURSE and NORTH in the TLS. Since the frequency of NURSE and NORTH tokens is not identical in the sample (Section 5.7.3), and since the frequencies of both NURSE and NORTH vary from speaker to speaker, all figures in this section are given as percentages. Full details of the raw and percentage figures can be found in Appendix 9.

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[4] Note that the words *poor* and *tour* are already excluded from the analysis since they do not form part of the combined NORTH-FORCE lexical set for most speakers of TE, and have a word final vowel.

The auditory results are analysed at three levels: (1) the whole TLS sample; (2) the social groups identified in Section 5.6.4; and (3) individual speakers. In this way, the distribution of NURSE and NORTH variants in TE is made fully explicit. In order to facilitate interpretation of the data, the results of my auditory analysis are presented in graph form. In each of the graphs in this section, the front/back dimension appears on the X axis, whilst frequency (percentage) appears on the Y axis. In a number of cases, however, the analysis at the level of the individual speaker requires additional formal statistical testing in order to determine whether the distribution of NURSE and NORTH variants is significantly different. The results of this statistical testing will be expressed in terms of the retention or rejection of the null and alternative hypotheses.

6.3.1. Auditory analysis of the whole sample

6.3.1.1. NURSE and NORTH compared

As discussed in Section 5.7.4, there is a huge amount of variation in the pronunciation of the NURSE vowel along the front/back dimension, but much less so for the NORTH vowel. Figure 33 compares the distribution of variants of these lexical sets for all tokens and all speakers in the sample combined.

Figure 33: The distribution of NURSE and NORTH in the TLS.

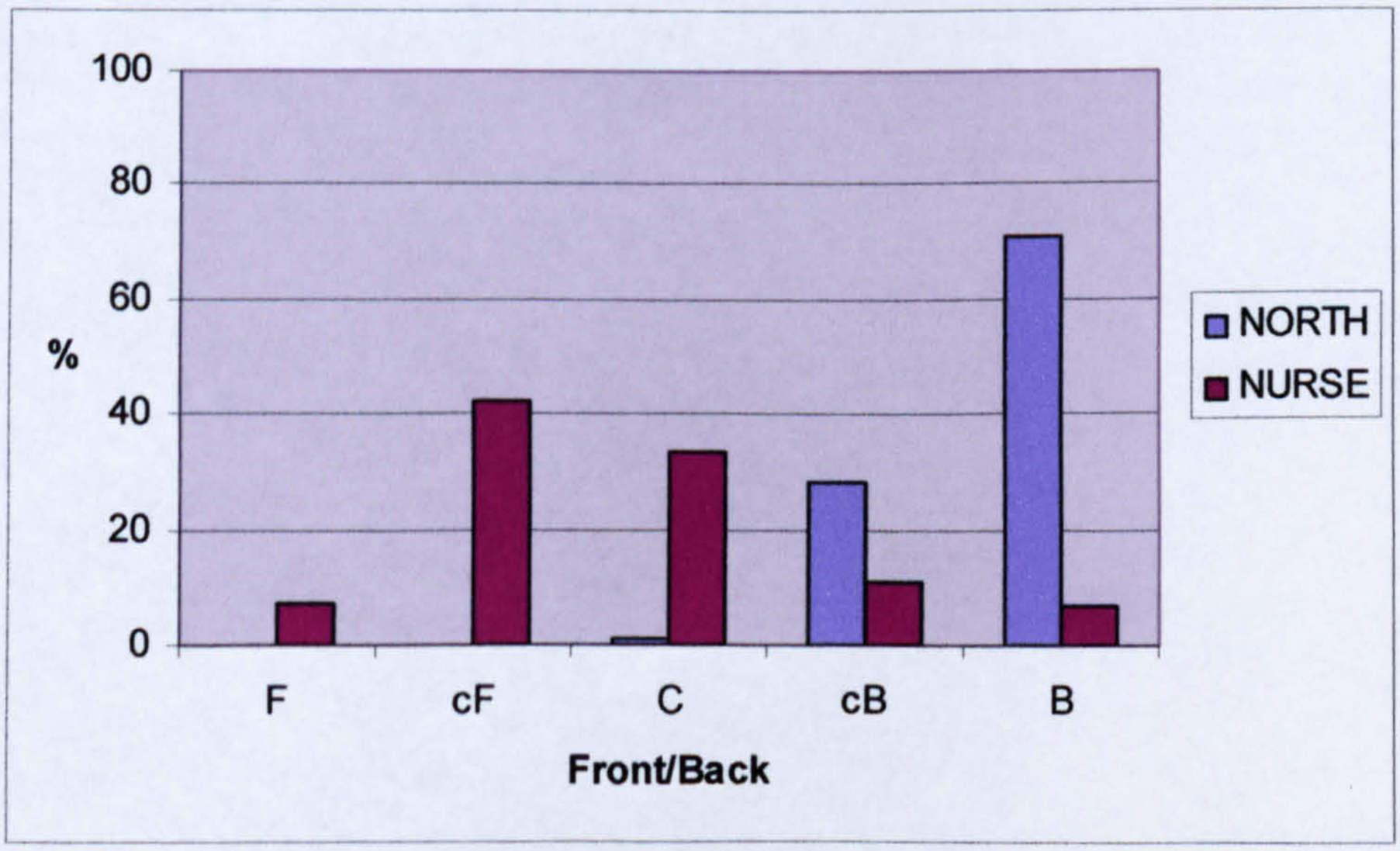


Figure 33 illustrates the striking difference in behaviour of these two lexical sets in the TLS. As discussed in Section 5.7.4.1, NURSE varies enormously along the front/back dimension. The most common variants of NURSE are cF and F, with considerably

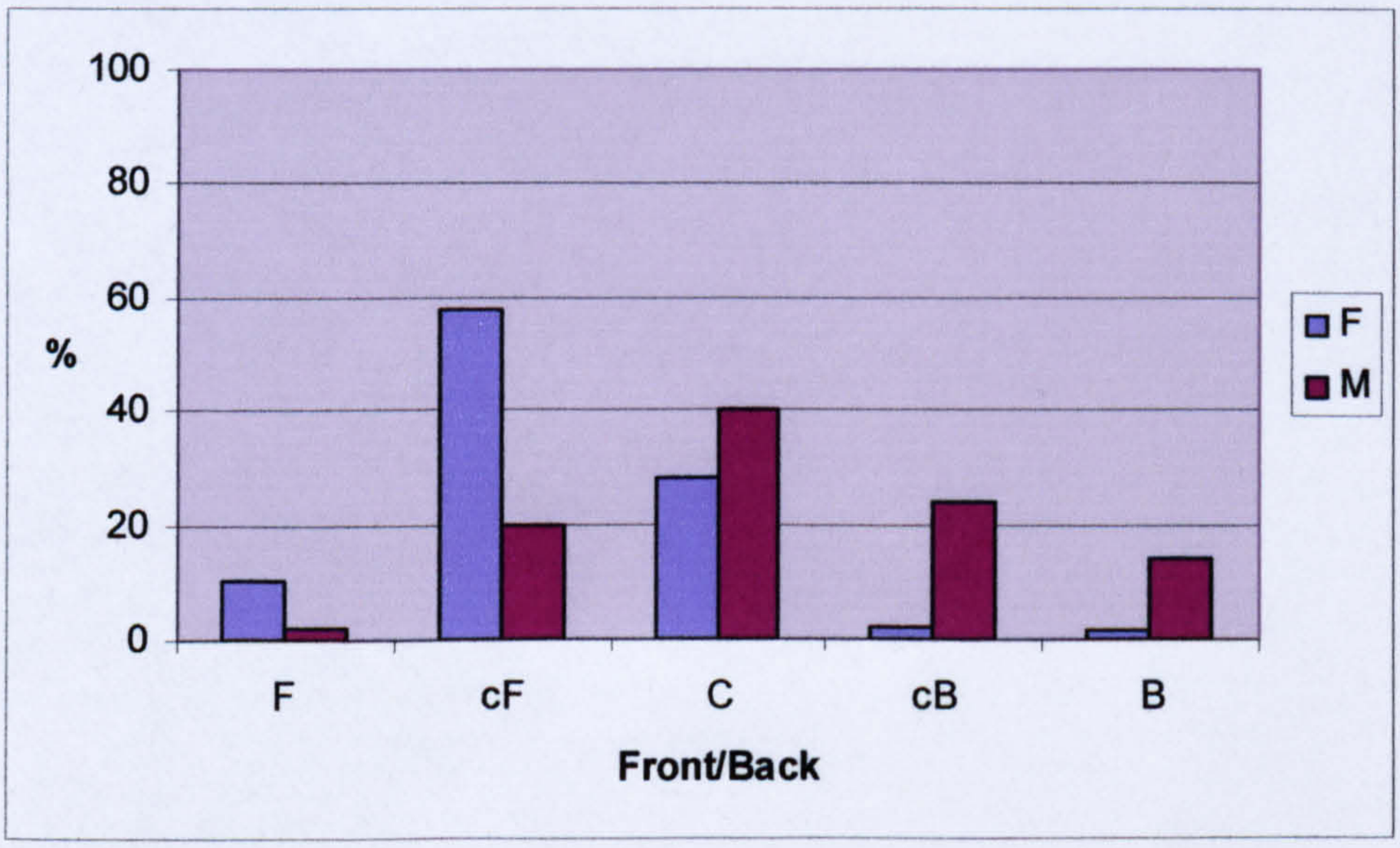
lower frequency in the F, cB and B categories. NORTH, on the other hand, is almost completely restricted to the back part of the vowel space, with most tokens falling into the B category. A substantial number of NORTH tokens are, however, found in the cB category, and a very few NORTH tokens are pronounced as far forward as C.

In the following subsections, I analyse the social distribution of NURSE and NORTH in the whole TLS sample and, in order to maintain clarity, the frequencies for the two lexical sets are graphed separately.

6.3.1.2. NURSE

Given the range of pronunciations of the NURSE vowel revealed in Figure 33, it is not surprising that this enormous variation is socially structured. In Figure 34, Figure 35 and Figure 36, the distribution of NURSE variants in the whole TLS sample according to gender, age and socio-economic group is illustrated.

Figure 34: The distribution of NURSE by gender in the TLS.

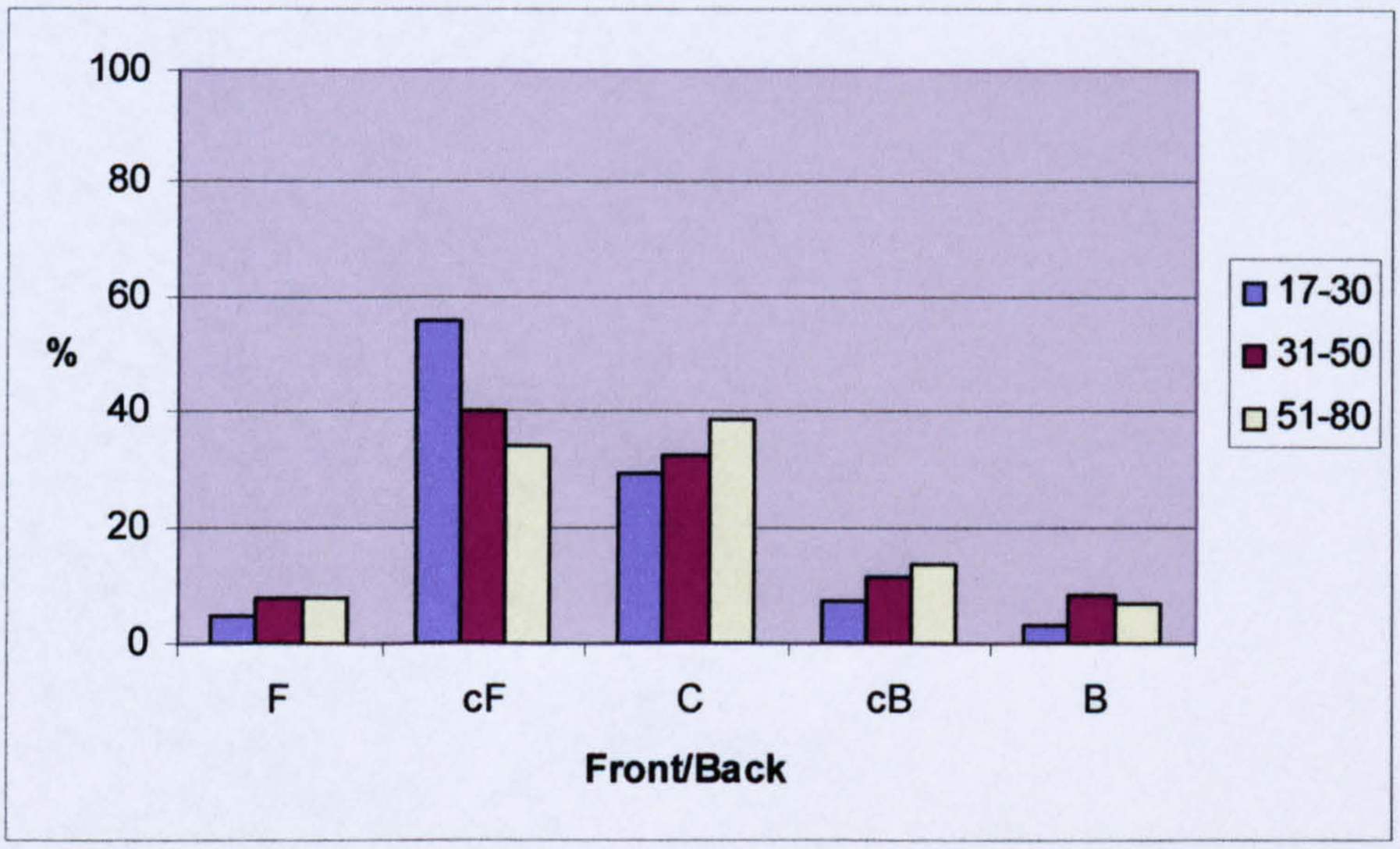


It is immediately apparent that gender is an important factor in the pronunciation of NURSE in the TLS. Although male tokens are distributed throughout the front/back dimension, F pronunciations are rare, B and cB pronunciations make up a substantial part of the total, and C pronunciations are the most common. At least some of the Male F and cF variants of NURSE are the result of the survival of what appears to be older lexical distinctions, as described in Section 6.2 above.

For females, NURSE is generally pronounced in the front and central part of the vowel space (cF in particular). cB and B pronunciations are almost completely absent; B pronunciations are, in fact, restricted to the speech of only one female informant,[5] whilst cB pronunciations are restricted to the speech of only three female informants (and one of these has less than 3% of her variants in this category). I return to the behaviour of individual speakers in Section 6.3.3 below.

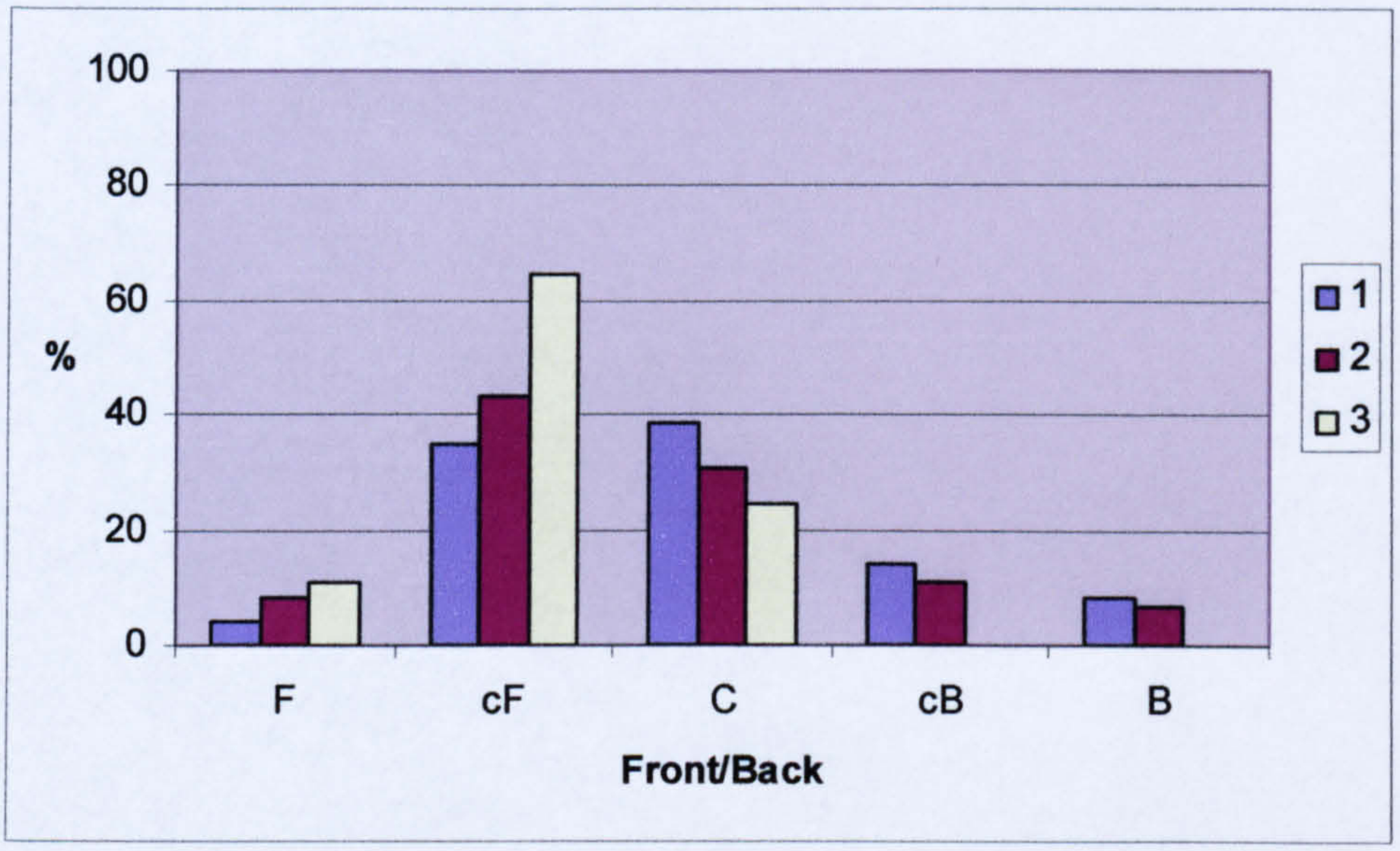
Compared to the difference between males and females revealed in Figure 34, patterns in the distribution of NURSE variants by age are not so obvious (see Figure 35). The only feature which stands out in this data is the much higher frequency of cF pronunciations of NURSE in the youngest age group. This high frequency of cF pronunciations has the consequence that F, cB and B pronunciations of NURSE in particular are uncommon in this age group. The age groups 31-50 and 51-80 are very evenly matched in their distribution of NURSE variants. It appears that age is not a major factor influencing pronunciation of NURSE in the TLS, although there is a tendency for the youngest age group to use more front and less back pronunciations of NURSE.

Figure 35: The distribution of NURSE by speaker age in the TLS.



[5] This informant, G052, is one of the most localised speakers in the TLS sample and is, by any stretch of the imagination, exceptional.

Figure 36: The distribution of NURSE by socio-economic group in the TLS.

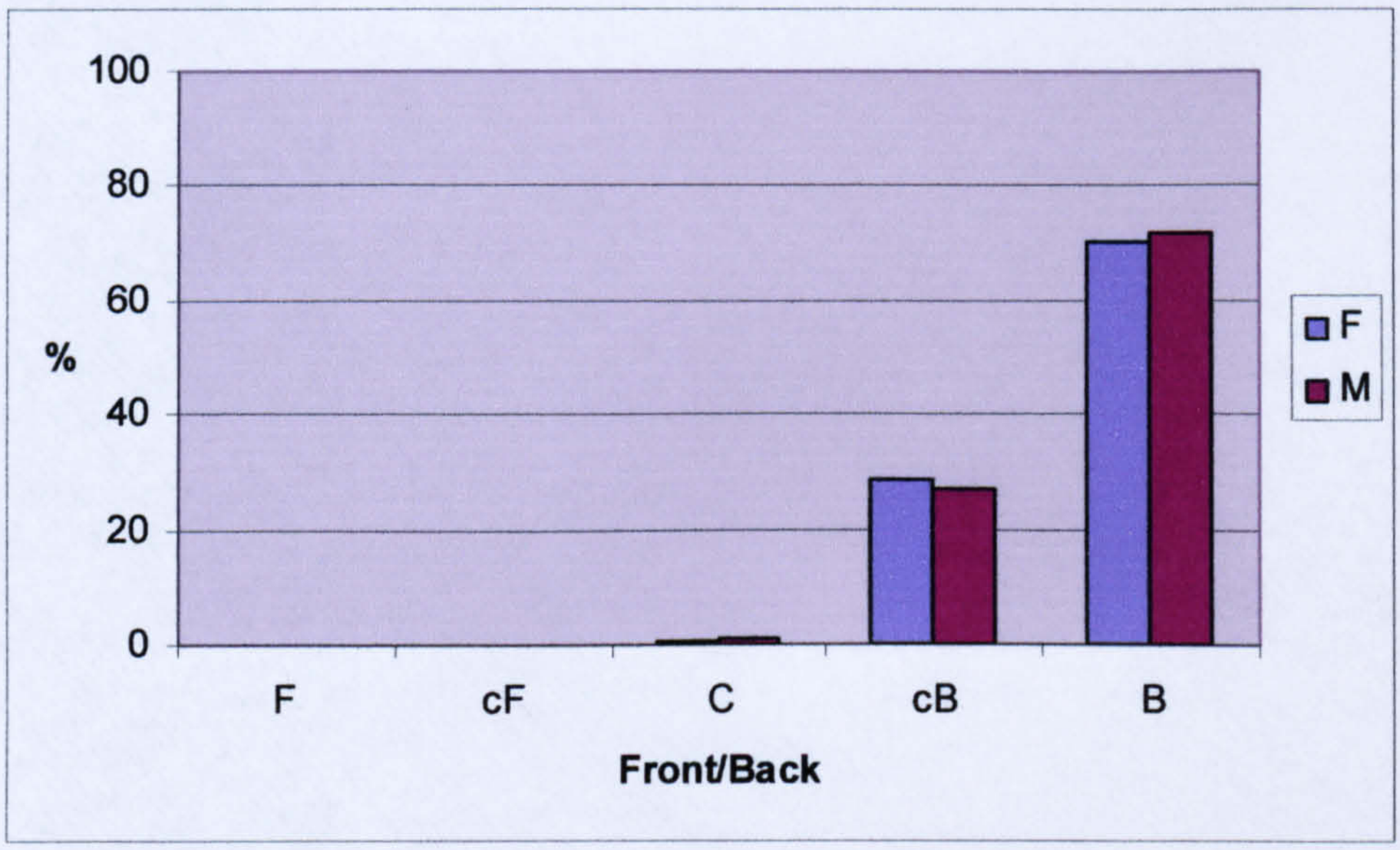


It is immediately apparent from Figure 36 that cB and B pronunciations are absent in the speech of group 3 informants (the highest socio-economic group). Rather, this group particularly favours the cF variant. It should be remembered, however, that group 3 is very much under-represented in the TLS sample, including as it does only seven of the seventy informants. As such, any patterns associated with group 3 must be treated with caution. Groups 1 and 2 are more generally distributed, and have similar distributions of NURSE variants. There are slightly more cB and B variants for group 1, the lowest socio-economic group, although the differences between groups 1 and 2 here are not great.

6.3.1.3. NORTH

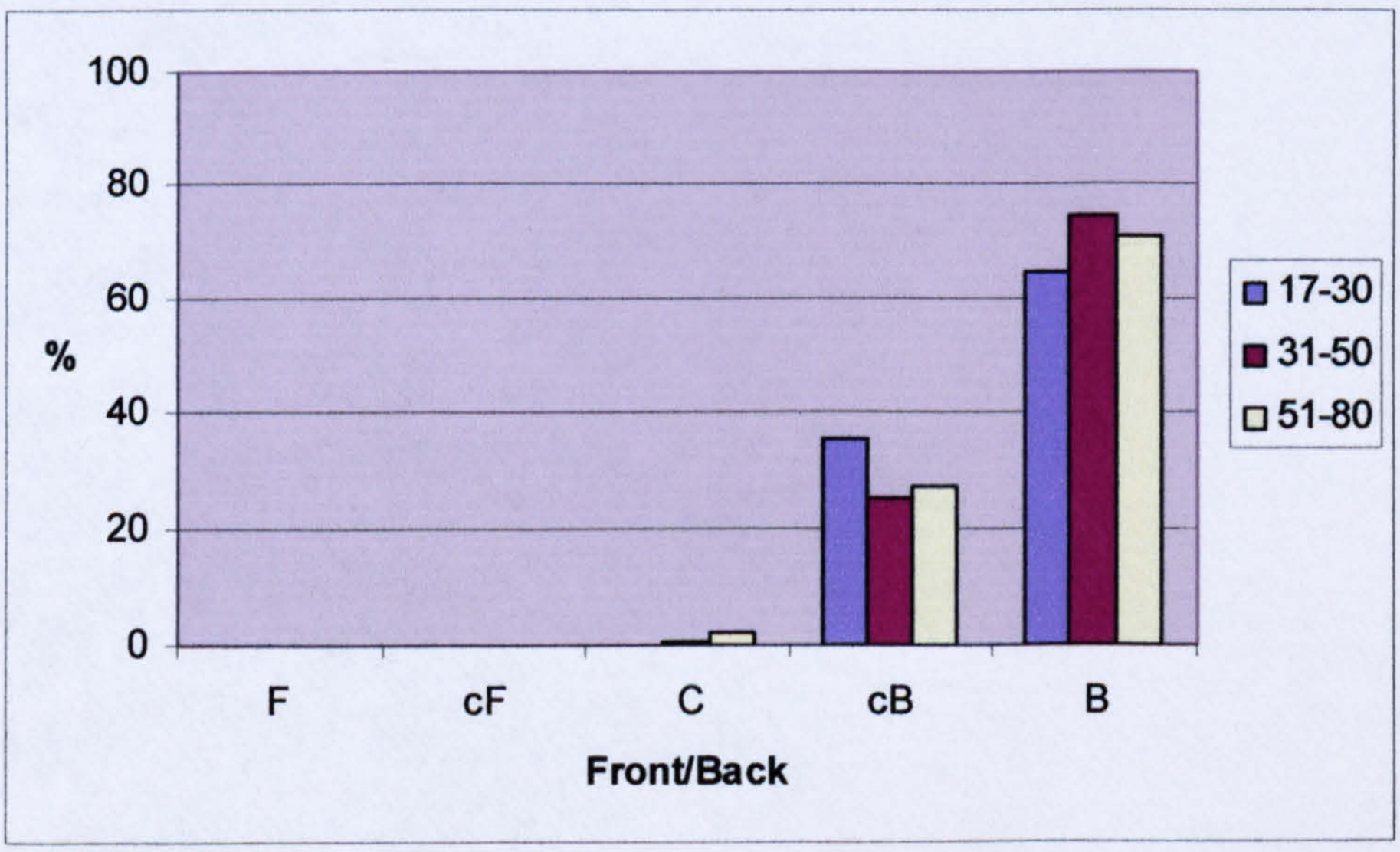
It was noted above that there is considerably less variation in the pronunciation of the NORTH vowel in the TLS than for the NURSE vowel. In Figure 37, Figure 38 and Figure 39 below, I examine the social distribution of NORTH variants in order to determine whether the variation that does occur in this vowel is socially structured.

Figure 37: The distribution of NORTH by gender in the TLS.



The most striking thing about the distribution of NORTH is that there is almost no difference in the distribution of variants in male and female speech in the TLS. This contrasts sharply with the variation in the NURSE vowel, which appears to be primarily influenced by gender.

Figure 38: The distribution of NORTH by speaker age in the TLS.

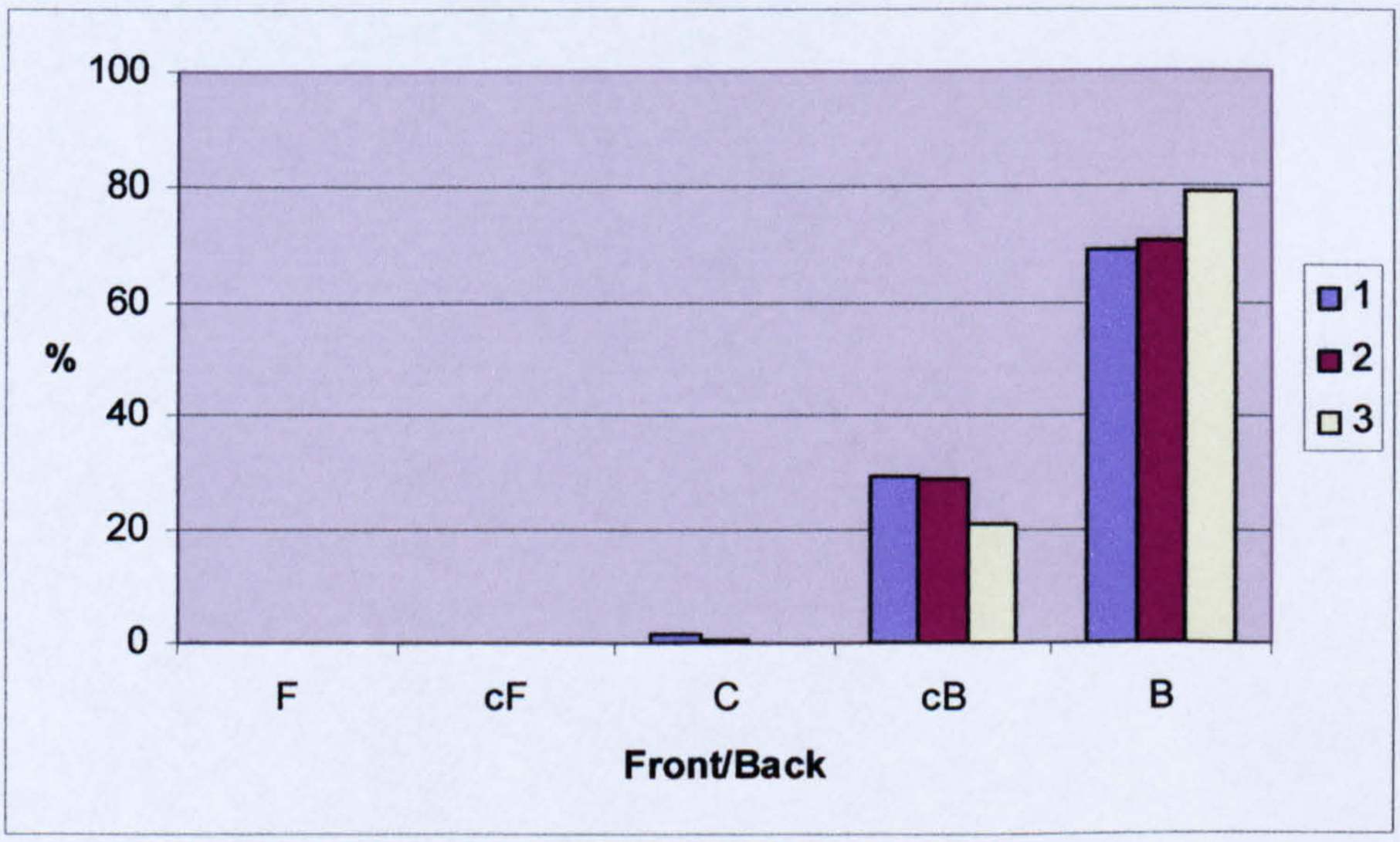


It is again difficult to see any obvious patterns of distribution of NORTH variants. It is true that C pronunciations are most common for older speakers and absent from the speech of the younger informants, but the differences are so small that no firm conclusions can be drawn. Speakers from the youngest age group also appear to

use more cB variants than any other age group, but again the differences are not great.

As with gender and age, there are no striking patterns in the distribution of NORTH variants in the different socio-economic groups. It is possible that group 3 (the highest socio-economic group) favours B variants more than the other groups; this group has a lower frequency of cB variants and is completely lacking C variants. That said, the figures for C variants in particular are extremely low anyway, and again it must be remembered that socio-economic group 3 is very much under-represented in the TLS sample. As such, no firm conclusions drawn from these distribution patterns.

Figure 39: The distribution of NORTH by socio-economic group in the TLS.



6.3.1.4. Summary of the distribution of NURSE and NORTH in the TLS as a whole

The clear phonetic divergence of NURSE and NORTH in the TLS sample as a whole (see Figure 33) is matched by the very different sociolinguistic patterning of the two lexical sets. Whilst the distribution of NURSE variants is strongly influenced by gender, more weakly so by socio-economic status, and least of all by age, none of these three social variables appears to affect the distribution of NORTH variants to any great degree. In order to reveal whether any combination of the three social variables is particularly important in determining the distribution of NURSE and NORTH variants, and in order to gain a better understanding of the structure of the variation revealed in Figure 34 to Figure 39, I turn now to the examination of the

distribution of NURSE and NORTH variants in the TLS social groups listed in Section 5.6.4.

6.3.2. NURSE and NORTH in the social groups

When the speakers in the TLS sample are grouped according to gender, age and socio-economic status, they fall into 17 social groups, each of which has its own particular social profile (see Section 5.6.4). For convenience, these social groups, and the numbers of speakers in each, are listed again in Table 26.

Table 26: The social groups in the TLS sample.

Speaker Group	No. of speakers
YM1	1
YF1	4
YM2	5
YF2	4
YM3	2
YF3	1
MM1	5
MF1	10
MM2	7
MF2	10
MM3	1
MF3	2
OM1	3
OF1	4
OM2	4
OF2	6
OM3	1

In addition, the three social variables predict an OF3 group, but there are no informants who match this profile in the TLS. As noted above, examination of the distribution of NURSE and NORTH variants for each of these social groups will give us a detailed picture of the social distribution of NURSE and NORTH in the TLS

sample, from which more general conclusions can be drawn. It was also noted that the present state of the TLS corpus means that not all types of speaker are equally represented, a fact which has important consequences for any interpretation of the data. Nevertheless, the analysis presented below shows that, despite the uneven distribution of speakers, the distribution of NURSE variants, at least, shows clear patterning.

In light of the patterns of distribution revealed in Figure 34, Figure 35 and Figure 36, it appears that gender is the most important factor in determining the distribution of NURSE, followed by socio-economic group and then age. As such, I take this pattern of distribution into account in the following presentation of the data for the distribution of NURSE (and NORTH) in the TLS social groups. In Figure 40 and Figure 41, the social groups appear on the X axis, ordered by gender, then by socio-economic group, and then by age. Within this arrangement, the social groups are arranged such that the social attributes which favour back pronunciations of NURSE are given on the left, whilst social attributes which favour front pronunciations of NURSE are given on the right, in order best to illustrate the pattern of distribution in the sample. Since there were no obvious patterns of distribution for NORTH, it is laid out in the same way as NURSE. As before, the frequency of occurrence of each variant, in percent, appears on the Y axis.[6]

Figure 40 very clearly displays the structured distribution of NURSE variants in the TLS. The nearly complete restriction of B and cB variants of NURSE to males of socio-economic groups 1 and 2 is mirrored by the much higher frequency of F and cF variants in the speech of males from socio-economic group 3 and females (especially from socio-economic groups 2 and 3). The existence of cF and F pronunciations of NURSE in the groups OM1 and OM2 is almost entirely the result of the survival of the traditional lexical distinctions referred to in Section 6.2 above.

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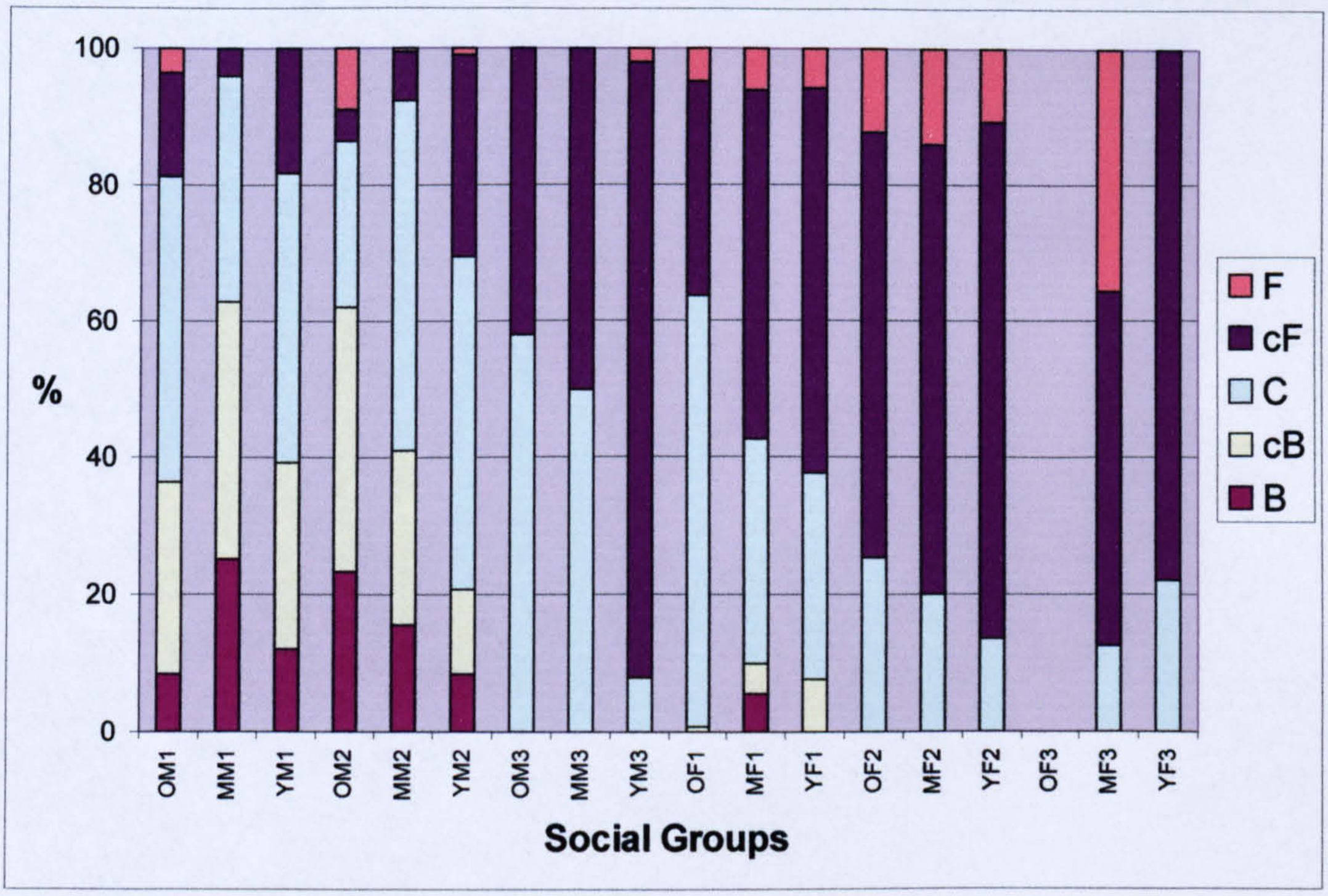
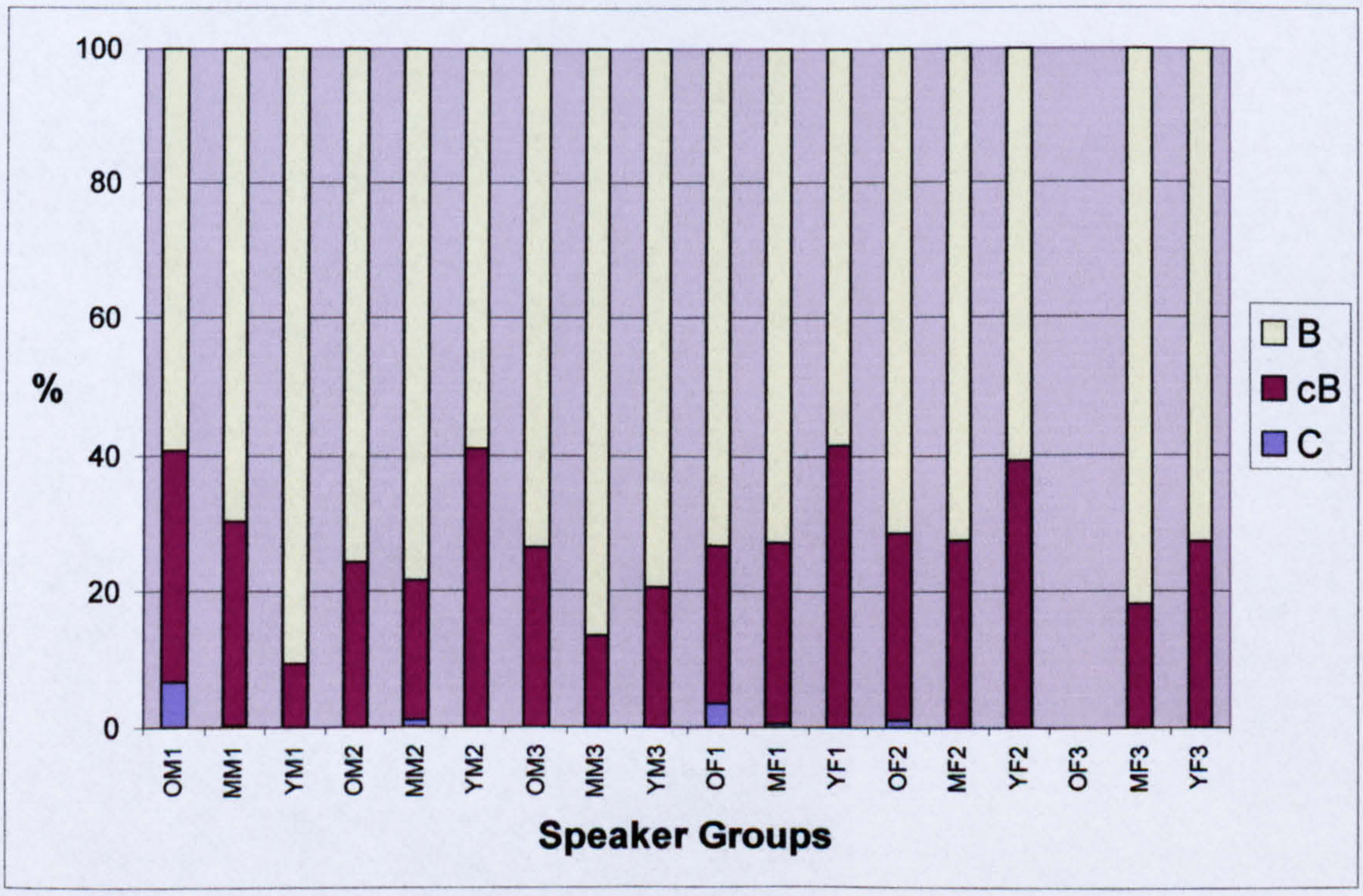
[6] Note that only three variants are given for NORTH, since it is never pronounced with C, cF or F. Note also that the TLS social group OF3 appears in the graphs, even though it has no members, so that a false image of the patterns of variation is not presented.

Figure 40: The frequency of NURSE variants for each of the TLS social groups.



As was mentioned in Section 6.3.1.2 above, cB and B variants are only found in the speech of two females with any degree of frequency. The slightly aberrant pattern for YF3 can probably be explained as a consequence of this cell only having one speaker.

Figure 41: The frequency of NORTH variants for each of the TLS social groups.



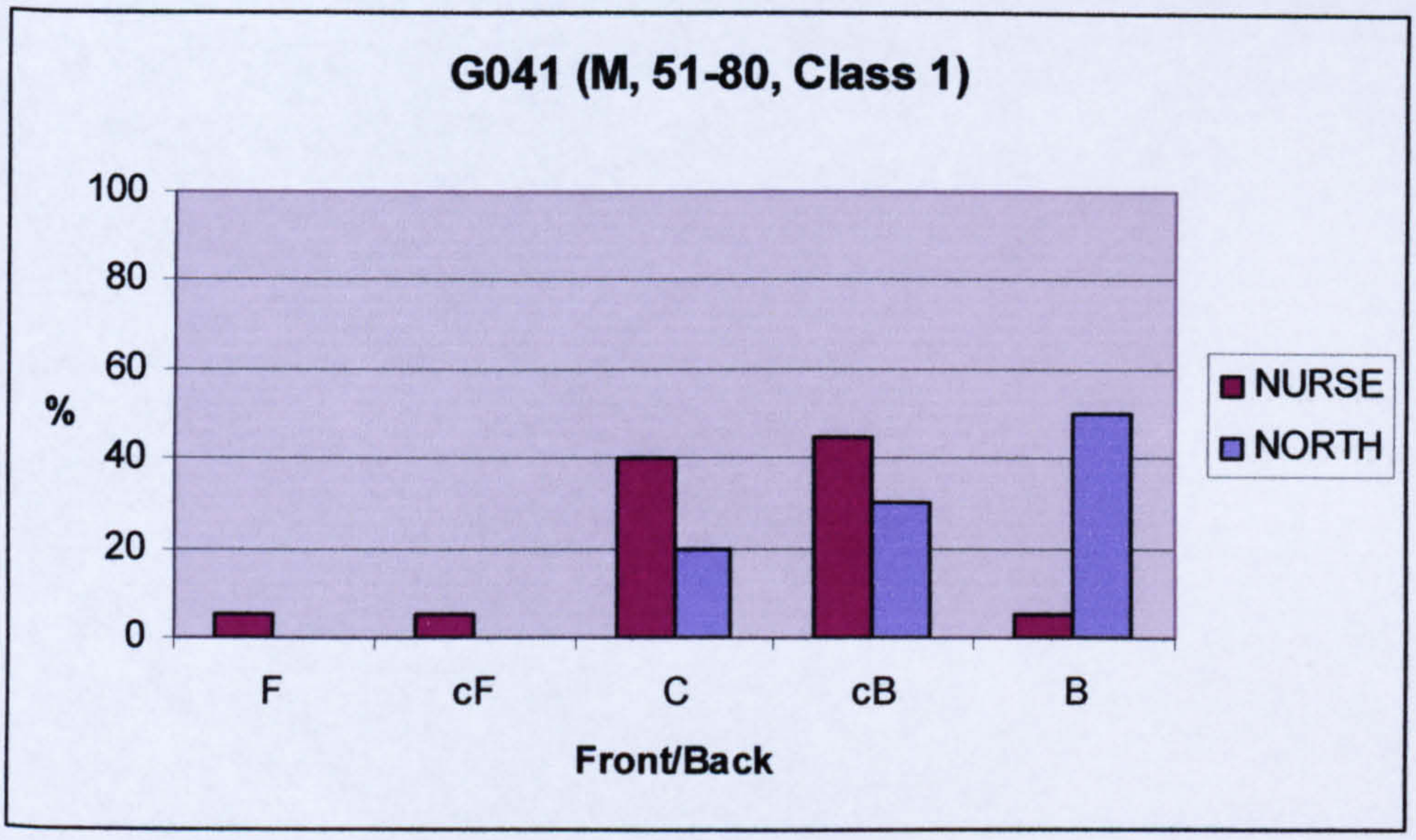
Compared with the striking patterns of distribution of variants for NURSE, NORTH once again defies easy interpretation. A number of points can be made, however. Firstly, the rare C variant is absent from the speech of young speakers, most middle-aged speakers, and speakers from socio-economic class 3. It is most common in OM1 and OF1, the older working-class groups, and somewhat less common in MM2 and OF2. The three highest counts of the cB variant are found in the younger groups YM2, YF1 and YF2. Two of the three groups with the highest proportion of the B variant are middle-aged and socio-economic group 3 (MM3 and MF3), although the highest frequencies of B variants is found in group YM1. None of these groups is well represented in the sample. The distribution of NORTH in the sample is examined in more detail in Chapter 7.

6.3.3. Auditory analysis of individuals speakers

The importance of understanding the distribution of phonetic and phonological variants not only in the community but also in the speech of individuals has featured throughout the discussion in this thesis. Although the data presented in Section 6.3.1 and Section 6.3.2 above tell us much about the distribution of the NURSE and NORTH variants in the TLS, they potentially hide a great deal of crucial information. For example, Figure 33 reveals that there is enormous variation in the pronunciation of NURSE, but much less variation in the pronunciation of NORTH. The reasons for the enormous variation in NURSE remain unclear, however. We cannot tell from composite totals such as those given in Figure 33 whether this is due to inter-speaker variation, intra-speaker variation, or some combination of the two. Similarly, we cannot tell from Figure 33 whether NURSE and NORTH are pronounced alike or completely differently for particular speakers, information which is crucial if we are to understand the nature of the 'NURSE-NORTH Merger' in TE. The analysis of individual speakers in this section seeks to overcome these problems.

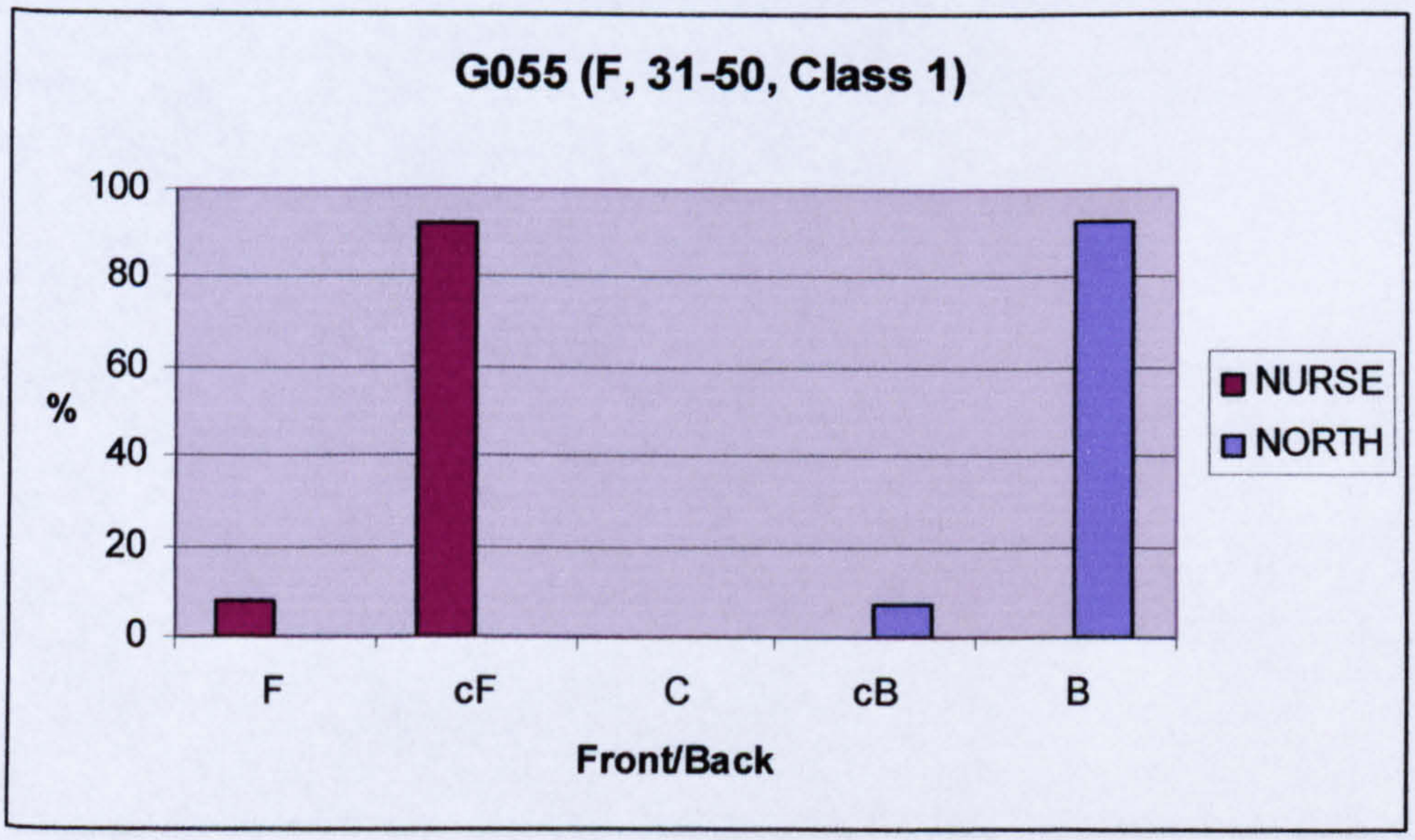
Before examining the relationship between the NURSE and NORTH lexical sets, however, I examine first the degree to which the variation in the pronunciation of NURSE and NORTH revealed in Sections 6.3.1 and 6.3.2 is found in the speech of individual informants. Figure 42 shows that this variation in pronunciation of NURSE and NORTH is not just the product of the analysis of the TLS sample wholesale.

Figure 42: Variation in the pronunciation of NURSE and NORTH by G041.[7]



Although the level of variation in NURSE and NORTH in G041's pronunciation is not typical of the majority of speakers in the TLS sample, most speakers have some degree of variation in both vowels, as the graphs in Appendix 10 illustrate. Note that the distribution of G041's variants resembles the overall distribution of the two lexical sets for the whole sample and for males in particular.

Figure 43: Variation in the pronunciation of NURSE and NORTH by G055.[8]



[7] Number of NURSE tokens = 20; number of NORTH tokens = 10.

[8] Number of NURSE tokens = 25; number of NORTH tokens = 14.

Figure 43 demonstrates that, for some speakers, variation in NURSE and NORTH is much more limited. Although G055 does have some variation in pronunciation of both NURSE and NORTH, the variation is minimal. Nine times out of ten, NURSE is pronounced with a cF variant, and nine times out of ten, NORTH is pronounced with a B variant.

In the following sections, I discuss the data for two kinds of speakers in turn: speakers who, like G055, have completely distinct NURSE and NORTH lexical sets, and speakers who, like G041, have some degree of overlap of NURSE and NORTH. The individual speaker graphs for all 70 speakers can be found in Appendix 10.

6.3.3.1. Speakers with completely distinct NURSE and NORTH lexical sets

Of the 70 TLS speakers analysed, 43 have completely distinct NURSE and NORTH lexical sets in the auditory analysis (see Appendix 10). From the data we have available to us in the TLS interviews, these speakers have no merger of NURSE and NORTH. Despite variation in the pronunciation of the two vowels, NURSE is restricted to the centre and front of the vowel space, whilst NORTH is almost completely restricted to the back part of the vowel space. One speaker, G323, has a few C variants of NORTH although, since her pronunciations of NURSE are found wholly within the front part of the vowel space, there is still no overlap of the two sets.

6.3.3.2. Speakers with some degree of overlap of NURSE and NORTH

Of the 70 TLS speakers analysed, 27 have phonetic overlap, to one degree or another, of the NURSE and NORTH lexical sets (again see Appendix 10). That is, on some occasions at least, NURSE and NORTH may be pronounced the same, and it is among these speakers that any evidence of the 'NURSE-NORTH Merger', if it exists, will be found.

For many of these speakers, overlap of NURSE and NORTH is minimal. Speakers G024, G056, G057, G223, G228, G317, G318, G322, G325, and G326 appear to have more or less distinct NURSE and NORTH lexical sets which on occasion intrude upon each other's phonetic space.

For other speakers, G033, G041, G045, G047, G054, G327, G328, G329, G332, G519, G522, G526, and G529, the overlap of NURSE and NORTH is considerable, such that all of the NORTH tokens are found in the possible phonetic space of NURSE, but not all of the NURSE tokens are found in the possible phonetic space of NORTH. Despite the complete occurrence of NORTH within the range of NURSE in these cases, most, perhaps all, of these speakers appear to have distinct frequency profiles for NURSE and NORTH, to a greater or lesser extent.

Four speakers, G035, G036, G044, and G052, have completely overlapping NURSE and NORTH lexical sets; that is, the NURSE and NORTH variants share the same phonetic space. Although it is possible for the two lexical sets to share the same phonetic space, yet still have distinct frequency profiles, it appears that of these four speakers only G036 shows a preference for centralised pronunciations of NURSE and back pronunciations of NORTH. G035 may also show a hint of this, but the differences in distribution are small. G044 and G052, on the other hand, have completely overlapping NURSE and NORTH pronunciations, with no discernible frequency differences between them (indeed, in the case of G044, NURSE tokens are slightly more frequent in the B part of the vowel space than NORTH). That is, these speakers appear to have no phonetic distinction between the NURSE and NORTH lexical sets whatsoever.

In order to determine more precisely the relationship between NURSE and NORTH in those cases (G035, G036, G044 and G052) where there appears to be a merger of the two lexical sets, or something very near it, the data for these speakers were submitted to statistical testing using the Mann-Whitney *U* test, as described in Section 5.8. In addition, data for a further three speakers (G054, G519 and G522) who show a high degree of overlap of NURSE and NORTH were also tested in order to demonstrate that the difference between the two lexical sets for these speakers is indeed significant.

The results of the Mann-Whitney *U* test for G035, G044 and G052 reveal that there is no significant difference between NURSE and NORTH for any of these speakers ($p >$

0.05 in all three cases).[9] As such, the Null Hypothesis (that any difference between NURSE and NORTH for these speakers is the result of chance) is accepted, and the Alternative Hypothesis (that the difference between NURSE and NORTH for these speakers is not the result of chance) is rejected. In the case of G036, however, there is a significant difference in the distribution of NURSE and NORTH ($p = 0.023$) and, as such, the Null Hypothesis is rejected in this case, whilst the Alternative Hypothesis is accepted. The results of the Mann-Whitney *U* test for G036 confirm what the impressionistic interpretation of the data appear to show – that although NURSE and NORTH are very similar for this speaker, their frequency distributions are slightly different.

The results of the Mann-Whitney *U* test for some of the speakers with substantial overlap of NURSE and NORTH (G054, G519 and G522) reveal, not surprisingly, that there is a significant difference between NURSE and NORTH for these speakers. For G054 and G522, the difference is highly significant ($p < 0.001$), whilst for G519, the result is significant at the 5% level ($p = 0.022$).

Thus far, the results of the Mann-Whitney *U* tests confirm the impressionistic interpretation of the individual auditory results. However, since at least two of the speakers for whom the difference between NURSE and NORTH was found to be significant are among those speakers who appear to retain a distinct lexical subset made up of at least the words *girl*, *thirteen* and *thirty*, it may be the case that the difference between NURSE and NORTH is being caused by this probable lexical survival. In order to determine whether this is so, Mann-Whitney *U* tests were conducted a second time for the three speakers with a significant difference between NURSE and NORTH, but on this occasion, tokens of the words *girl*, *thirteen* and *thirty* were excluded from the analysis. For G054 and G522, this had no effect on the results of the Mann-Whitney *U* tests – in both cases, the differences between the two lexical sets was still highly significant ($p < 0.001$). However, in the case of G519, who has considerable numbers of front pronunciations of *thirteen* and *thirty*, there is no significant difference between NURSE and NORTH once these words have been excluded ($p = 0.180$). Perhaps more surprisingly, since he has no obvious front

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[9] G035: $p = 0.400$; G044: $p = 0.789$; G052: $p = 0.667$.

pronunciations of NURSE words, the removal of the words *girls*, *thirteen* and *thirty* from the data for G036 results in there being no significant difference between NURSE and NORTH for this speaker either ($p = 0.104$).

These results suggest that, in some cases at least, front pronunciations of words like *girl*, *thirteen* and *thirty* may give the appearance (in the auditory analysis) that there is no merger of NURSE and NORTH when, in fact, there is. This finding is taken into account in the acoustic analysis of the TLS data, which I turn to now.

6.4. Acoustic results

In Section 5.7.5, I noted that data for the following eight speakers were selected for acoustical analysis:

G035, G044, G052, G054, G223, G331, G519, G522

These eight speakers represent a range of speaker types, from speakers such as G044 and G052, who appear, in the auditory analysis, to have complete merger of NURSE and NORTH, to speakers such as G223 and G331, who have wholly distinct, or nearly so, NURSE and NORTH lexical sets. In this section, I discuss the results of the acoustic analysis and, in addition, conduct Mann-Whitney *U* tests on the data for all speakers. In Section 5.8, I suggested that although it was desirable to test the distribution of NURSE and NORTH in the acoustic analysis using the *t* test, this is not possible for all speakers, since there are a number of extreme violations of the assumptions underlying the *t* test. Perhaps most seriously, the numbers of tokens for one or other of the two lexical sets is rather low for some speakers. The numbers of tokens for each of the speakers listed above, which are given in Table 27,[10] reveal that almost half of the token sets fall below the desired minimum of 30, some rather severely so.

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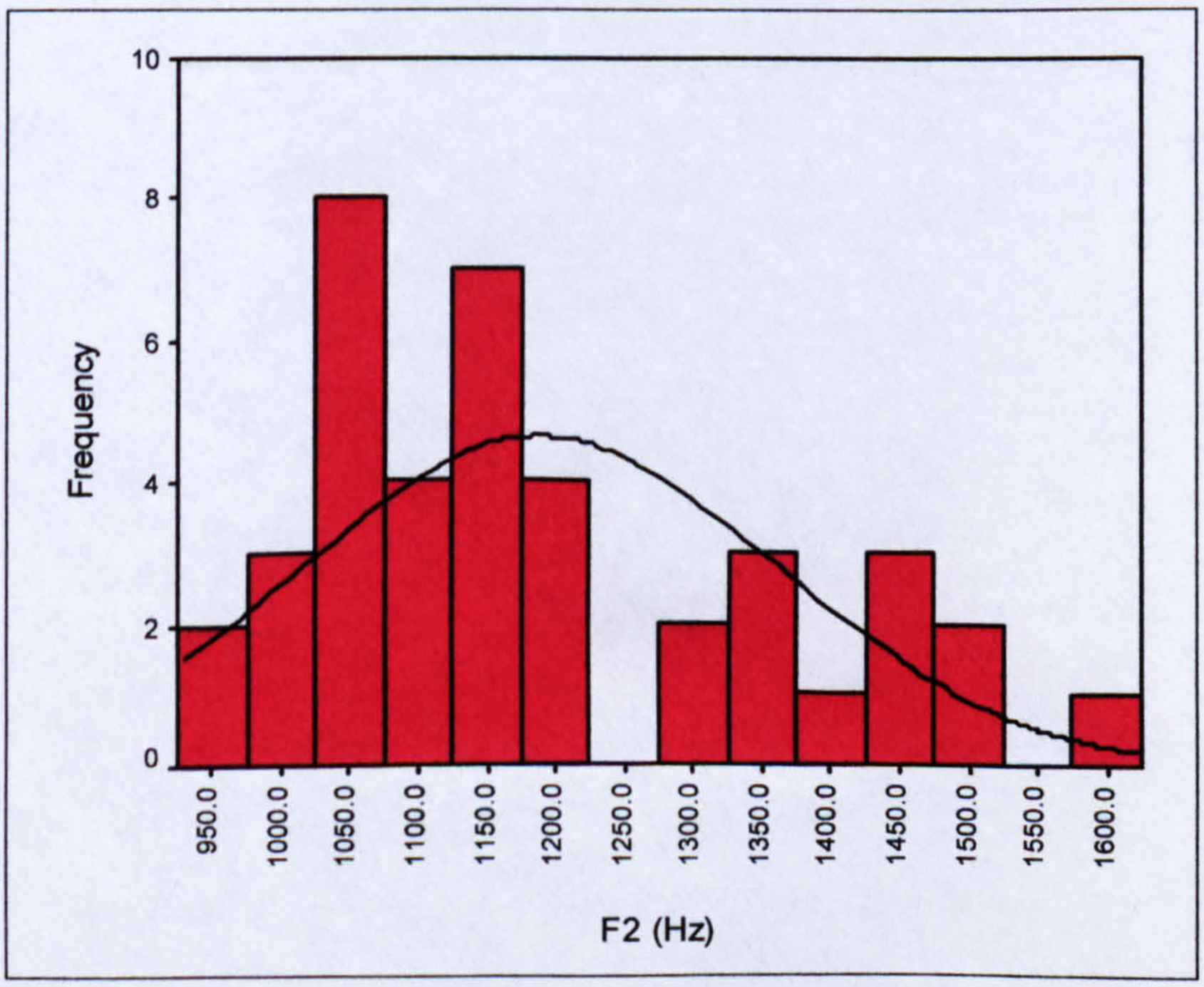
[10] The figures for NURSE in brackets are explained below.

Table 27: The number of NURSE and NORTH tokens for each speaker in the acoustic analysis.

Speaker	NURSE tokens	NORTH tokens
G035	14	19
G044	58	13
G052	40	15
G054	63 (60)	52
G223	31	29
G331	29	13
G519	44 (32)	9
G522	84 (68)	21

The data are also problematic, in terms of the *t* test, in other ways. For some speakers, there is quite a large degree of mismatch between the variance of NURSE and NORTH. And in a number of cases, the data are not distributed normally. This is even the case for speakers like G052, where the normality of the distribution of NURSE, for example, is not easily determined from an inspection of the relevant graphs in Appendix 10. Figure 44, on the other hand, reveals that G052's F2 values for NURSE are positively skewed.

Figure 44: Histogram of G052's F2 values for NURSE.



The combination of low numbers of tokens, differences in variance between NURSE and NORTH, and lack of normality in the distribution of formant values means that a substantial proportion of the acoustic analysis data does not fulfil the requirements of the *t* test and, as such, the non-parametric Mann-Whitney *U* test, which analyses only the ordinal properties of the data, is used instead.

As mentioned at the end of Section 6.3, the aberrant behaviour of the words *girl*, *thirteen* and *thirty* affects our interpretation of the relationship between NURSE and NORTH for a number of speakers. In this acoustic analysis, the behaviour of these lexical items is taken into account, such that NURSE as a whole and NURSE without these words may be compared to NORTH. The figures for NURSE in Table 27 in brackets indicate the number of NURSE tokens excluding the words *girl*, *thirteen* and *thirty*. As noted above, this minor lexical set is referred to by the label THIR-.

I turn now to the examination of the distribution of NURSE and NORTH on the F1 and F2 dimensions for the eight speakers listed at the start of this section. I begin with those speakers (G035, G044 and G052) who have no significant difference between NURSE and NORTH in the auditory analysis, along with G519, who has no significant difference between NURSE and NORTH in the auditory analysis after the words *thirteen* and *thirty* are excluded from the analysis. I follow these with analysis of the two speakers (G054 and G522) who have a large degree of overlap of NURSE and NORTH and, finally, with the two speakers (G223 and G331) who have distinct, or nearly so, NURSE and NORTH. Formant values for each analysis are given in Appendix 11.

In order to establish the similarity (or otherwise) of the auditory and acoustic results, two kinds of comparison can be made between the two sets of data. The first of these is a comparison of the distributions of NURSE and NORTH as revealed in the individual auditory analysis graphs and the acoustic analysis graphs. Since the auditory analysis examines only the front/back dimension, the spread of NURSE and NORTH variants on this dimension can be compared visually with the spread of NURSE and NORTH variants on the F2 dimension in the acoustic analysis. In addition, the results of the Mann-Whitney *U* tests can be compared in each instance.

Comparisons of this sort are made below for each of the eight speakers for whom acoustic analysis was conducted.

The second kind of comparison that can be made is to identify the auditory category to which each token in the acoustic analysis was assigned, regardless of whether the token belongs to NURSE or NORTH, as was discussed in Section 5.7.6. In this kind of comparison, the acoustic analysis plots are repeated, but with the tokens identified by the auditory category they were assigned to in the auditory analysis. The average positions of each of the auditory categories in the F1/F2 graph can then be plotted for extra clarity. The same statistical technique described in Section 5.8, and used to determine whether the distribution of NURSE and NORTH was the same or different in the auditory and acoustic analyses, can also be brought to bear in this comparison of auditory and acoustic results. In order to determine whether the distribution of acoustic tokens for the different auditory categories is significantly different or not, Mann-Whitney *U* tests will be conducted on pairs of auditory categories which should be adjacent to each other (e.g. F and cF, cB and B). The Null Hypothesis in this instance is that any difference in the distribution of tokens which have been categorised differently in the auditory analysis is the result of chance. Where a significant difference is found, the Null Hypothesis is rejected. The combination of the distribution of the auditory categories on the F1/F2 plots, and the significance (or otherwise) of the differences between them will allow an assessment of the similarity of the auditory and acoustic results to be made.

Four graphs are given for each of the speakers included in the acoustic analysis in Appendix 12. The first of these (A, top left) in each case illustrates the distribution of NURSE and NORTH on the front/back dimension in the auditory analysis. The second (B, top right) illustrates the distribution of the NURSE and NORTH tokens on the F1 and F2 dimensions (as noted in Chapter 5, the acoustic analysis graphs are laid out in such a way as to capture the relationship between formant measurements and the IPA vowel chart). Average positions of NURSE and NORTH are indicated by X symbols in the relevant colour. It will be noticed that in some of these graphs, the THIR- lexical set is plotted separately. In such cases, the average position of NURSE does not factor in instances of THIR-.

The bottom two graphs in each case, C and D, compare the distribution of the auditory category of each token with the F1/F2 measurement of that same token, such that the similarities or differences between the two analyses are revealed. Graph C illustrates all tokens, graph D the average F1/F2 positions of the tokens assigned to each auditory category.

6.4.1. G035

The near identity of NURSE and NORTH in the acoustic analysis of G035 is apparent from graph B in Appendix 12 (G035). Although the THIR- lexical subset did not appear to act substantially differently in the auditory analysis, the two THIR- tokens are clearly distinct in the acoustic analysis, and are marked separately.

The results of the Mann-Whitney *U* test reveal that there is no significant difference between NURSE and NORTH on either the F1 or F2 dimensions for G035, regardless of whether or not THIR- is included in NURSE.[11] As such, the Null Hypothesis, that any differences between NURSE and NORTH are the result of chance, is accepted for this speaker, whilst the alternative hypothesis, that there is some meaningful difference between NURSE and NORTH, is rejected.

The comparison of the auditory analysis graph and the acoustic analysis graph for G035 reveals the same pattern of distribution of NURSE and NORTH. In both cases, the distribution of NURSE and NORTH is nearly identical, and, in both cases, the results of the Mann-Whitney *U* tests confirm that there is no significant difference between them. The close similarity of the results of the auditory and acoustic analyses suggests not only that NURSE and NORTH are indeed identical for G035, but also that the two analyses, which were conducted independently of each other, reflect the same phonetic reality.

In graph C, which compares the auditory categories with the acoustic measurements, there is a considerable amount of overlap between the two auditory categories,

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[11] NURSE (inc. THIR-) *vs.* NORTH: F1: p = 0.716, F2: p = 0.244; NURSE (excl. THIR-) *vs.* NORTH: F1: p = 0.968, F2: p = 0.598.

although there does appear to be a slight difference in their distributions, and this difference is reflected in graph D, which shows the average auditory/acoustic correspondences.

Although the distance between them is not great, the average positions of cB and B are correct relative to each other, assuming that the F2 scale correlates with degrees of frontness and backness. Nevertheless, statistical testing (using the Mann-Whitney *U* test) suggests that there is no significant difference between the distribution of tokens assigned to cB and tokens assigned to B.[12] As such, no firm conclusions can be drawn from the distribution of the auditory categories on the F1/F2 plots for G035.

6.4.2. G044

The distribution of G044's NURSE and NORTH tokens on the F1 and F2 dimensions is illustrated in graph B in Appendix 12 (G044). Since the THIR- lexical subset does not appear to behave differently to the rest of NURSE, it is not marked separately.

As was the case with G035, the near identity of NURSE and NORTH in the speech of G044 is apparent in graph B. This apparent identity is confirmed by the results of the Mann-Whitney *U* test, which finds that there is no significant difference between NURSE and NORTH for G044 on either the F1 or F2 dimensions.[13] As such, the Null Hypothesis is accepted for this speaker, whilst the alternative hypothesis is rejected.

As was the case with G035, comparison of the auditory analysis graph and the acoustic analysis graph for G044 reveals the same pattern of distribution of NURSE and NORTH. In both cases, the distribution of NURSE and NORTH is nearly identical, with a slight (though insignificant) tendency for NORTH to be further forward in the vowel space than NURSE. This near identity of NURSE and NORTH in the speech of G044 is confirmed by the results of the Mann-Whitney *U* test, which revealed that there is no significant difference between the two lexical sets in either the auditory or acoustic analyses for this speaker. Again, the close similarity of the results of the auditory and acoustic analyses suggests not only that NURSE and

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[12] For F1, p = 0.296; for F2, p = 0.296.

[13] NURSE (inc. THIR-) *vs.* NORTH: F1: p = 0.917, F2: p = 0.158.

NORTH are indeed identical for G044, but also that the two analyses, which were conducted independently of each other, reflect the same phonetic reality.

In graph C, which compares the tokens in the acoustic analysis with the category they were assigned to in the auditory analysis, there is a considerable amount of overlap between the two auditory categories, although there also appears to be a slight difference in their distributions on the F1/F2 plot. This difference is also reflected in the average positions of the two auditory categories as plotted on graph D.

As was the case with G035, the average positions of cB and B are correct relative to each other, although the distance between them is not great. But again, the Mann-Whitney *U* test suggests that there is no significant difference between the distribution of tokens assigned to cB and tokens assigned to B, although in this case, the difference in F2 is only just beyond the 5% level of confidence.[14] Nevertheless, no firm conclusions can be drawn from the distribution of the auditory categories on the F1/F2 plots for G044 either.

6.4.3. G052

Graph B in Appendix 12 (G052) illustrates the distribution of G052's NURSE and NORTH tokens on the F1 and F2 dimensions. Since the THIR- lexical subset does not appear to behave differently to the rest of NURSE for G052 either, it is not marked separately.

The acoustic plot illustrates the near identity of NURSE and NORTH in the speech of G052, on the F1 and F2 dimensions at least. The Mann-Whitney *U* test confirms that there is no significant difference between NURSE and NORTH for G052, in the values for F1 and F2.[15] As such, the Null Hypothesis is retained, and the Alternative Hypothesis is rejected.

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[14] For F1, p = 0.840; for F2, p = 0.065.

[15] NURSE (inc. THIR-) *vs.* NORTH: F1: p = 0.942, F2: p = 0.786.

As was the case with G035 and G044, the auditory and acoustic analyses of the data for G052 revealed the same picture: in both cases, the distribution of NURSE and NORTH was nearly identical, and in both cases, this near identity was confirmed by the Mann-Whitney *U* tests, which found no significant differences in the pronunciation of the two lexical sets.

Graph C illustrates the distribution of the auditory categories on the F1/F2 plot, again regardless of lexical set, whilst the average positions of each auditory category are plotted in graph D. Although there is a considerable amount of overlap between cB and B, they do appear to have distinct distributions, but the tokens categorised as C in the auditory analysis do not appear to cluster in the acoustic analysis, although the small number of tokens of C is unhelpful.

In graph D, the average positions of cB and B are not only clearly distinct, but also in the correct positions relative to each other. This distinction is confirmed by the results of the Mann-Whitney *U* test, which reveals that the distribution of cB and C tokens is highly significantly different on the F2 dimension ($p = 0.007$), but not on the F1 dimension ($p = 0.185$), which is less important for present purposes, since we are looking for differences in frontness/backness. The difference between C and cB is not, however, significant,[16] although the small number of C tokens is problematic, as mentioned above.

6.4.4. G519

The distribution of NURSE and NORTH for G519 is illustrated in the graphs in Appendix 12 (G519). As was discussed in Section 6.2.1, G519 is one of those speakers who most obviously retains a distinct THIR- lexical subset and, as such, THIR- is indicated separately in the acoustic analysis graph B.

The radically different behaviour of the THIR- lexical subset is instantly clear in the acoustic analysis of G519. With THIR- included in NURSE, it is obvious that NURSE and NORTH are distributed rather differently. With THIR- excluded from NURSE,

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[16] For F1, $p = 0.077$; for F2, $p = 0.734$.

however, the distributions of NURSE and NORTH are much more similar. The Mann-Whitney *U* test for G519 produces rather interesting results, although the small number of NORTH tokens is less than ideal for any statistical test. With THIR- included in NURSE, the difference between F1 for NURSE and NORTH is significant at the 1% level ($p = 0.019$), whilst the difference between F2 for NURSE and NORTH is significant at the 5% level ($p = 0.035$). With THIR- excluded from NURSE, however, the difference between NURSE and NORTH on the F2 dimension is no longer significant ($p = 0.270$), whereas the difference between NURSE and NORTH on F1 remains significant ($p = 0.013$). It appears, then, that NURSE and NORTH are significantly different for G519 whether or not the THIR- lexical set is included in NURSE. The distinction of the two lexical sets in the F1 dimension only when THIR- is excluded is rather difficult to explain, and may, in fact, be an artefact of the small number of NORTH tokens.

In both the auditory and acoustic analyses, G519 was one of the older male speakers whose distribution of NURSE was affected by the apparent survival of archaic pronunciations of the words *thirteen* and *thirty* and, as a result, his distribution of NURSE is bimodal. The aberrant behaviour of this minor lexical set is readily apparent in both the auditory and acoustic analyses. The Mann-Whitney *U* tests of the data for both analyses also produced similar results, with the difference between NURSE and NORTH being significant when THIR- is included in NURSE, and no significant difference in the auditory analysis or in the acoustic analysis on the F2 dimension when THIR- is excluded.

The comparison of the auditory and acoustic analyses with the categorisation of tokens on the F1/F2 plot by auditory category rather than lexical set for G519 is complicated only by the small number of cF tokens. Otherwise, the distribution of the auditory categories relative to each other on the F2 dimension is exactly as expected (see graphs C and D).

Despite the small number of cF tokens, the Mann-Whitney *U* test suggests that there is a significant difference, on the F2 dimension, between F and cF, between cF and

cB, and between cB and B.[17] There is no significant difference on the F1 dimension, except between cB and B.[18] That is, there is a remarkably good match between the auditory and acoustic analyses for G519.

6.4.5. G054

Graph B in Appendix 12 (G054) illustrates the distribution of NURSE and NORTH on the F1 and F2 dimensions for G054. Although the exclusion of the THIR- lexical set from NURSE in the auditory analysis had no significant effect on the relationship between NURSE and NORTH, the exclusion of the THIR- subset from NURSE does appear to have an effect in the acoustic analysis (see below). As a result, it is marked separately in graph B.

At an impressionistic level, NURSE and NORTH appear to act differently in the speech of G054, although there is a large degree of overlap between them. The Mann-Whitney *U* test confirms that, when THIR- is included in NURSE, NURSE and NORTH are significantly different on the F2 dimension ($p = 0.045$), whereas there is no significant difference on the F1 dimension ($p = 0.507$). When THIR- is excluded from NURSE, however, the difference between NURSE and NORTH on both the F1 and the F2 dimensions is no longer significant, even though they still appear to be rather different at the inspectional level.[19]

In both the auditory and acoustic analyses, NURSE and NORTH overlap to a large degree for G054 (see graphs A and B). Despite this, NURSE and NORTH have distinct frequency profiles, to the point where the difference between them is significant (for both the auditory and acoustic analyses), except in the acoustic analysis when THIR- is excluded from NURSE.

The distribution of the auditory categories, and their average positions, are plotted on the F1/F2 graphs C and D. Since the cF category only has one member, no confident conclusions can be drawn from its position on the F1/F2 plots. Nevertheless, the

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[17] For F vs. cF, $p = 0.034$; for cF vs. cB, $p = 0.019$; for cB vs. B, $p = 0.003$.

[18] For F vs. cF, $p = 0.346$; for cF vs. cB, $p = 0.380$; for cB vs. B, $p = 0.031$.

[19] For F1, $p = 0.466$; for F2, $p = 0.100$.

positions of the individual tokens and the average positions of each auditory category are correct relative to each other, with tokens identified as cF in the auditory analysis having the highest F2 values, and tokens identified as B in the auditory analysis having the lowest F2 values.

This impressionistic interpretation of the data is confirmed by the results of the Mann-Whitney *U* tests. Although the difference between cF and C is not amenable to statistical testing (there is only one token with cF), the differences between C and cB, and cB and B are highly significant on the important F2 dimension (although not on the F1 dimension, as expected).[20] That is, there is a remarkably good match between the auditory and acoustic analyses for G054.

6.4.6. G522

Like G519, G522 is one of the speakers in the TLS who appears to have maintained a distinct THIR- lexical set. Graph B in Appendix 12 (G522) illustrates the distribution of NURSE and NORTH on the F1 and F2 dimensions for G522 (THIR- is marked separately).

The aberrant behaviour of THIR- is immediately apparent from graph B, clustered as it is in the front of the vowel space. Even without the inclusion of THIR- it appears, at the inspectional level, that NURSE and NORTH behave quite differently in the speech of G522. The Mann-Whitney *U* test confirms this impression; regardless of the inclusion or exclusion of THIR- from NURSE, there is a highly significant difference between F2 for NURSE and NORTH ($p < 0.001$ in both cases), whilst the difference between F1 is similarly significant ($p < 0.05$ in both cases).[21] As such, the Null Hypothesis, that the difference between NURSE and NORTH is the result of chance, is rejected for this speaker.

Like G519, G522 treats the THIR- lexical subset rather differently to the rest of NURSE, giving rise, in both the auditory and acoustic analyses, to a widely distributed NURSE lexical set, skewed towards the back part of the vowel space, and

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[20] For C vs. cB: on F1, $p = 0.228$, on F2, $p < 0.001$; for cB vs. B: on F1, $p = 0.328$, on F2, $p = 0.001$.

[21] $p = 0.031$ for F1 with THIR- included in NURSE; $p = 0.043$ for F1 with THIR- excluded from NURSE.

a more compact NORTH lexical set (see graphs A and B). In both the auditory and acoustic analyses, the inclusion or exclusion of THIR- does not affect the significant difference between NURSE and NORTH. As such, there is a close match between the findings of the auditory and acoustic analyses for this speaker.

The comparison of the auditory and acoustic analyses by the categorisation of tokens on the F1/F2 plot by auditory category rather than lexical set confirms the close similarity in the results of the auditory and acoustic analyses. An inspection of graphs C and D for this speaker reveals that the auditory categories appear in the correct positions relative to each other on the F1/F2 plot. This neat pattern is only complicated by the very small number of F and cF tokens, which makes any statistical assessment of the positions of these two categories problematic.

As a result, the Mann-Whitney *U* tests reveal that although they appear in the correct places in the vowel space, the differences between F and cF, and between cF and C, are not significant.[22] For the other auditory categories, however, the differences between them on the important F2 dimension are highly significant, whilst they are not on the F1 dimension.[23] Despite the problems created by the small number of F and cF tokens, the match between the results of the auditory and acoustic analyses for G522 is very good indeed.

6.4.7. G223

G223 is one of the two speakers included in this acoustic analysis for whom there is a clear, obvious difference between NURSE and NORTH. Since NURSE appears in the front part of the vowel space in any case, the pronunciation of the THIR- lexical subset is not differentiated from it. Graph B in Appendix 12 (G223) illustrates the distribution of NURSE and NORTH in the acoustic analysis of G223.

The results of the Mann-Whitney *U* test confirm the obvious difference in NURSE and NORTH for this speaker: the difference on the F1 dimension is significant at the 5%

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[22] For F vs. cF, $p = 0.655$ for F1, $p = 0.180$ for F2; for cF vs. C, $p = 0.855$ for F1, $p = 0.144$ for F2.

[23] For C vs. cB, $p = 0.960$ for F1, $p < 0.001$ for F2; for cB vs. B, $p = 0.964$ for F1, $p < 0.001$ for F2.

level ($p = 0.018$), whilst the difference on the F2 dimension is, unsurprisingly, highly significant ($p < 0.001$).

The auditory analysis of G223 suggested that for this speaker, NURSE and NORTH were almost completely different, with only some minor phonetic overlap in the central part of the vowel space (see graph A). The acoustic analysis for G223 presented a very similar pattern, with NURSE and NORTH tokens clustering in two parts of the vowel space and with few tokens of either in the intervening area. The difference between the distribution of NURSE and NORTH is highly significant.

The comparison of auditory categorisation with acoustic values for G223 is somewhat less satisfactory, however (see graphs C and D). Although there is a clear and (highly) significant difference in the distributions of tokens categorised as C and as cB in the auditory analysis on the important F2 dimension,[24] differences between cF and C, and between cB and B, are not visually apparent, nor are they statistically significant.[25] The small number of tokens of both cF and cB (five and six respectively) doubtless contributes to the problematic distribution of these categories.

6.4.8. G331

Like G223, the difference between NURSE and NORTH in the speech of G331 is obvious and uncontroversial in the acoustic analysis, as graph B in Appendix 12 (G331) illustrates.

The Mann-Whitney *U* test confirms the difference between NURSE and NORTH, and, on this occasion, the difference is only significant on the F2 dimension ($p < 0.001$), whilst there is no significant difference between F1 for NURSE and NORTH ($p = 0.237$). The highly significant difference between NURSE and NORTH on the F2 dimension forces us to reject the Null Hypothesis for G331.

The auditory analysis of NURSE and NORTH in the speech of G331 revealed that these two lexical sets are entirely distinct for this speaker, NURSE being pronounced

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[24] For F1, $p = 0.069$; for F2, $p < 0.001$.

[25] For cF vs. C, $p = 0.069$ on F1, $p = 0.364$ on F2; for cB vs. B, $p = 0.538$ on F1, $p = 0.780$ on F2.

in the centre and front part of the vowel space, whilst NORTH was pronounced in the back part of the vowel space (see graph A). The acoustic analysis of NURSE and NORTH for G331 revealed a very similar pattern, with NURSE forming a cluster characterised by high F2 values and NORTH forming a cluster characterised by low F2 values (see graph B). The difference between NURSE and NORTH on the F2 dimension is highly significant. As such, the auditory and acoustic analyses produce very similar results.

The comparison of the auditory and acoustic analyses by the categorisation of tokens on the F1/F2 plot by auditory category rather than lexical set is complicated by the small number of tokens in four out of the five categories.[26] Graphs C and D reveal that although the F, cF, C and cB categories are in the correct positions relative to each other, the difference between F and cF is small, whilst the relative positions of cB and B, though very close, are reversed.

Although the difference between C and cB is significant on the important F2 dimension,[27] there is no significant difference between F and cF, cF and C, and cB and B.[28] This is not unexpected, given their close approximation and the small number of tokens involved.[29]

6.4.9. Summary of the acoustic analysis

The acoustic analysis of the TLS was conducted for two reasons: (1) to provide extra data on the status of the NURSE and NORTH lexical sets in TE; and (2) to provide a check on the accuracy of the auditory analysis presented in Section 6.3 above. It is clear that the two analyses give very similar results.

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[26] There are three F tokens, three C tokens, four cB tokens, and nine B tokens.

[27] For F1, $p = 0.289$; for F2, $p = 0.034$.

[28] For F vs. cF, $p = 0.245$ on F1, $p = 0.547$ on F2; for cF vs. C, $p = 0.779$ on F1, $p = 0.138$ on F2; for cB vs. B, $p = 0.123$ on F1, $p = 0.537$ on F2.

[29] So although there appears to be a considerable difference between cF and C, the small number of tokens of C does not allow any meaningful statistical conclusions to be drawn.

In every one of the eight cases discussed above, there is a close match between the overall behaviour of NURSE and NORTH in the auditory and acoustic analyses. Where there is merger of the two lexical sets in one, there is merger in the other and, likewise, where the two lexical sets are distributed differently in one, they are also so distributed in the other. The only exception to this is G054, whose NURSE (excluding THIR-) and NORTH are significantly different in the auditory analysis but not the acoustic analysis.

The comparison of the auditory and acoustic analyses by the categorisation of tokens on the F1/F2 plot by auditory category rather than lexical set also confirms the similarity of results, although the match is less exact. In every case but one (cB *vs.* B for G331), the average positions of the auditory categories on the F2 dimension are correct relative to each other, although in six cases out of twenty, the difference is very small. In statistical terms, the difference between the auditory categories is significant in ten out of 21 cases, and in almost every case where there is no significant difference between the auditory categories, the small number of tokens involved is almost certainly a factor.

6.5. Conclusions

Detailed discussion of the results presented in this chapter, their significance and their relationship to the data and arguments in the preceding chapters is deferred to Chapter 7. Given the considerable amount of data presented in this chapter, however, I summarise the most important patterns in the data here, in order to prepare for that. These are:

1) There are very few survivals of historical lexical sets in the TLS data. The only potential exception to this is the survival of front pronunciations in the words *thirteen*, *thirty* and *girl*, and perhaps in a few other SERVE words. The existence of front vowels (e.g. [ɛː]) in these words, and the existence of similar vowels in NURSE words generally in the speech of many informants complicates the analysis somewhat. Since front pronunciations of *thirteen*, *thirty* and *girl* are found in the speech of speakers who otherwise have back pronunciations of NURSE, and whose speech is characterised by other

traditional features, I suggest that these lexically specific front pronunciations do indeed represent survivals of older lexical distinctions.

2) NURSE and NORTH are distributed very differently in the TLS sample, both phonetically and socially. The pronunciation of NURSE ranges across the vowel space in a continuous fashion, from fully front to fully back, whilst NORTH is restricted to the back part of the vowel space, although pronunciations may be nearer the centre of the vowel space than has previously been reported. Although there is little discernible social patterning to the variation in the NORTH vowel, the variation in the NURSE vowel is closely tied to social variables, particularly gender. Front pronunciations of NURSE are most characteristic of females from socio-economic groups 2 and 3, whilst back pronunciations of NURSE are most characteristic of males from socio-economic groups 1 and 2.

3) In the TLS sample of 70 speakers, 43 have completely distinct NURSE and NORTH lexical sets, whilst 27 have some degree of overlap between them. Of these 27 speakers, three have no significant difference between NURSE and NORTH in both the auditory and acoustic analyses, whilst a further three have no distinction in either auditory or acoustic analyses when the THIR- lexical set is excluded. That is, the vast majority of speakers in the TLS (61%) have no merger of NURSE and NORTH, whilst only between 4% and 10% have identical NURSE and NORTH, depending upon the data considered.

4) A comparison of the auditory and acoustic analyses for eight individual speakers reveals very similar results, suggesting not only that the two analyses are revealing the same reality, but also that the accuracy of both procedures is good. The very similar results for the auditory and acoustic analyses suggest that for some speakers, at least, NURSE and NORTH are the same.

It should be obvious that these results tell us a great deal about the development of the 'NURSE-NORTH Merger' in TE, and have a very significant bearing on the status of the 'merger'. Although I defer discussion of these central topics to Chapter 7, it

should be noted at this point that the TLS NURSE and NORTH data confirm what has been a major theme of this thesis thus far: that the question of whether there is a merger of NURSE and NORTH in TE erroneously presumes that 'merger' is a simple, easily defined phenomenon. Rather, we find in the TLS a range of behaviours with respect to NURSE and NORTH, from speakers who have no overlap of the two lexical sets to speakers who have completely or very nearly identical NURSE and NORTH, and everything in between. The distribution of NURSE and NORTH, and indeed the membership of NURSE and NORTH, varies dramatically across the sample, and it is clear that this variation is socially structured in a way which reveals not only the history of the two lexical sets, but also the way in which mergers exist in society.

Chapter 7: Discussion of the TLS Results

7.1. Introduction

The TLS data presented in the previous chapter provide us with a unique insight into the pronunciation of the NURSE and NORTH lexical sets at a crucial time in their history, intermediate between the traditional dialect data of the SED and the modern sociolinguistic data of the PVC. As such, these data can tell us a great deal about the history, status and apparent reversal of the 'NURSE-NORTH Merger' in TE and, in this chapter, I discuss the picture that emerges from these data, both independently and in comparison with the earlier and later data. Despite this wealth of data, however, there are certain things which are not revealed by the TLS, and it is essential that we understand what the TLS data *do not* tell us in order to understand what they *do* tell us. As such, I return to this issue in Section 7.2.5 below and I conclude this chapter with an examination of whether lexical frequency has played a part in the development of the NURSE lexical set as evidenced in the TLS data.

7.2. Analysis of the TLS results

Taking the TLS sample as a whole, it is clear that NURSE and NORTH are not identical; the vowel in NURSE ranges from a fully back vowel to a fully front one. The NORTH vowel is, on the other hand, almost entirely restricted to the back part of the vowel space. That is, there is no merger of NURSE and NORTH in TE if we take the TLS sample as a whole, although there is considerable overlap in speaker pronunciations.

As discussed in Section 4.2.4, however, the examination of sociolinguistic variables at the group or community level only tells us part of the story, and it is essential, therefore, to examine the distribution of variants at the individual level too. When this is done for NURSE and NORTH in the TLS (see Appendix 10), a wide range of patterns emerges, from speakers who have no overlap in the phonetic distributions of NURSE and NORTH (approx. 61%), through speakers who have some degree of overlap of NURSE and NORTH (approx. 30%), to those who have identical NURSE

and NORTH (approx. 9%). Of the speakers who have a degree of overlap between NURSE and NORTH pronunciations, some (such as G024) have only minimal overlap and others have very large degrees of overlap whilst retaining significantly different distributions of the two lexical sets (e.g. G054). Still other speakers lie somewhere between these two extremes (e.g. G045). That is, there is a range of speaker types distinguishable in the TLS, from those who have completely distinct NURSE and NORTH lexical sets to those who have complete merger of them, and every degree in between. Unlike the analysis at the community level, the breakdown of pronunciations at the individual level reveals that the relationship between the NURSE and NORTH lexical sets in the TLS is exceedingly complex.

In addition to examining the distributions of NURSE and NORTH at the community and individual levels, Chapter 6 also revealed the behaviour of these two lexical sets in smaller, socially homogenous subsets of the TLS sample. This approach allows us to dig deeper than the general summary of distribution that we get from examining the sample as a whole, and also allows us to begin to make some sense out of the mass of different patterns that emerge in the individual analyses.

The pronunciation of NURSE in the TLS varies quite considerably depending upon the gender, age and socioeconomic status of the speakers. Conversely, the pronunciation of NORTH varies much less, although there is more variation than has been previously appreciated. In the following Sections, I tease out and discuss the differences in distribution of NURSE and NORTH which depend upon the three social variables of gender, age and socioeconomic status.

7.2.1. Gender

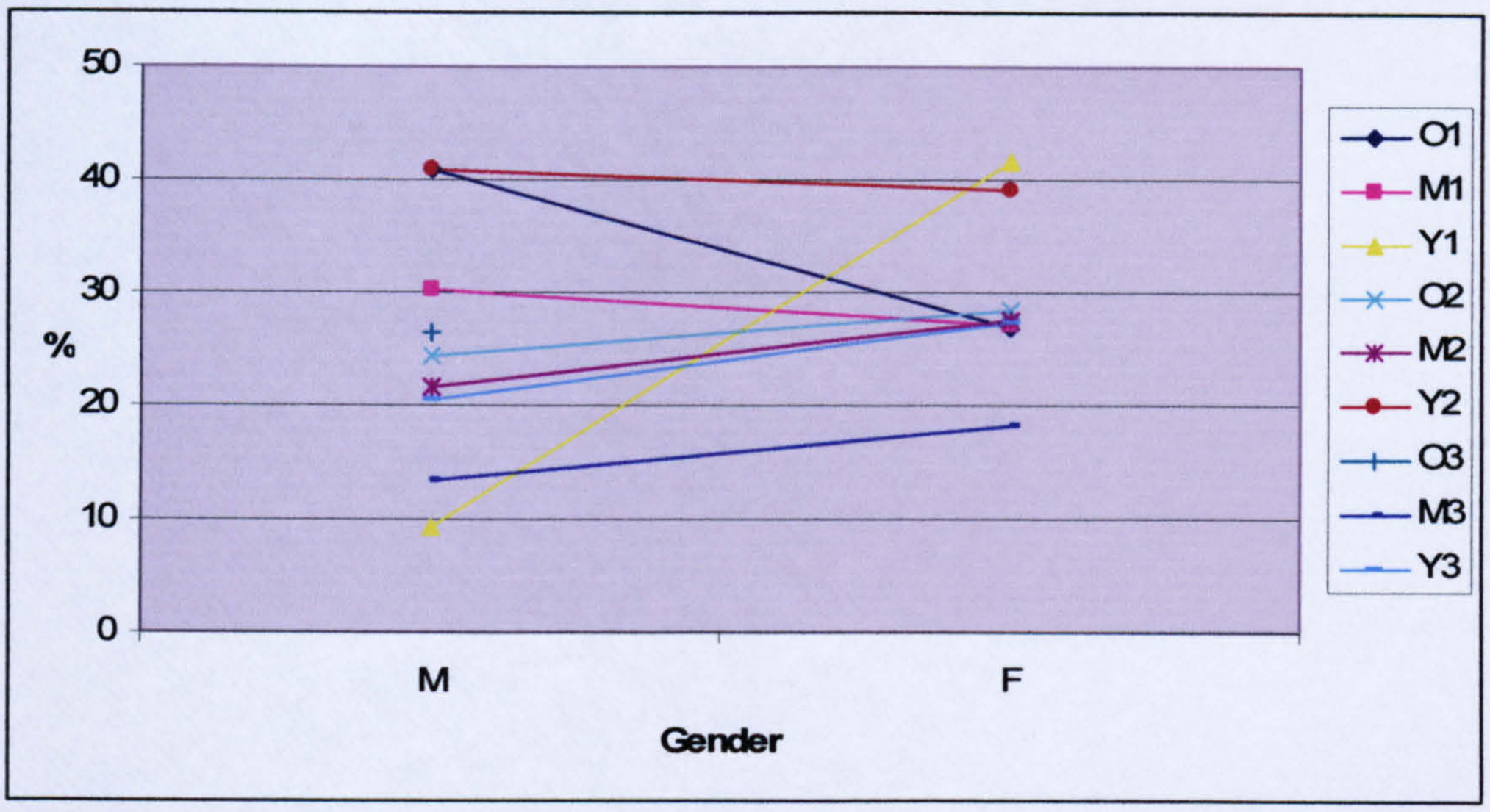
In the analysis of the TLS data in the previous chapter, gender stands out among the three social variables investigated as being far and away the most important for determining the distribution of NURSE but, as noted in Chapter 6, it appears to be less important in determining the distribution of NORTH variants. Looking more closely at the results of the analysis, B and cB variants of NURSE are entirely absent from the males from socio-economic group 3, being the sole preserve of the working-class males in the sample. Within the working-class groups (1 and 2) the highest scoring male group is that consisting of the middle-aged males from group 1, who

have almost 63% of NURSE variants in the B or cB locations. The lowest scoring working-class males are the younger males from socio-economic group 2, with almost 21% B and cB NURSE. If we compare this to the females in the sample, only the lowest socio-economic group (1) have any B and cB variants of NURSE, with the middle age group having the highest values, at almost 10%. In fact, it is important to point out that of all 41 females in the TLS sample, only five have any cB and B variants of NURSE, and, of these, only two have significant numbers of these variants.

In contrast, front pronunciations (cF and F) of NURSE are much more frequent in the speech of females than of males. In only one case (young speakers from socio-economic group 3) do male speakers have more front variants of NURSE than the equivalent female speakers (although there is no older female group from socio-economic group 3 to compare with the equivalent males). This aberrant pattern is probably due to a very high frequency of front NURSE variants among these young middle-class males combined with the young middle-class female group having only one member, with the consequence that it may very well be unrepresentative. In any case, the overall striking pattern stands, with 67% of all female NURSE tokens having F or cF compared with only 20% of all male tokens having only F or cF.

The very clear-cut gender differences in the pronunciation of NURSE are not replicated with NORTH, however. A comparison of the overall male and female frequencies of C and cB variants of NORTH, as shown in Figure 45, reveals conflicting patterns; in some cases they are more frequent in male groups than the equivalent females groups and in other cases the opposite is true. In only one case is the difference very marked (the young speakers from socio-economic group 1), but the reasons for this are unknown.

Figure 45: C and cB variants of NORTH by gender in the TLS.



In summary, then, there are two very obvious patterns in the TLS data as far as gender is concerned:

1) An almost exclusive use of back variants of NURSE by males
2) A marked preference amongst females for front variants of NURSE

The discussion of gender in Chapter 5 highlighted its central importance as a determiner of linguistic variation in western societies. So prevalent is this social effect that Labov (1991: 210, 213, 215) established three general principles regarding it, which I repeat again here:

> **Principle I**: In stable sociolinguistic stratification, men use a higher frequency of non-standard forms than women.
>
> **Principle Ia**: In change from above, women favour the incoming prestige forms more than men.
>
> **Principle II**: In change from below, women are most often the innovators.

As noted in Chapter 5, however, research by Milroy (1992), Milroy and Milroy (1993), Milroy *et al.* (1994) and Milroy and Milroy (1997) suggests that not only do women favour the "incoming prestige forms more than men", they also favour incoming forms

generally, whether prestigious or not, such that "gender-marking may override class-marking as the underlying social mechanism whereby linguistic change is implemented and diffused in the speech-community" (Milroy *et al.* 1994: 26). This strong tendency for females to be the innovators in speech communities with respect to non-localised patterns of speech, whether high status or not, is summed up by Foulkes and Docherty (1999: 15-16) as follows:

> many recent studies in Britain have identified gender as prior to class ... Some of their findings support the established view that females in western industrialised societies tend to use fewer non-standard variants than males ... Females have repeatedly been shown to use fewer local forms than males, i.e. those variants which particularly characterise the speech of a given locality. This does not mean that females necessarily orient themselves towards the standard more than males, but rather that they are more susceptible to influences from any kind of non-local forms. In the current climate, where non-standard forms are becoming more and more influential, it follows that females are more likely to be the harbingers of incoming variants, even if they are of non-standard origin.

It is clear that the distributions of the NURSE variants described above represent another instance of this priority. The back variants of NURSE, which are almost exclusively associated with working-class males, are extremely localised and non-standard. The preference among female speakers for front pronunciations of NURSE appears, at first sight, to be problematic, since front pronunciations of NURSE might not be considered prestigious. However, the lack of front pronunciations of NURSE in RP English, for example, should not lead us to believe that front pronunciations of NURSE are, in fact, a localised feature. Watt and Milroy (1999) note that a similar pronunciation is typical of southern hemisphere Englishes (p. 33) and that compared to [ɜ:], it has "a wider distribution in the English south and midlands" (p. 40). Furthermore, front pronunciations of NURSE are found in other British urban varieties, such as Liverpool (see Watt and Milroy (1999: 45), Knowles (1978) and Newbrook (1999)) and Middlesbrough (Llamas 2001a, Watt and Llamas 2004). As such, the pronunciation of NURSE as front, although not a feature of RP English, is, nevertheless, a widespread non-localised feature of Englishes in England and beyond. This being the case, it is expected that females would be the first to adopt such pronunciations as they spread to the northeast of England, and this is exactly what we find in the TLS.

The distribution of the variants of NURSE by gender, as described above, combined with the evidence from other studies, which suggests that males are resistant to change whilst females are the "harbingers of incoming variants", strongly suggests that the back variants of NURSE represent an older stage in the history of this vowel, and that they are being replaced by front variants with a wider geographical provenance. That is, the distribution of the variants by gender gives us a window into the history of change in the pronunciation of the NURSE vowel, a history in which it is moving from being a back vowel to being a front one.

7.2.2. Age

Of the three social variables investigated in the previous chapter, age appears to be the least important for determining the pronunciation of NURSE in the TLS (see Figure 35), but it does seem to have a marginal effect. As noted in Section 5.6.2, a pattern whereby certain variants are restricted to the older members of the speech community and are absent in the speech of the youngest members of the community suggests that the feature is disappearing. Conversely, a pattern whereby features are found in the speech of younger members of the community and not in the speech of older members suggests that they are new introductions. That is, we can formulate hypotheses from the distribution of variants in apparent-time which predict that particular features are changing in real-time.

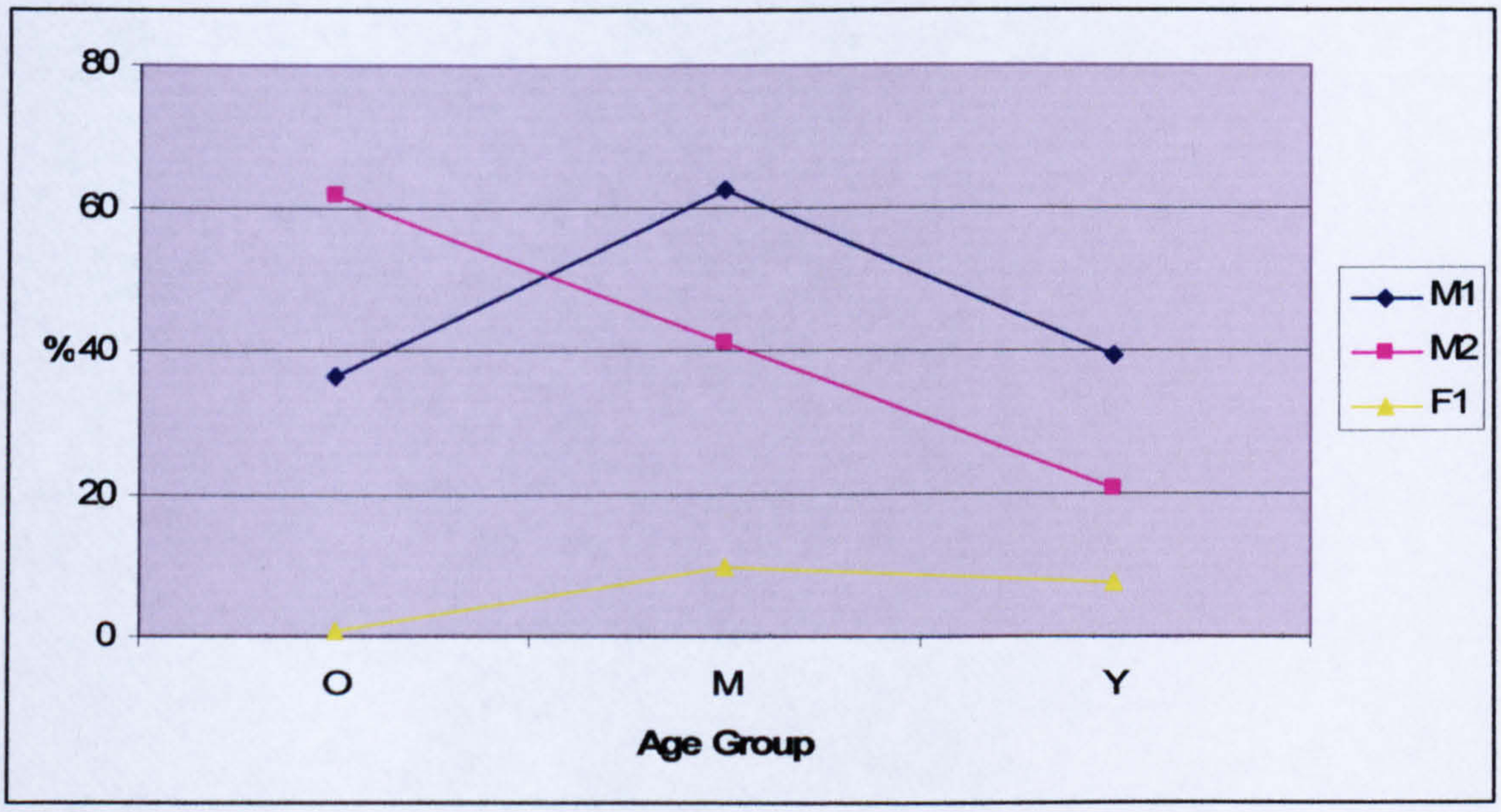
In this section, by focusing on the two lexical sets in turn, I examine three patterns of distribution in apparent-time in the TLS which suggest that there has been change in the pronunciation of NURSE and NORTH in 20th century TE.

NURSE

It is not unexpected that a vowel which is subject to as much variation as NURSE is in the TLS should vary according to the age group of speakers. As noted in Chapter 6, however, the divergence of NURSE according to age group is not as marked as variation by gender or by socio-economic status. Despite this, a fairly clear pattern does emerge, involving both the back and the front part of the vowel continuum of NURSE.

In Figure 46, the combined totals (in percentage) of B and cB pronunciations of NURSE are plotted for each of the social groups which has them (males from socio-economic groups 1 and 2 and females from socio-economic group 1) across the three age groups. The figures of B and cB variants for the females are consistently low and, since they only involve single speakers in the two age groups that have significant numbers of them, I do not discuss them further.

Figure 46: B and cB variants of NURSE in the TLS.



The patterns of distribution of back variants of NURSE in apparent-time for the working-class males in the TLS are much more instructive. The males from socio-economic group 2 show a sharp decrease in the frequency of back variants of NURSE from the oldest age group to the youngest, suggesting that this feature is disappearing over time. The males from socio-economic group 1 show a more complex picture – there is a drop in the frequency of back variants of NURSE between the middle and younger age group which closely parallels the equivalent drop for the group 2 males, but there is a rise in the frequency of back NURSE variants between the older and the middle age groups. The reason for this rise is uncertain, but may well reflect a decrease in the pronunciation of the THIR- group (*girl, thirteen, thirty*) as a distinct lexical set with a front vowel, and may also be affected by the small number of speakers (three) involved (see Section 6.2.1).

At the other end of the NURSE vowel continuum, comparison of the distribution of the combined cF and F variants for each of the social groups (Figure 47) also reveals patterns in apparent-time which suggest change.

Figure 47: cF and F variants of NURSE in the TLS.

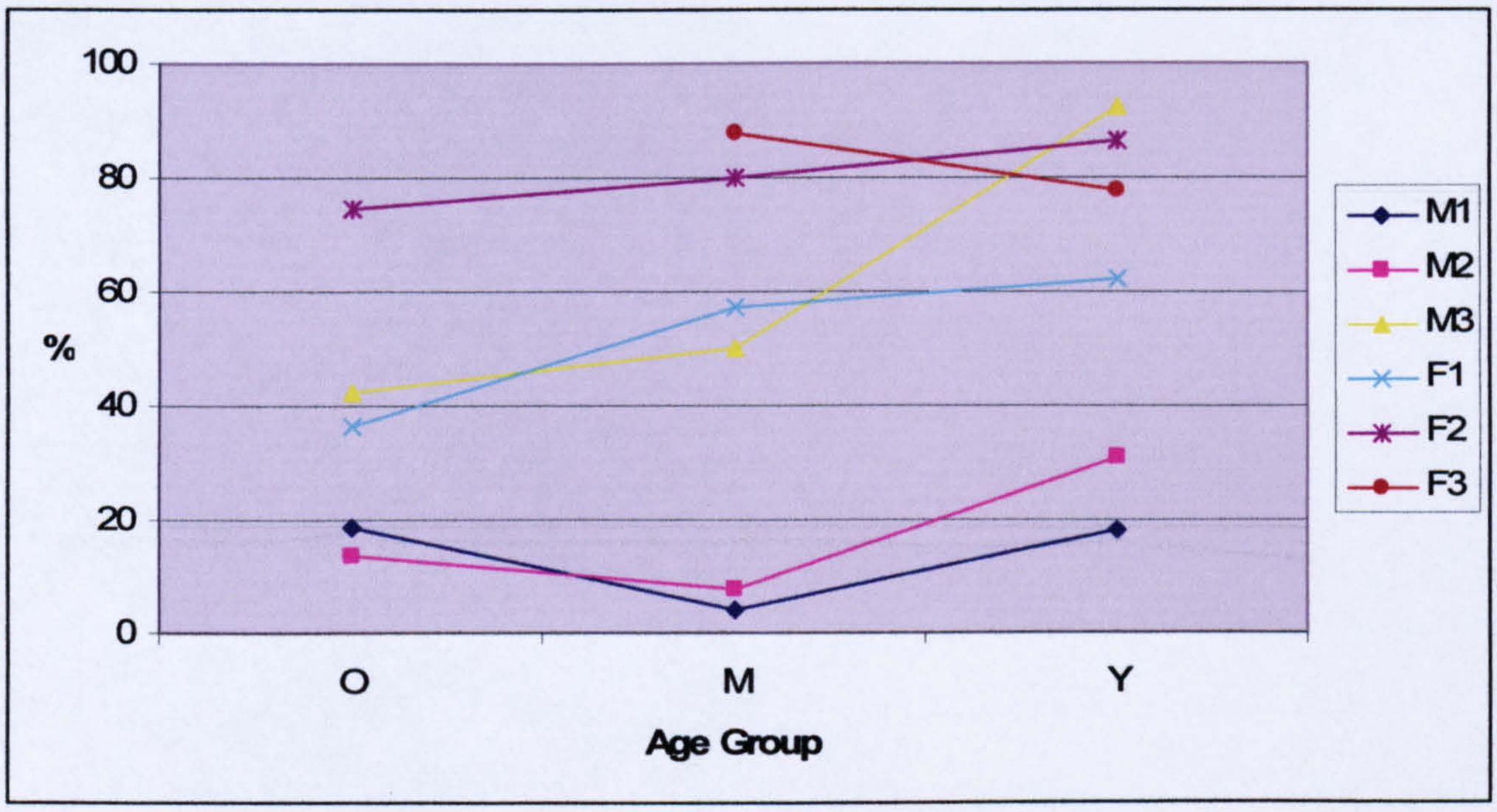
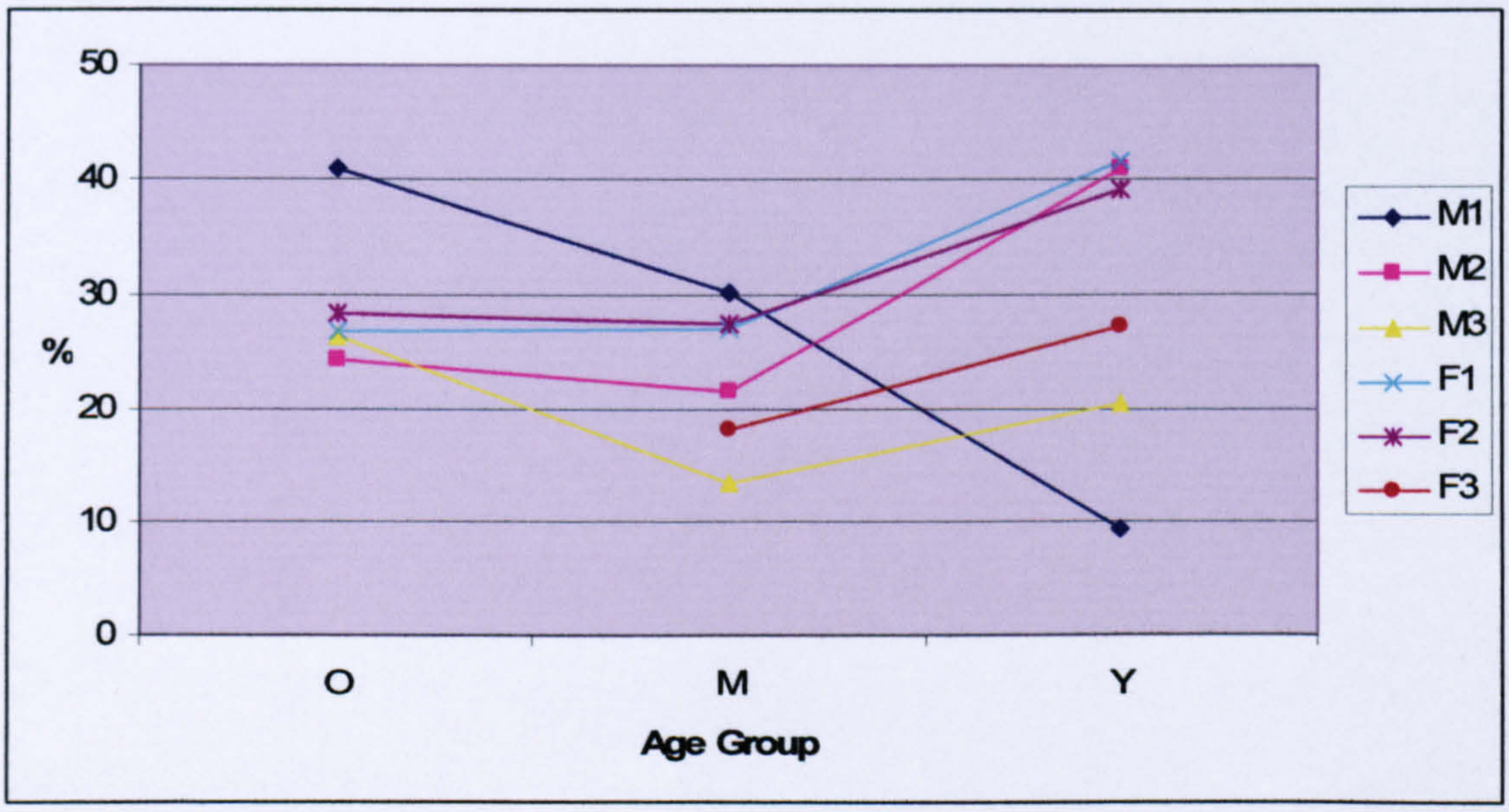


Figure 47 reveals that for all groups except the working-class males (socio-economic groups 1 and 2) and the middle-class females (socio-economic group 3), there is a consistent rise in the frequency of cF and F tokens of NURSE from the oldest to the youngest age group (no data is available for the older females from socio-economic group 3). Furthermore, this rise is present in all groups between the middle and youngest age groups, except for the middle-class females. This pattern of distribution in apparent-time suggests a change in the pronunciation of NURSE towards the front part of the vowel space throughout the 20th century, although it is clear that it is more advanced in some social groups than others (see below for further discussion). The exceptional behaviour of the middle-class females may be the result of the small number of speakers involved (only 2 in the middle age group and 1 in the young group) and, hence, is unlikely to be significant. The slight dip in the frequency of front pronunciations of NURSE between the older and middle-aged working-class males, although counter to the pattern overall, is not unexpected since it is among the older speakers in these two groups that the words *girl*, *thirteen* and *thirty* (the THIR- group) are most consistently distinguished from the rest of NURSE, being frequently pronounced with a cF or F vowel.

NORTH

As noted in the previous chapter, NORTH does not vary anything like as much as NURSE in the TLS, and what variation there is seems more difficult to interpret. Nevertheless, there is some variation in NORTH according to the age group of speakers, and, when analysed in more detail, a clear pattern is revealed. In Figure 48, the combined total (in percentages) of C and cB variants of NORTH has been plotted for each of the social groups across the three age groups. It is clear from this figure that there is a distinct pattern in the distribution of NORTH variants, and that this pattern suggests that the vowel is changing through time.

Figure 48: C and cB variants of NORTH in the TLS.



In Figure 48, all groups, with the exception of males from socio-economic group 1, show a similar pattern. Between the older age group and the middle age group, there is very little change in the frequency of centralised pronunciations of NORTH, although there is a noticeable dip for the males from the highest socio-economic group (we do not have any older speakers from the highest female socio-economic group to compare this with, as noted above). But between the middle age group and the youngest age group, there is a marked and consistent rise in the frequency of centralised tokens of NORTH. This distribution in apparent-time suggests that centralised variants of NORTH were on the increase in the 20 to 30 years before the TLS, i.e. from the middle of the 20th century onwards. The only group which does not follow this pattern, the males from socio-economic group 1, seem to be doing something entirely different – in that group, there is a sharp fall from an initially high

level of centralised pronunciations of NORTH in the older group to a relatively low frequency in the youngest group. Why this group should show such a different pattern in the distribution of NORTH in apparent-time is unknown at this point in this research.

The discussion of the distribution of NURSE and NORTH in apparent-time in the TLS suggests that there is clear evidence for change in the two vowels throughout the 20th century. Three clear patterns emerge in particular:

1) A reduction in back variants of NURSE
2) An increase in front pronunciations of NURSE
3) An increase in centralised pronunciations of NORTH

It is reasonable to assume that the first two of these changes are connected, since they both affect the distribution of NURSE on the front to back vowel dimension. That is, it seems, from the apparent-time evidence, that there has been a general move in the centre of phonetic gravity of NURSE from the back part of the vowel space to the front. Whether the increase in centralised pronunciations of NORTH is related to this change will be discussed further in Section 7.2.4 below.

7.2.3. Socioeconomic status

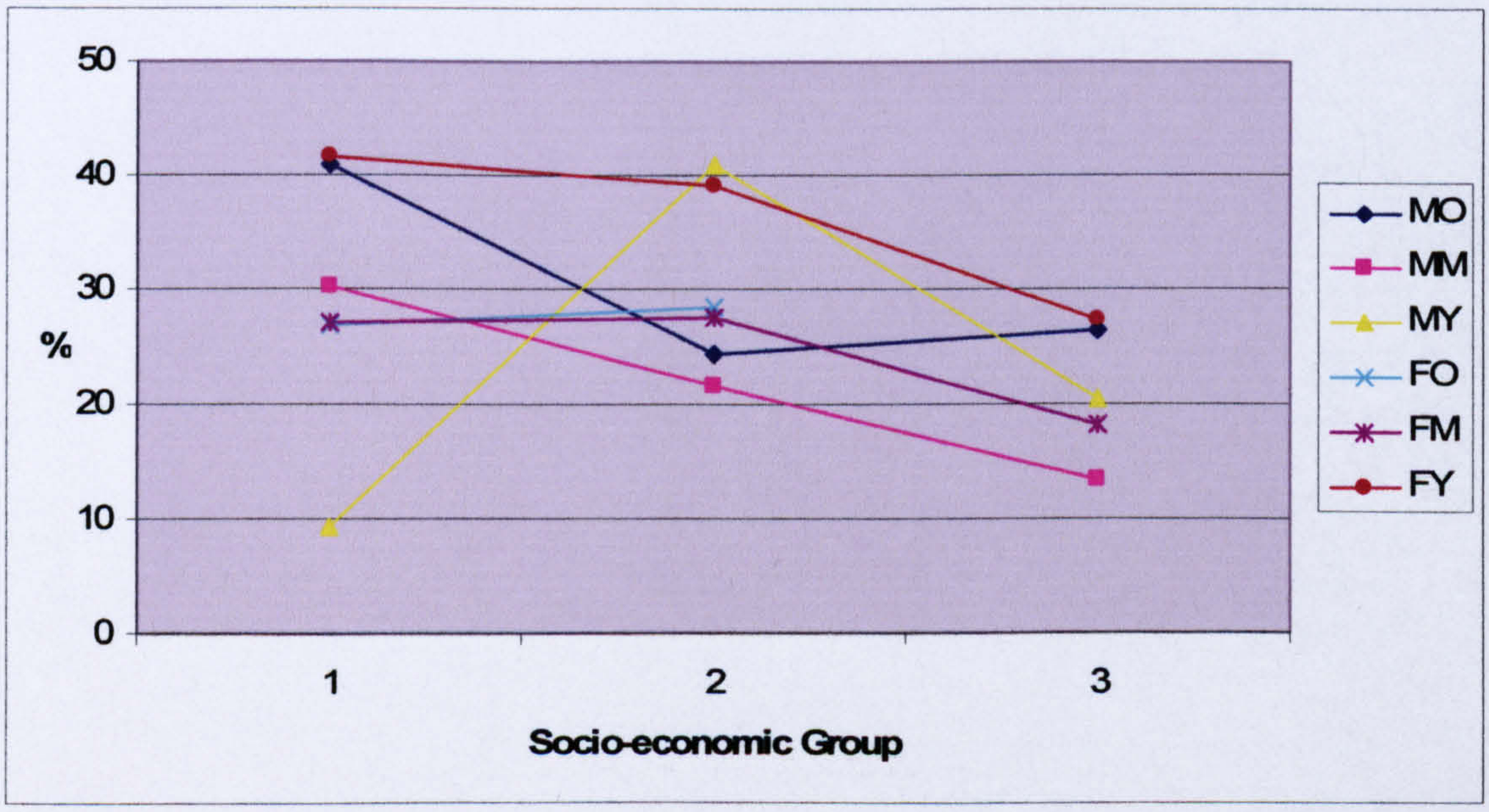
As noted in Section 5.6.3, the two lower socio-economic groups (1 and 2) in the TLS correspond roughly to the working-class and the highest (3) corresponds roughly to the middle-class. The importance of class for determining the distribution of linguistic variants is well known (see the discussion in Section 5.6.3), and it is thus not surprising that the results of the TLS analysis presented in Chapter 6 reveal patterns of distribution related to these divisions.

The data presented in Chapter 6 reveal that in almost every case, the frequency of B and cB variants of NURSE is reduced as one moves from the lowest socio-economic group (1) to the highest (3), and that B and cB variants of NURSE are, in fact, absent in the speech of the middle-class speakers. The only exception to this pattern is a rise in the use of these between the oldest and middle age group for socio-economic group 1, but this may be (at least partially) explicable with reference to the distinctive

behaviour of the THIR- lexical subset (pronounced with a front vowel), most common in this social group. Similarly, the frequency of cF and F pronunciations of NURSE typically increases from the lowest socio-economic group to the highest, although there are two exceptions: there is a decrease between the older and middle-aged males in the lowest socio-economic group (again probably as the result of the distinctive pronunciation of THIR- with a front vowel by the older group), and a similar decrease between the middle-aged and young females from group 3. This latter reduction may not be of any significance, however, since there is only a single young middle-class female in the sample. For males in particular, there is a sharp disjunction in the pronunciation of NURSE between the two working-class groups on the one hand and the middle-class group on the other.

A comparison of the frequency of C and cB pronunciations of NORTH across the three socio-economic groups in the TLS reveals that they are, by and large, more frequent in working-class speech than in middle-class speech, as Figure 49 illustrates. Note that this difference is particularly pronounced between groups 2 and 3 (roughly the division between working-class and middle-class), although the older males buck the trend somewhat. There is no obvious explanation for the aberrant behaviour of the young males in group 1.

Figure 49: The frequency of C and cB (combined) for NORTH in the TLS socio-economic groups.



In summary, then, three patterns of divergent distribution of variants according to the socio-economic group of the speaker emerge from the TLS data:

1) Back variants of NURSE are restricted to working-class speakers and are avoided by middle-class speakers;
2) Front variants of NURSE are preferred by middle-class speakers and are least typical of the lowest socio-economic group;
3) Centralised pronunciations of NORTH are preferred by working-class speakers.

The first two of these findings accord well with the hypothesis, expressed in Pellowe *et al.* (1972: 3), that there is a "correlation between non-working class status and non-localised speech". Back variants of NURSE are very much a feature of traditional local speech in the northeast of England, but they are not a feature of non-localised speech (including RP) in the rest of the English-speaking world. Similarly, centralised pronunciations of NORTH, although not previously reported in TE, are certainly not a feature of non-localised speech (including RP) in the British Isles and presumably represent a localised development within TE or, perhaps, the wider northeast of England. This connection between localised features and working-class speech and non-localised features and middle-class speech is a constant theme in sociolinguistic studies, from Labov (1966) and Trudgill (1974) right through to Watt and Milroy (1999). For example, Trudgill (1974: 61) finds that the localised lack of an overt 3rd person singular form on present tense verbs in English[1] (as in *she love* for non-localised *she loves*) is found almost 100% of the time in everyday lower working-class speech, but they are entirely absent from middle-class speech of any kind. A similar pattern is found with almost all of his phonological variables.

The preference by middle-class speakers for front pronunciations of NURSE appear, at first sight, to contradict this rule. Again, however, the lack of front pronunciations of NURSE in RP should not lead us to believe that front pronunciations of NURSE are, in fact, a localised feature, since front pronunciations of NURSE are widespread in both British Isles and extra-territorial varieties of English (see Section 7.2.1 above).

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[1] He calls them "marker-less forms".

Foulkes and Docherty (1999: 15) note that "much work in urban dialectology has isolated social class as the most important social factor underlying changes in progress".[2] This hypothesis follows from the fact that middle-class speakers prefer non-localised features; it implies that in cases where new non-localised features have arisen, middle-class speakers will be the first to adopt these new features, whilst working-class speakers will maintain localised patterns of speech for longer. That is, ongoing non-localised sound changes from outside a speech community will spread first to the middle-class speakers and only then to working-class speakers.

If this interpretation is correct, then the distribution of variants across the social classes in a sample gives us a window into the history of sound changes in a similar way to the distribution of variants in apparent-time. In terms of the variants of NURSE and NORTH discussed above, this interpretation suggests that the highly localised back variants of NURSE, associated with working-class speakers, are disappearing from TE in the face of the newer front vowel variants of NURSE, which are particularly associated with middle-class speakers. As will be discussed in Section 7.3 below, this is precisely the interpretation given by Watt and Milroy (1999) to similar patterns of distribution in the later PVC corpus of TE.

Since centralised pronunciations of NORTH are not a feature of non-localised varieties of English, it is not surprising that they are less common in middle-class speech than working-class speech. It appears that they are, in fact, the result of a recent internal development, since they are most characteristic of younger working-class speakers. Middle-class speakers, on the other hand, prefer non-localised B pronunciations of NURSE, as we might expect.

7.2.4. Hypercorrection of NORTH?

Despite the comparative lack of variation in NORTH, the variation that does exist is potentially very interesting from the perspective of the intertwined development of NURSE and NORTH in the northeast of England. Previous studies (e.g. the SED) and subsequent accounts (e.g. Watt and Milroy 1999) of NORTH in northeast

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[2] Although they note that in Britain, at least, gender may be more important (see Section 7.2.1 above).

England do not record anything much other than [ɔ:] (earlier [ɔᵚ:]) for this vowel, and they certainly don't record centralised pronunciations such as [ɔ̈:]. Yet centralised pronunciations of NORTH are remarkably common in the TLS data, accounting for 27.5% of NORTH tokens (see Figure 33).

A simple explanation for these central variants of NORTH in the TLS (despite the potential problems this might cause for my analysis) might be error on the part of the analyser. Although it is probable that errors in analysis, particularly the auditory analysis, have occurred, the fact that the auditory and acoustic analyses both reveal that NORTH can have centralised pronunciations suggests that this cannot be the explanation. Furthermore, the fact that centralised variants of NORTH are associated more with some social groups than others strongly suggests that the pattern of distribution of centralised NURSE variants is not random in the way it ought to be if errors in analysis were the causal factor. In any case, even a superficial examination of the recorded data will detect that centralised pronunciations of NORTH are often fairly obvious.

Another explanation for centralised variants of NORTH might be that they represent 'undershoot' by speakers aiming at [ɔ:] in fast speech or relatively unstressed tokens.[3] Although this could conceivably account for some of the centralised tokens of NORTH, it certainly cannot account for all or, indeed, even a majority of them. Firstly, steps were taken to exclude a number of words which were particularly prone to being reduced in fluent speech (see Section 5.7.3). Of the words that remained, no association with weakly stressed or unclear pronunciation was noted during the analysis of the NORTH vowel – in fact, it was frequently the case that centralised pronunciations of NORTH were fully stressed. In any case, this does not explain the social structure in the variation described above, nor the non-existence of centralised pronunciations of NORTH in other sources, such as the PVC or the earlier SED (although the elicitation technique might mitigate against undershoot here, since it tended to produce citations). It seems likely then that either centralised pronunciations of NORTH were not present in other sources, or went unrecorded in them. In either case, an explanation of their presence in the TLS is still required.

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[3] See, for example, Lindblom (1963).

If we accept that centralised pronunciations do exist as a normal feature of NORTH in the TLS, then they can only be explained by change in the pronunciation of this vowel. That is, at some (presumably recent) stage in the history of NORTH, its phonetic range expanded from around cardinal position 6 ([ɔː]) to include centralised pronunciations such as [ɵː] and even central pronunciations in the region of [ɜ] (although these are rare). Such expansion in the phonetic range of a phoneme raises interesting questions about the reason for the change and its interaction with the NURSE vowel. An intriguing example of this is revealed in the auditory and acoustic analyses of the two lexical sets in the speech of G052, as the following figures, repeated from Appendix 12, reveal:

Figure 50: Auditory analysis of G052.

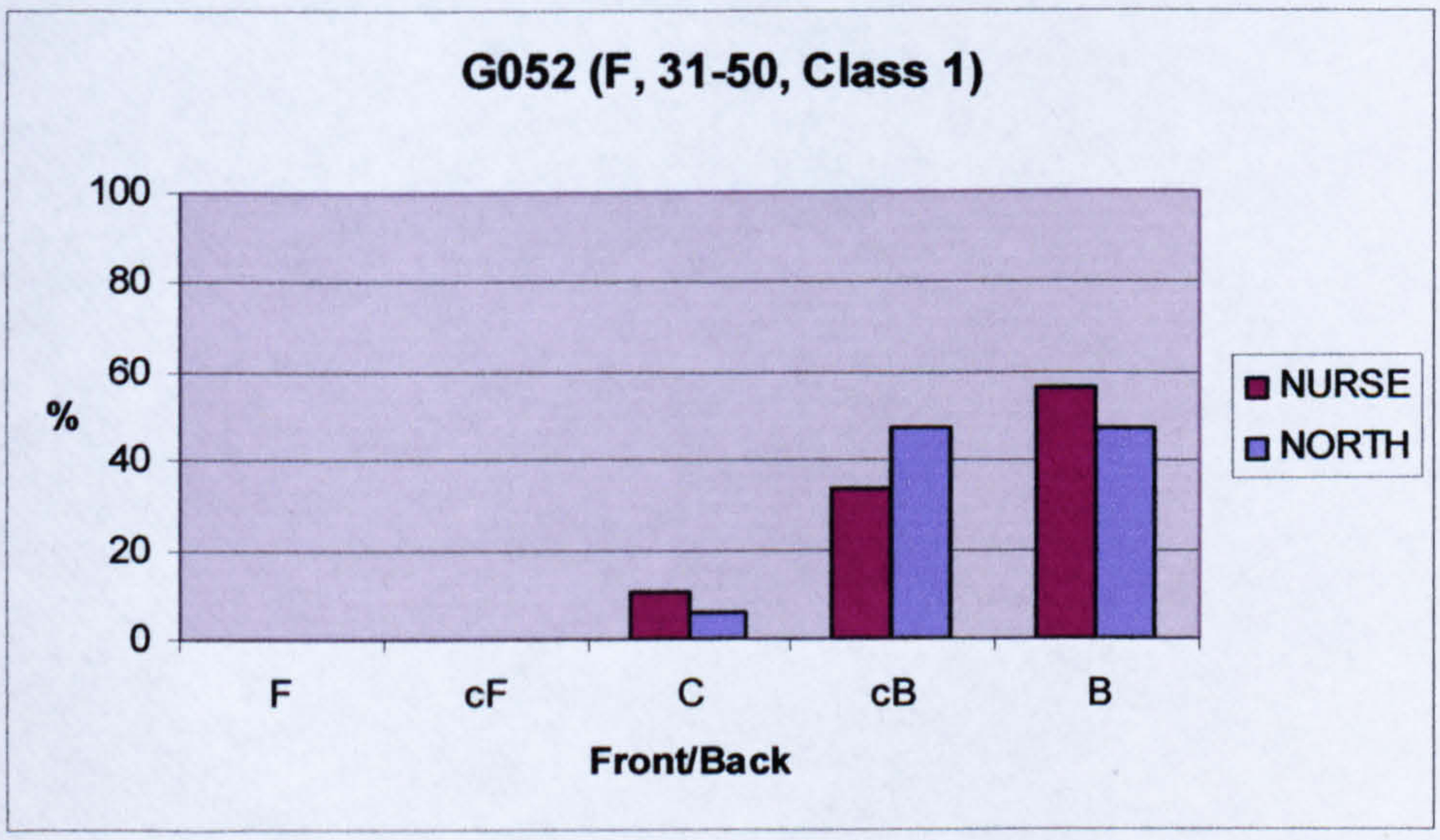
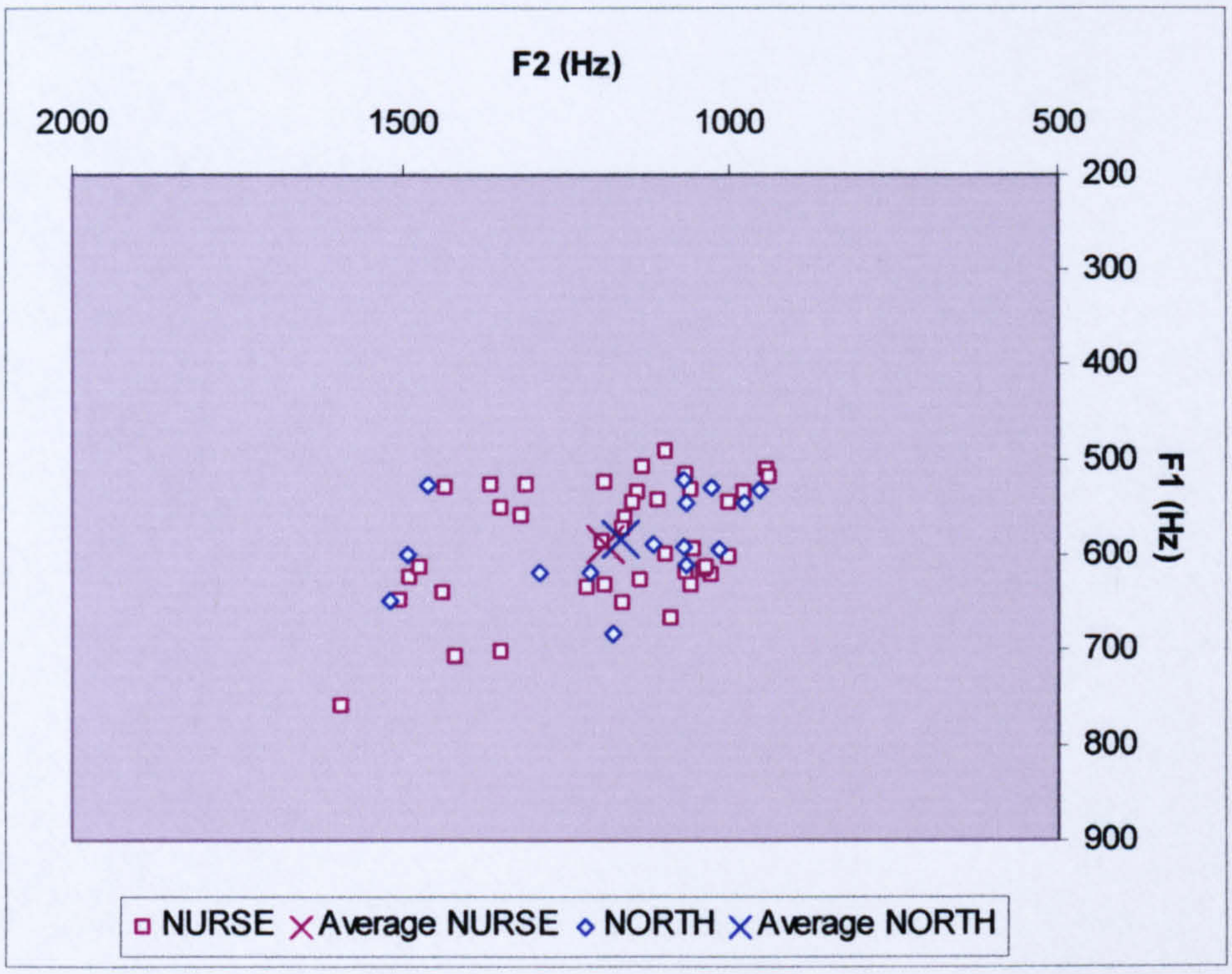


Figure 51: Acoustic analysis of G052.



As was discussed in Chapter 6, there is no significant difference in the distributions (either in the auditory or acoustic analyses) for this speaker. That is, the NURSE and NORTH lexical sets are, in effect, one lexical set, in production terms at least, for this speaker. Note, however, that the phonetic space of this combined NURSE-NORTH lexical set is not [ɔ:], as predicted by the traditional dialect transcriptions or by Watt and Milroy (1999), but occupies a much wider phonetic space, from cardinal [ɔ:] to central [ɜ:]. In other words, the expansion in the phonetic range of NORTH does not appear to have been an isolated phenomenon, since it also affected NURSE where this was also a back vowel. This combined expansion of NURSE and NORTH suggests that NORTH is expanding for the same reason as NURSE is, but is not expanding as far. If such an interpretation is tenable, this is similar in motivation, if not in mechanism or result, to hypercorrections of the sort hypothesised by Wells (1982), namely that NORTH has been 'incorrectly' moved forward in the vowel space because it was identical to NURSE. I return to this possible 'hypercorrection' of NORTH in the next chapter.

7.2.5. What the TLS data don't tell us

In the discussion of mergers and near-mergers in Chapter 1, a number of different methods were discussed for determining whether two phonemes are the same or different. These included phonetic analysis (both auditory and acoustic), native speaker intuition, minimal pair tests and other perception tests designed to determine whether speakers not only produced two phonemes alike but whether they perceived them to be the same. Furthermore, it became apparent that different types of evidence are obtainable for different kinds of data and different linguistic situations. As such, it is not surprising that there things about the 'NURSE-NORTH Merger' that the TLS data do not tell us.

Perhaps most obviously, it is impossible to obtain a full picture of the NURSE and NORTH lexical sets in Gateshead (never mind the wider northeast) in 1970 from half hour semi-formal interviews with 70 speakers (out of a possible 69570, according to Pellowe *et al.* 1972). This represents only a tiny fragment of the linguistic reality, but is, of course, a problem faced by all sampling frames, linguistic and non-linguistic alike.

More serious, perhaps, is the fact that the TLS data is historical data which therefore allows us to analyse speaker production only. The result of this for the analysis of the 'NURSE-NORTH Merger' in the TLS is that we do not know whether those speakers who do not make a distinction between them in production also fail to distinguish between them in perception, or whether they are aware of the lexical membership of the two lexical sets, even if they never implement it. Similarly, we do not know whether those speakers who make a distinction between NURSE and NORTH (complete or partial) have knowledge of the merger, even if they never implement it, or whether they are more likely to produce merged forms in certain social situations (e.g. informal conversations with friends) than in others (e.g. in particular, the semi-formal linguistic interviews which remain to us as the TLS legacy). In neither case do we know the extent to which the speakers are surrounded and informed by linguistic patterns contrary to their own.

As was discussed in Section 1.4, Labov (1994: 353-357) suggests that in order to determine whether two sounds have merged or not, it is useful not only to analyse

the phonetic distribution of the tokens produced, but to assess the speakers' knowledge of the distinction by means of minimal pair tests and commutation tests. This not only helps to confirm suspicions that two sounds are the same or different, but may also pinpoint situations where a speaker has variable or partial merger of two phonemes, or has knowledge of a distinction in the speech community which the speaker does not produce. It is precisely this approach which yielded the intriguing results in Warren and Hay (2005) and Hay *et al.* (2006), discussed in Section 1.3.5. The results of their acoustic analyses of tokens of the NEAR and SQUARE vowels in New Zealand English were complemented by findings from a series of perception tests which sought to determine whether the speakers maintained knowledge of the distinction even when they did not produce it, and this is exactly what they found.

It is possible that research of the sort conducted by Warren and Hay and Hay *et al.* would tell us much about the history and status of the NURSE and NORTH lexical sets in Tyneside English, but it may well be the case that this merger, like the merger of MEAT and MATE in Belfast Vernacular English (Milroy and Harris 1980), is so submerged in the vernacular that targeted testing of this sort may be very difficult, perhaps even impossible. Certainly this is an avenue of research which it would be instructive to pursue in future investigations of this phenomenon that I plan to undertake.

7.2.6. Summary

A clear, if somewhat complicated, picture emerges from the analysis of the TLS. The auditory and acoustic analyses suggest that for a small number of speakers in this corpus, the NURSE and NORTH lexical sets are identical (the THIR- subset and some SERVE items aside), in production terms at least. For the vast majority of speakers, however, the two lexical sets are not identical, although there may be substantial overlap in their phonetic distributions. Since these speakers all come from the same urban area, it follows that speakers with a merger of NURSE and NORTH in production are surrounded by speakers without it, and that both sets of speakers are exposed, to some degree, to speakers who pronounce NURSE and NORTH quite differently than they do themselves.

The evidence from the social distribution of the variants of NURSE (in particular) points in one direction – that back pronunciations of NURSE are highly local and old-fashioned, and are disappearing in the face of newer cF and F variants of NURSE which are characteristic of a wider geographical area. Young middle-class females are in the forefront of this change, whilst older working-class males are most resistant to it. This, combined with the phonetic identity of NURSE and NORTH for some speakers in the auditory and acoustic analyses, suggests that not only are back variants of NURSE disappearing, but, more importantly, that this involves a reversal of the 'NURSE-NORTH Merger' in TE. This may explain the apparent expansion in the phonetic distribution of NORTH from a back vowel to a vowel which covers an area between the back and centre of the vowel space, hypercorrection of a much more subtle sort than that envisaged by Wells (1982).

A real-time comparison of the TLS data with earlier and later data should allow us to assess more fully the robustness of these patterns and the inferences which we draw from them, and it is this issue which is addressed in the following two sections.

7.3. Comparison of the TLS data with the PVC data

Despite differences in informant selection and their phonetic analyses, the picture emerging from the patterning of the NURSE and NORTH vowels in the TLS data is similar to that revealed by Watt (1998a) and Watt and Milroy (1999) in their investigation of the more recent PVC corpus (as discussed in Chapter 4). Watt and Milroy's analysis of the latter revealed the following patterns of distribution:

NORTH and FORCE:	[ɔ:]
NURSE:	[ɑ:] ~ [ɔ:] ~ [ɜ:] ~ [ɛ:]/[e:][4] ~ [ø:]

The analysis of the TLS in Chapter 6 showed the distributions below for NURSE, NORTH and FORCE:

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[4] See Watt and Milroy (1999: 45, note 3).

NORTH and FORCE: [ɔ:] ~ [ɔ̈:]

NURSE: [ɑ:] ~ [ɔ:] ~ [ɔ̈:] ~ [ɜ:] ~ [ɞ:] ~ [ø̞:] ~ [ɛ:] ~ [ø:]

In both cases, NORTH and FORCE are found only in the back part of the vowel space, whereas NURSE, of whatever origin, varies from a fully back rounded vowel, through a central vowel, to a front vowel, rounded or unrounded.[5] Although the TLS and the PVC are separated by 24 years (they were conducted in 1970 and 1994 respectively), the phonological distribution and the phonetic range of the variants is largely the same in the two corpora.

There are differences, however. Firstly, the NORTH-FORCE vowel in the TLS is often somewhat centralised ([ɔ̈:]), although [ɔ:] is the majority pronunciation. No such central variants of NORTH-FORCE are recorded in the PVC data, although since Watt and Milroy do not analyse this vowel in any detail, it is possible that such variants, if they continued to exist in the 1990s, were either not noticed, or were subsumed under the broad phonetic label [ɔ:]. Secondly, Watt and Milroy fail to record NURSE variants intermediate between back and central, and central and front. The reasons for this are not completely clear; Watt and Milroy (1999: 32) note that "Tokens of NURSE ... though scattered across the vowel space in a continuous fashion, appear to cluster around certain points in the space, with the result that we can with reasonable ease distinguish three variant categories associated with each cluster" (see the discussion Section 5.7.4.4). Elsewhere (p. 33), they remark that it is possible to "divide the vowel continuum into three sections with respect to variable pronunciations of the NURSE vowel". What Watt and Milroy appear to be saying is that NURSE is indeed distributed in a continuous fashion from a fully front to a fully back vowel, but that there are concentrations of these variants around the fully back, centre and fully front points in this continuum. If this tri-modal distribution is indeed a reality, rather than the result of their methodological decision to divide the continuum into three groups of variants, then this represents a situation somewhat different to that found in the TLS data, where variants of NURSE do not cluster around particular points in the continuum. In either case, the division of the NURSE continuum into

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[5] In both cases, [ɑ:] is a rare variant recorded in a few words with ME /ɛr/, and is not part of the NURSE continuum from [ɔ:] to [ø:].

three by Watt and Milroy as against the division of the continuum into five in my analysis of the TLS means that strict comparison of the variants is not possible.

As well as revealing similar phonetic distributions of NURSE and NORTH-FORCE, the analyses of the TLS and the PVC reveal similar patterns of social distribution of the variants. In both cases, front variants are most characteristic of younger middle-class females and back variants are most characteristic of older working-class males. In between these two phonetic extremes lie central pronunciations of NURSE which are characteristic of the majority of speakers in both samples. As was discussed in Section 7.2.1 above, gender is, by some margin, the most important social factor in determining the pronunciation of NURSE in both corpora, although other social factors are also important. In both corpora, females largely avoid back pronunciations of NURSE, and are much more likely to use front pronunciations than their male counterparts. Similarly, middle-class speakers in the PVC and the highest socio-economic group (group 3) in the TLS generally avoid back variants of NURSE – in the case of the TLS speakers, there is complete evasion, whereas there are low levels of [ɔ:] recorded for the male middle-class speakers in the PVC, particularly from the older group.[6]

In the PVC data, age also plays an important role in determining the distribution of NURSE variants. In particular, the back variant of NURSE ([ɔ:]) is favoured by older (working-class) males, but is largely avoided by the younger males. Conversely, the front variant of NURSE ([ø:]) is particularly common in the speech of younger females, both middle- and working-class, and is also used about half the time by the older working-class females. Watt and Milroy suggest that these two patterns reflect a change in the pronunciation of NURSE in Tyneside English in apparent-time, such that [ɔ:] is disappearing (Watt and Milroy 1999: 39 suggest that it is "recessive" and "has lost ground to less localised forms"), whilst use of [ø:] "is on the increase" (Watt and Milroy 1999: 28), with younger females leading the change. If we compare this situation to that found in the TLS, it is clear that age is much more important for determining the distribution of back variants of NURSE in the PVC than it is in the

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[6] The reasons for this slight discrepancy are uncertain – they may be the result of chance or of different auditory appreciation or analysis of the phonetic variants of NURSE.

TLS, but that the preference for younger speakers (socio-economic group 3 males and females) for front variants of NURSE is repeated. This suggests that although the change away from back pronunciations of NURSE in the TLS in apparent-time is only minor, it has continued, and this change in real-time is reflected in the apparent-time distribution of the back variant of NURSE in the PVC. This fits well with the patterns revealed in the analysis of the TLS, since the older working-class males in the PVC were born between 1927 and 1949 (Watt and Milroy 1999: 27) and, hence, they were aged between 21 and 43 at the time the TLS was conducted (i.e. in the middle or younger age cohorts – groups which produced significant numbers of back variants of NURSE). The younger speakers in the PVC, on the other hand, were born between 1967 and 1979, and represent a generation of speakers after the TLS was conducted. Likewise, the distribution of the front variant of NURSE in the speech of older working-class females in the PVC fits the distribution of the front variants of NURSE for the middle and younger working-class females in the TLS, and the increased pronunciation of NURSE with a front vowel by the younger PVC speakers continues this trend.

In summary then, the phonetic distribution of NURSE and the social distribution of those NURSE variants in the PVC fit well with the situation revealed in the analysis of the TLS, and show that the trends identified there (in particular, loss of back variants and increase of front variants) have continued. This suggests that back variants of NURSE are indeed "recessive" and, since my analysis of the TLS has shown that NURSE and NORTH were identical for at least some speakers in the TLS, that this recession of back variants of NURSE is leading to a reversal of the 'NURSE-NORTH Merger' in Tyneside English. In order to reveal what the PVC has to tell us about the nature of this apparent reversal, it would be useful to re-examine the NURSE lexical set and investigate the combined NORTH-FORCE lexical set in that corpus in more detail, and to determine not only the distribution of variants in the various social groups, but also within the speech of the individual speakers themselves. If this were done, the precise distribution of NURSE in the front-back continuum could be determined, the survival of centralised variants of NORTH could be revealed, and the exact relationship of NURSE and NORTH in the speech of those speakers with back variants of NURSE could be assessed. It is hoped that such a follow up study will be possible in the future.

7.4. Comparison of the TLS data with the traditional dialect data

In this section, I compare the data for NURSE and NORTH in the TLS with the data for these lexical sets in the traditional dialect studies discussed in Chapters 2 and 3. In particular, I compare the TLS with the SED, since the two surveys are relatively close chronologically (1970 and 1953-4 respectively), and because the SED contains substantially more information on the traditional pronunciations of NURSE and NORTH than the very sparse comments and data found in the geographically and chronologically closer Viereck (1966).

Stoddart *et al.* (1999: 78), in their comparison of the SED data for Sheffield with a corpus collected from the same location in 1997, note that "the dialect of the Sheffield area appears to have experienced comparatively limited change over the past half century". What change they do identify involves some minor differences in the realisation and lexical incidence of vowels and a somewhat more standard distribution of consonant variants, not withstanding an increased use of glottalisation. Conversely, a comparison of the TLS with the nearest SED locations (Nb6 Earsdon, Nb8 Heddon-on-the-Wall, and Du1 Washington) suggests that there is a much greater difference in Tyneside, although this may be partially explicable as a result of the SED locations *not* being in the Tyneside conurbation itself. Perhaps most obviously, uvular /r/, recorded with 100% consistency in the Tyneside area in the SED, is almost entirely absent in the TLS, as is the presence of any kind of /r/ in coda position. In terms of vocalic distribution, two of the most well known features of traditional northern dialects, the identity of the development of OE /ɑ:/ and of the ME Open Syllable Lengthening of /a/, and the fronting of early ME /o:/, are almost entirely absent from the TLS whilst being regularly recorded in the nearest SED locations.[7] On the other hand, the retention of ME /u:/ as a high back monophthong in words such as *out* is common amongst the working-class males in the TLS sample.

At first sight, a comparison of the NURSE and NORTH lexical sets in the SED locations nearest Tyneside and in the TLS suggests that they are not at all similar. As

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[7] Certain lexically specific survivals of these traditional patterns do occur in the speech of working-class males (most typically) in the TLS, however; in particular /i:/ for early ME /o:/ in the words *do* and *to*, /jɛ/ for OE /ɑ:/ in *home*, /i:/ for OE /ɑ:/ in final position in *no* and *so*, and /a:/ for OE /ɑ:/ in *know*.

discussed in Chapter 3, the SED data from southeast Northumberland and north Durham reveals the following pattern:

ME /ɔ:r/ (FORCE): [ɔˠ:]
ME /ɒr/ (NORTH): [ɔˠ:]
ME /ʊr/ (NURSE): [ɔˠ:]
ME /ɪr/ (NURSE): [ɔˠ:]
ME /ɛr/ (NURSE): [ɔˠ:], [aˠ:]

That is, there was a complete merger of FORCE, NORTH and NURSE, the only exception being words with ME /ɛr/, which remained variably distinct.

In comparison, the analysis of the TLS data in Chapter 6 revealed the following pattern:

ME /ɔ:r/ (FORCE): [ɔ:] ~ [ɔ̈:]
ME /ɒr/ (NORTH): [ɔ:] ~ [ɔ̈:]
ME /ʊr/ (NURSE): [ɔ:] ~ [ɔ̈:] ~ [ɜ:] ~ [ɛ̈:] ~ [ø̈:] ~ [ɛ:] ~ [ø:]
ME /ɪr/ (NURSE): [ɔ:] ~ [ɔ̈:] ~ [ɜ:] ~ [ɛ̈:] ~ [ø̈:] ~ [ɛ:] ~ [ø:]
ME /ɛr/ (NURSE): [ɑ:] ~ [ɔ:] ~ [ɔ̈:] ~ [ɜ:] ~ [ɛ̈:] ~ [ø̈:] ~ [ɛ:] ~ [ø:]

That is, there was a complete merger of FORCE and NORTH, but these two lexical sets were only variably merged (in the sample as a whole) with NURSE, which, in the majority of cases, had a distinct phonetic distribution. For only a small number of speakers in the TLS were NURSE, NORTH and FORCE identical, and only a few tokens of NURSE words with ME /ɛr/ retained the low back vowel [ɑ:], not found in NURSE words derived from ME /ʊr/ and /ɪr/. In addition, some (older working-class male) speakers treat the words *thirteen* and *thirty* (and perhaps some other words which had ME /ɛr/) differently, having front or central front vowels rather than the expected back vowel (the OC confirms that *girl* is traditionally pronounced with a front vowel or diphthong throughout the northeast of England).

It seems, then, that there has been a major reorganisation of the NURSE and, to a lesser extent, NORTH lexical sets between the SED and the TLS, and it is this

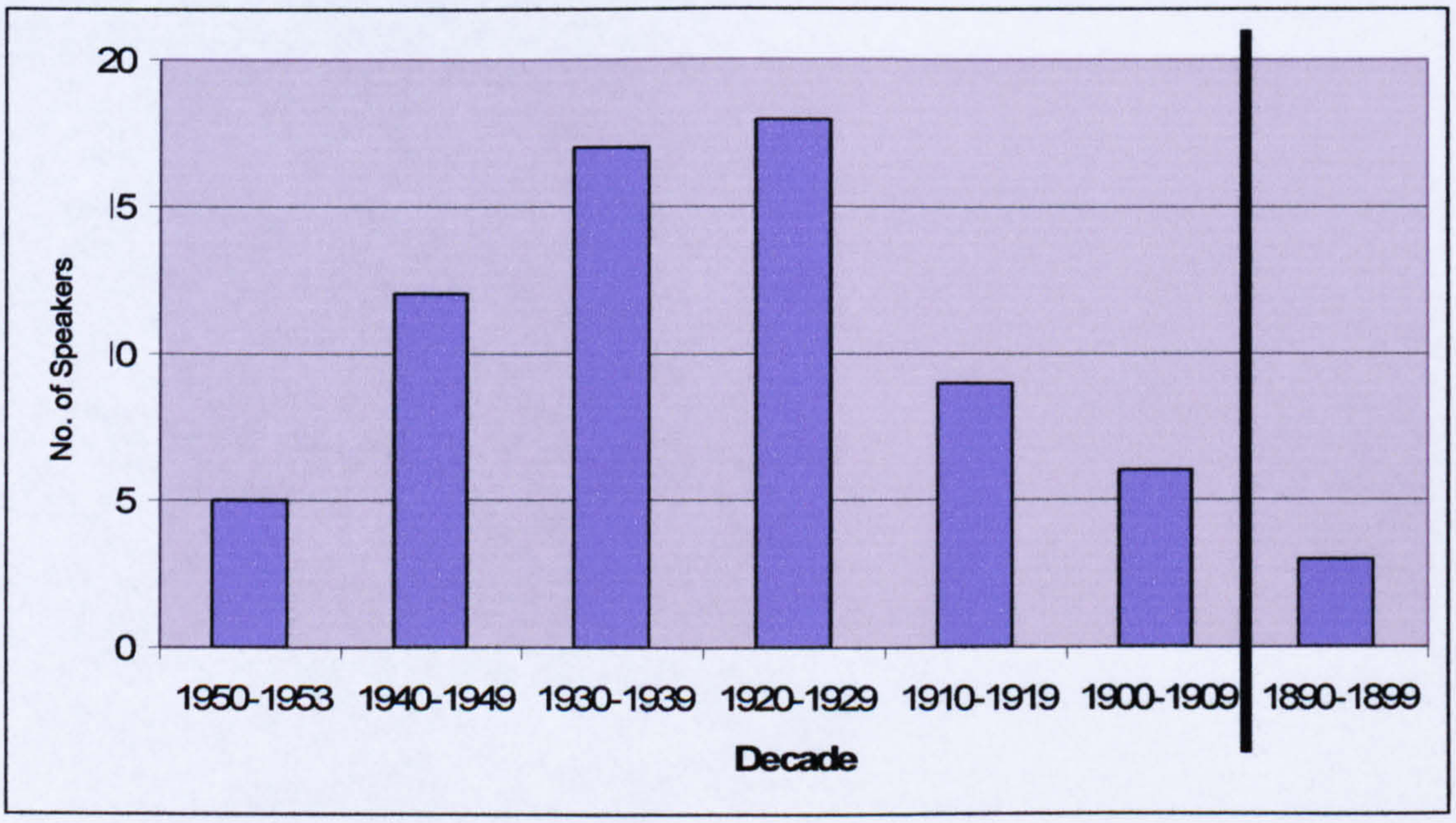
restructuring which is, of course, the central concern of this thesis – the apparent reversal of the 'NURSE-NORTH Merger'. Nevertheless, there is a considerable amount of similarity between the distribution of NURSE and NORTH in the SED and in the speech of some speakers in the TLS sample. In terms of the phonological oppositions involved, the pattern revealed in the SED is identical to that found in speakers such as G044 and G052 – NURSE, NORTH and FORCE are identical, although some NURSE words with ME /ɛr/ may have a low back unrounded vowel ([aᵚ:] in the SED, [ɑ:] in the TLS). At the phonetic level, the two data sources give somewhat different pictures, but this could be accounted for in a number of different ways, e.g. change through time, geographical differences, different appreciation and transcription of the phonetics, or differences in the detail of phonetic transcriptions. The distinction that some (older working-class male) speakers make between *thirteen* and *thirty* and the rest of NURSE is somewhat surprising, given that no such distinction is recorded in southeast Northumberland and north Durham in the SED or OC (although such a distinction is characteristic of northern and western Northumberland).

Despite the similarity of the distribution of NURSE and NORTH in the speech of some speakers in the TLS sample with the data recorded in the SED, the overwhelming picture is, however, one of change. Given that the SED data for the Tyneside area was collected in 1953-4, less than two decades prior to the TLS, how might the differences between the two data sets be explained, and what consequences does this have for our understanding of the development and status of the 'NURSE-NORTH Merger'?

If we remind ourselves of the SED desiderata for informants – that they should be "elderly men and women – more often men ... who were themselves natives of the place and both of whose parents were preferably natives also. They were to be over 60 years of age ... of the class of agricultural who would be familiar with the subject matter of the questionnaire" (Orton *et al.* 1978: 3) – then it is clear that none of the TLS speakers would have qualified as informants for the SED. Leaving aside the agricultural requirement (as Stoddart *et al.* 1999 point out, not all SED informants were agricultural workers, and some were from cities), the overlap in the age groups of the two surveys is minimal. Since the TLS was conducted in 1970 and the age of

each speaker is identified within a ten year limit (e.g. 21-30), we can illustrate the birth dates of the TLS speakers as in Figure 52. In addition, the latest birth decade for the SED informants (who "were to be over 60 years of age" when the survey was conducted in the 1950s) is indicated by a black line between 1900 and 1899.

Figure 52: The birth decades of the TLS speakers compared with the latest birth decade of the SED informants.



Only 3 of the TLS speakers were in the age range that was required for SED informants, and all of these three are female, whereas only one of the seven SED informants from the Tyneside area was female. This, combined with the socially heterogeneous nature of the TLS sample (see Chapter 5), means that even if we relaxed the date of birth requirement, speakers with an SED-like social profile are very much in the minority in the TLS sample (e.g. out of 70 speakers, there are 7 males born before 1920 in the two lowest socio-economic groups, of which only 3 are in the lowest socio-economic group).

It seems likely that the major difference in the demographics (particularly the date of birth of speakers) of the two surveys is a major contributing factor to the differences in the pronunciation of NURSE and NORTH in the SED and the TLS. If we add to this the distinct likelihood that the informants in traditional dialect surveys (such as the SED) were specifically selected because they spoke a particular way in the first

place,[8] and were questioned in such a way as to elicit the most archaic pronunciations at their command (see the discussion in Chapter 2), it is not at all surprising that there should be major differences between the data gathered in the two surveys. It remains unknown whether a similar selection of informants and data as that employed in the SED would have revealed phonetic and phonological patterns much more in line with those of the SED had such a method been employed in 1970 at the time of the TLS (the data in Viereck (1966) suggests that it might well have done).

The discussion of the birth dates of the speakers in the TLS brings us back to the suggestion, in Chapter 2, that, at the time traditional dialect surveys such as the SED were carried out, there were speakers in the speech community who had substantially different phonological patterns than the informants selected. In Chapter 2, the question was raised as to whether it was possible that speakers who were recorded with consistent merger of NURSE and NORTH in, for example, the SED, were surrounded by speakers who did not have consistent merger of these two lexical sets. Figure 52 above indicates that by the time the SED data for the locations nearest Tyneside were collected (1953-54), *all* of the TLS informants had been born. Since 43 of the 70 TLS speakers (61%) have no overlap in the phonetic distributions of NURSE and NORTH, and since 21 of the 70 TLS speakers (30%) had overlap but not identity of the two lexical sets, it seems highly likely that, at the time the SED was conducted, a very large proportion of the Tyneside speech community had no merger of NURSE and NORTH. Given that the three SED locations from around the Tyneside area are all within 8 miles of the Tyne Bridge (which joins Newcastle and Gateshead),[9] and are (and were) therefore on the edge of the Tyneside conurbation, it seems inconceivable that these speech communities did not contain large numbers of speakers who also had completely or partially distinct NURSE and NORTH. That is, it is indeed quite likely that speakers with the 'NURSE-NORTH Merger' in the SED were surrounded, in the same community, by speakers who did not have it. If we add to this the internal evidence from the traditional dialect studies reviewed in Chapter 2,

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[8] That is, the stringent demographic requirements of the SED and similar surveys were not sufficient – it is possible, perhaps even likely, that speakers who fulfilled these requirements were nevertheless excluded since they did not (consistently) speak the traditional dialect of the area.

[9] The nearest, Du1 Washington, is less than 6 miles away.

i.e. the very stringent informant selection and elicitation techniques that were required to ensure that the 'right' kind of dialect was recorded, and the existence of clearly non-local phonological patterns even in their speech (e.g. *stone* with the vowel usually associated with ME /ɔ:/ from Open Syllable Lengthening rather than OE /ɑ:/), a strong case can, I feel, be made for the existence of non-merging speakers in the same speech community as these merging speakers, just as is the case in the TLS (although perhaps at lower levels given the earlier time frame and non-urban locations). It is even possible, given such a situation, that some of these speakers who were recorded with consistent merger of NURSE and NORTH might, at least some of the time, have distinguished NURSE and NORTH in their own speech, but that these pronunciations were not produced during the SED fieldwork or were not considered traditional enough for inclusion. An examination of the recordings made of SED informants (and the even earlier Orton Discs, from the late 1930s, made in conjunction with the OC) might help us fill this gap in our knowledge.

The comparison of the NURSE and NORTH data from the TLS with the equivalent data from the SED suggests that there has been a change in the distributions of these two lexical sets in the time frame of the birth dates of the speakers involved, since the 'NURSE-NORTH Merger' is most characteristic of the SED and the (older) working-class males in the TLS, and least characteristic of the younger, female and middle-class speakers in the TLS. However, the non-comparability in the methodologies of the two surveys makes an assessment of the earlier existence of non-merging patterns and the later existence of merging patterns somewhat difficult. What is clear, though, is that the phonetic identity of NURSE and NORTH, so consistently transcribed in the traditional dialect surveys, is supported by phonetic identity, in both the auditory and acoustic analyses, of NURSE and NORTH for the most traditional speakers in the TLS.

7.5. Frequency effects in the distribution of NURSE in the TLS

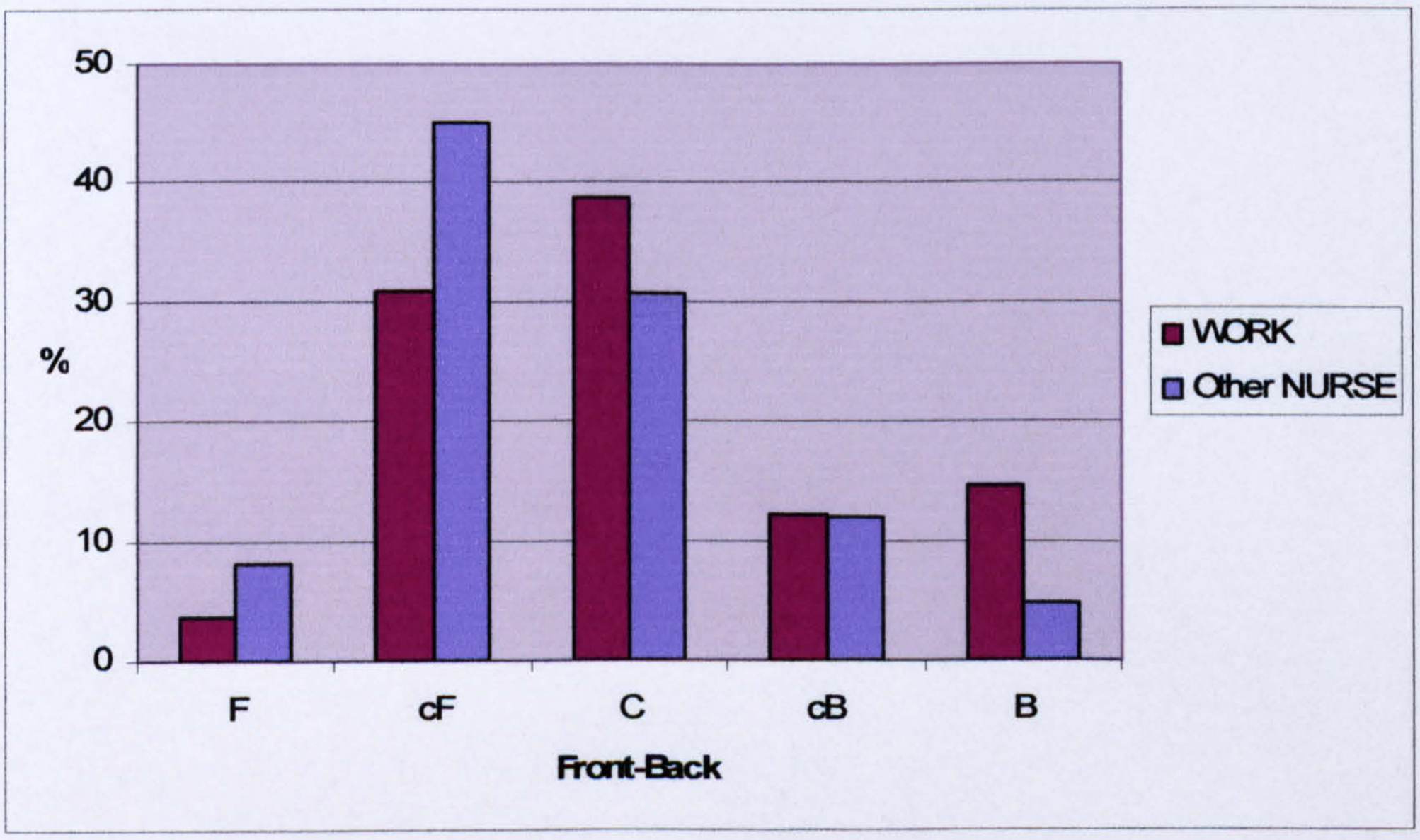
The discussion above suggests that there has been a change in the phonetic distribution of the NURSE vowel in Tyneside English, a change which is evidenced in apparent-time (in the TLS and PVC) and in real-time (in the comparison of the traditional dialect data, the TLS and the PVC). Furthermore, this change has led to

the separation of NURSE and NORTH, and has been phonetically gradual (variants fill the entire phonetic space between their furthest back and furthest front pronunciations).

During my analysis of the TLS data, it appeared that one NURSE word in particular, the word *work* (either as a noun or verb, with or without inflectional suffixes), was by far the most frequent in occurrence. An examination of 2316 NURSE tokens analysed reveals that 672, or 29%, involve the *work* lexeme, a figure that is not even remotely approximated by any other lexical item. Furthermore, the suspicion also arose, during the analysis, that *work* was more likely to be pronounced with back variants than other words. If this is indeed the case, it not only indicates that the frequency of lexical items may be playing a part in the change in pronunciation of the NURSE vowel recorded in the TLS, but also that the behaviour of *work* may be skewing our interpretation of the development of NURSE, due to its overwhelming frequency in the data.

The pronunciation of *work* compared to the pronunciation of other NURSE words in the TLS data is illustrated in Figure 53 below, which indicates that *work* is indeed pronounced on average with more back variants than other NURSE words.

Figure 53: The pronunciation of work compared with other NURSE words in the TLS data.



The difference in the pronunciation of *work* and other NURSE words is particularly striking in their frequencies of B and cF variants, where B variants are much more common in *work*, whilst cF variants are much more common in other NURSE words. Using the same statistical procedure as was applied in Chapter 6 (the Mann-Whitney *U* Test), we can determine whether the apparent differences in the phonetic profiles of *work* and of other NURSE words are significantly different. Again the Null Hypothesis is that there is no significant difference in the pronunciation of *work* and other NURSE words. The result of the Mann-Whitney *U* Test reveals, however, that the difference in distribution between *work* and the other NURSE words is, in fact, highly significant ($p < 0.001$) and, as such, we must reject the Null Hypothesis. It seems clear, then, that token frequency has indeed had a significant effect on the development of NURSE in TE.

Research on frequency effects (see, for example, Bybee 1985, 2001 and 2002) has suggested that token frequency plays an important part in the development of sound changes. In particular, Bybee (2001) suggests two ways in which token frequency can affect the development of sound changes:

1) "In one frequency effect, phonetic change often progresses more quickly in items with high token frequency" (p. 11);
2) "High frequency encourages phonetic change, but it renders items more conservative in the face of grammatical change or analogical change based on the analysis of other forms" (p.12).

Although these two effects seem contradictory, the first effect concerns phonetically conditioned change, whereas the second effect concerns changes which are not phonetically conditioned, but which are, instead, regularising or analogical (Bybee 2001: 12). Couched within the language of exemplar theories of phonology (see, for example, Pierrehumbert 2001), Bybee (2001: 11) explains the first effect as follows:

> If sound changes are the result of phonetic processes that apply in real time as words are used, then those words that are used more often have more opportunity to be affected by phonetic processes. If representations are changed gradually, with each token of use having a potential effect on representation, then words of high frequency will change at a faster rate than will words of low frequency.

The second, opposite effect is explained by Bybee (2001: 12) as follows:

> This conserving effect of frequency places some items outside the domain of the regular combinatorial patterns of the language. Their frequency gives them a high level of lexical strength. That is, they are so ingrained as individual patterns that they are less likely to change even if general changes are occurring in the language. To account for this entrenchment effect, I have proposed ... that representations are strengthened whenever they are accessed. This strengthening makes them subsequently easier to access and also more resistant to some forms of change.

It is clear that the different behaviour of the highly frequent word *work* in the TLS data, if interpreted in light of Bybee's predictions, cannot be a result of her first prediction. Firstly, *work* is conservative in its development (it retains back pronunciations of NURSE longer than other NURSE words), and, secondly, the separation of NURSE and NORTH is not an example of a phonetically conditioned change (there is no means of predicting which words will develop a central or front vowel other than by lexical set membership).[10] Rather, the behaviour of *work* is an instance of Bybee's second prediction, since *work* is a high frequency word which appears to be more resistant to a change, a change which involves realignment of the phonology of a particular set of words along the lexical lines of less localised varieties of English.

Thus, the TLS data for the very frequent *work* appear to support Bybee's claim that high frequency words are resistant to changes which are not phonetically motivated and, furthermore, that there is lexical conditioning in the movement of NURSE from the back part of the vowel space (where it was merged with NORTH).

Despite this, other factors must be taken into account before we can say for certain that this lexical effect is as strong as it first appears. In Section 6.2.1, I discussed the aberrant behaviour of a small number of NURSE words which historically contained ME /ɪr/, labelled there as the THIR- lexical subset. In the speech of some speakers (particularly older working-class males), these words are pronounced with F and cF variants, despite NURSE words normally being pronounced in the back part of the

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[10] Even if it is phonetically gradual, an issue I return to in Chapter 8.

vowel space. Thus the THIR- lexical set has a different phonetic profile than other NURSE words, not because of the frequency of the words involved, but for etymological reasons. Section 6.2.2 indicated that the same may also be true for (at least some) words which contained ME /ɛr/ (the SERVE lexical subset), although the difference between these words and other NURSE words is less striking. Again the differences that exist between SERVE and other NURSE words appear to be the result of etymology rather than frequency. If the phonetic profiles of these various subsets of NURSE are compared, as in Figure 54 below, the tendency for THIR- and SERVE to have more front variants than other NURSE words is observable.

Figure 54: The phonetic distribution of lexical subsets of NURSE compared.

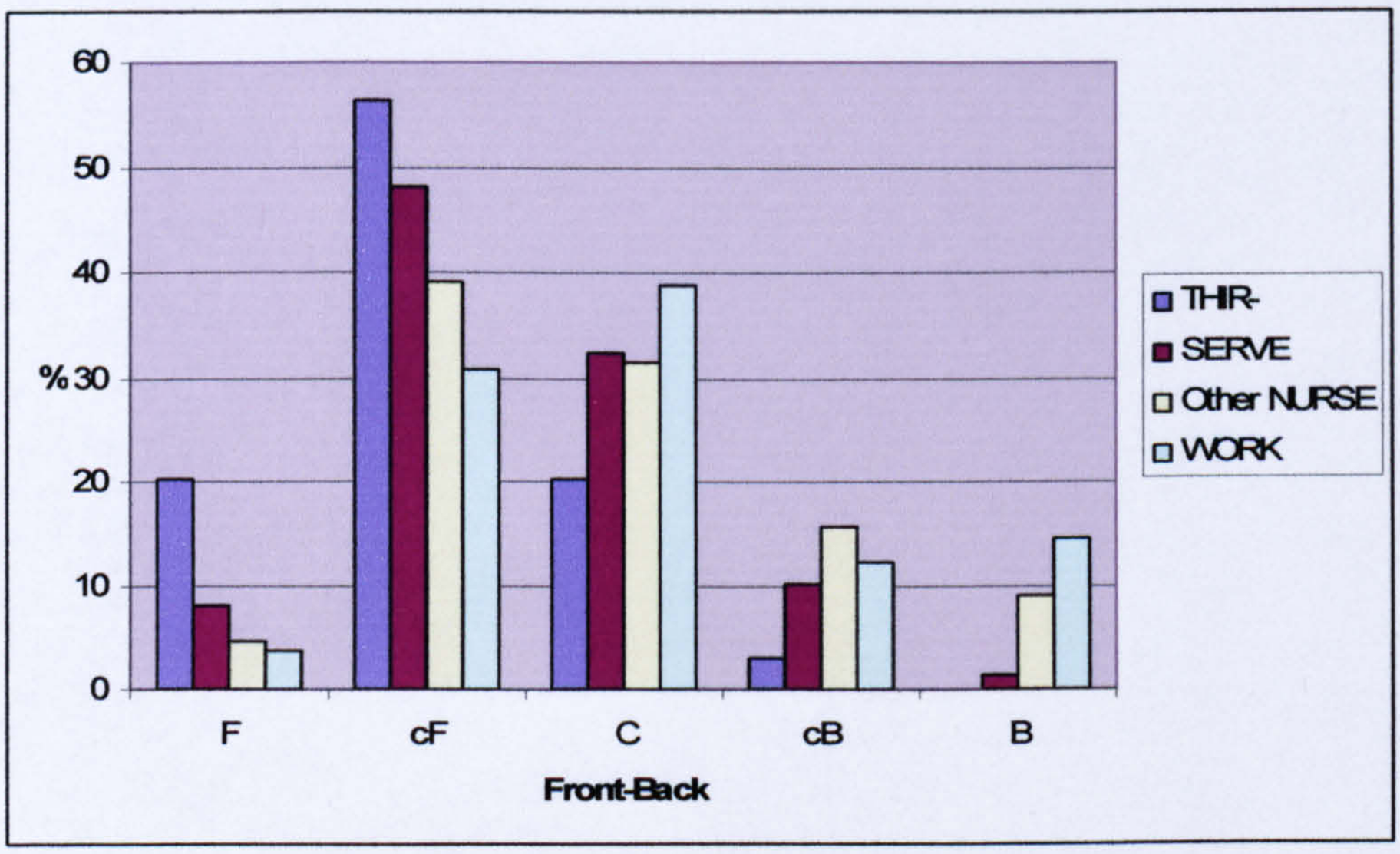

Figure 54 reveals that THIR-, as predicted, has the furthest front phonetic profile, followed by SERVE. Other NURSE and, in particular, *work*, have the furthest back phonetic profiles, although the exclusion of THIR- and SERVE from the comparison of *work* with other NURSE words has the effect of reducing the difference in their phonetic profiles (cf. Figure 53 above). The significance of the differences in distribution between these lexical subsets of NURSE can be tested as before, using the Mann-Whitney *U* Test, the results of which are given in Table 28.

Table 28: The statistical significance of difference in distribution of subsets of NURSE in the TLS.

Lexical Subset Comparison	p Value
THIR- vs. SERVE	< 0.001
THIR- vs. other NURSE	< 0.001
THIR- vs. *work*	< 0.001
SERVE vs. other NURSE	< 0.001
SERVE vs. *work*	< 0.001
other NURSE vs. *work*	= 0.001

The p values in Table 28 reveal that the differences between all of the lexical subsets are highly significant, including the difference between *work* and the other NURSE words with THIR- and SERVE excluded. That THIR- and SERVE are so significantly different is not, perhaps, surprising given their different etymological origin and history. The difference between other NURSE (excluding THIR- and SERVE) and *work*, although smaller than the difference between *work* and all other NURSE (including THIR- and SERVE), as illustrated in Figure 53 above, is also highly significant. This difference indicates that the very frequent word *work* is behaving differently than other NURSE words, and supports Bybee's second prediction. The effect of token frequency on the development of the NURSE and NORTH lexical sets, and in the development of other lexical splits and reversals of merger, would certainly constitute a fertile area for further research.[11]

Despite the role frequency has played in the split of the NURSE and NORTH lexical sets, the overall kind of change that has occurred is not affected. Regardless of which lexical items or subsets are involved, the movement of NURSE towards the front part of the vowel space appears to be gradual rather than discrete, since all words can appear at any point on the front-back continuum. That some words may have drifted more quickly than others fits with Bybee's model of sound change, but

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[11] Another avenue which might be researched is the effect of adjacent consonants on the vowel. It is possible that the preference for back pronunciations of the vowel in *work* are, at least partly, the result of the preceding [w], although an apparent lack of such patterning for other words beginning with [w] suggests that this is not the case.

still requires us to explain how this separation has occurred and how obvious hypercorrection has been avoided, a central issue which I return to in Chapter 8.

7.6. Conclusions

The import of the findings in this chapter will be considered in detail in the next, and, in advance of that, I briefly conclude this chapter with a list of key findings arising from the analysis of the TLS data and the comparison of it with the data from traditional dialect surveys and from the PVC corpus. These are:

1) NURSE and NORTH are identical, for some speakers, in production at least; we do not know how these speakers, or other speakers in the TLS, perceived the NURSE and NORTH lexical sets;
2) The social distribution of NURSE suggests that it is changing through time, from a back vowel to a front vowel – back variants of NURSE are typical of older working-class males, whilst front variants of NURSE are most typical of younger middle-class females;
3) This change in NURSE has been phonetically gradual, rather than a targeted transfer from one phonetic space to another;
4) The NORTH vowel has also been changing, expanding its phonetic range towards the central part of the vowel space; since this change appears to coincide with the forward movement of NURSE, this may be interpretable as a kind of hypercorrection;
5) Token frequency is important in the change in the NURSE vowel, with the highly frequent *work* changing more slowly than other NURSE words. This pattern supports the predictions made in Bybee (2001) concerning the interaction of frequency and sound change. Nevertheless, etymological origin is also important in the distribution of NURSE variants, and the frequency effect observed does not affect the overall kind of change occurring – phonetically gradual, lexically specific change.

In Chapter 8, the discussion returns, in light of the data and analysis in this and previous chapters, to the questions raised concerning the 'NURSE-NORTH Merger' and mergers in general in Chapter 1.

Chapter 8: What are Mergers, and can they be Reversed?

In this thesis, a detailed examination has been made of the NURSE and NORTH lexical sets in the traditional dialect data, spanning the period from the end of the 19th century to the middle of the 20th century, and in the socially stratified TLS sample, from 1970. Furthermore, analysis of NURSE in the PVC corpus (from 1994) by Watt and Milroy has been reviewed in detail. With all of this information to hand, we are now in a position to answer, in so far as this is possible, questions 1 to 6 (specific to the 'NURSE-NORTH Merger') raised in Chapter 1. In so doing, and by comparing the development of the 'NURSE-NORTH Merger' with the other mergers discussed in this thesis, it will then be possible to begin to answer the more general questions, 7 to 12, which followed from these. In Section 8.1, I discuss the specific questions, 1 to 6, and return to the more general questions in Section 8.2. In Section 8.3, I examine the relevance of this research for theories of phonology and sound change, and offer some general conclusions in Section 8.4.

8.1. The specific questions

1) What are the NURSE and NORTH lexical sets, and are they the same in Tyneside English as they are in Wells's definitions?

This thesis examines the development and relations of the NURSE and NORTH lexical sets through time, and it is clear that the terms 'NURSE' and 'NORTH' cannot be understood without delving into their history, since they are the product of a series of phonetic and phonological changes. As was discussed in Chapters 2 and 3, the NURSE lexical set mainly originates in the ME sequences /ɪr/, /ʊr/ and, partially, /ɛr/, whilst the NORTH lexical set mainly originates in the ME sequences /ɒr/ and /war/. Furthermore, the merger of NORTH and FORCE, in so far as it is present in a given locality, adds to the milieu words deriving, in the main, from ME /ɔ:r/. The existence of all of these historical subsets, each capable of divergent developments in different dialects means that what constitutes the NURSE and NORTH lexical sets in one may

not be the same as what constitutes NURSE and NORTH in another, with obvious consequences for any definition of a merger involving them.

A comparison of the traditional dialects of the northeast of England with, for example, RP English illustrates this potential difference. Whilst RP English merges ME /ɪr/, /ʊr/ and part of /ɛr/ completely, the traditional dialects of the northeast only merge them variably (under [ɔ:]), with /ɪr/ and /ɛr/ maintaining variable/partial separate identities ([eɒ] and [ɑ:] respectively), although distinct /ɪr/ is not characteristic of the Tyneside area. Similarly, whilst RP English merges ME /ɒr/, /war/ and /ɔ:r/ in a combined NORTH-FORCE lexical set, the traditional dialects of the northeast of England all maintain distinct /war/ (as [wɑ:]), whilst outside of southeast Northumberland and north Durham (the Tyneside area), a variable/partial distinction is maintained between /ɒr/ and /ɔ:r/ (as [ɔ:] and [uɒ] respectively). Conversely, the northeast dialects merge ME /ɒr/ and /ʊr/, and variably/partially merge these two with ME /ɪr/, /ɛr/ and /ɔ:r/. The result of these different series of developments is that the terms 'NURSE' and 'NORTH', as applied to the dialects of the northeast of England, mean very different things than when applied to RP English. Indeed, the fact that there are differences between the dialects of English in the northeast themselves means that the only thing that unites them is complete merger of ME /ɒr/ and /ʊr/, with partial/variable merger of ME /ɪr/ and the possibility of further partial/variable merger of ME /ɛr/ and /ɔ:r/. In traditional TE, it appears that the following series of mergers took place: ME /ɔ:r/ = ME /ɒr/ = ME /ʊr/ = ME /ɪr/, with a further partial/variable merger of ME /ɛr/, but with ME /war/ remaining distinct. It is this synchronic situation which appears to have been the input to the changes that resulted in the apparent reversal of the 'NURSE-NORTH Merger'.

Although the situation found in the TLS and the PVC is much more similar (phonologically if not phonetically) to that found in RP (for most speakers at least), there are still differences which mean that the definitions of the NURSE and NORTH lexical sets are not necessarily equivalent in the two varieties. Although it is uncommon, some speakers in the TLS maintain a partial/variable distinction between ME /war/ and ME /ɒr/ in NORTH. Similarly, some speakers partially/variably maintain a low back unrounded vowel [ɑ:] in ME /ɛr/ words, a vowel which is not found in other NURSE words. More importantly, however, some speakers of TE in the TLS, and

perhaps some in the PVC, have not introduced a distinction between NURSE and NORTH (+ FORCE), whilst others have only done so partially or variably. In addition, a distinction between the THIR- subset and the rest of the NURSE lexical set is maintained by some older working-class males in the TLS, and this is rather unexpected, given the lack of such a distinction in the recorded traditional dialects of the area (although such a distinction fits with the partial/variable survival of ME /ɪr/ in varieties more distant from Tyneside).

The consequences of these differences for the apparent reversal of the 'NURSE-NORTH Merger' should not be underestimated. If, as it appears to be the case, ME /war/ had not merged with ME /ɒr/ in traditional TE, ME /ɛr/ had only done so variably/partially, and if some ME /ɪr/ words (the THIR- subset) were also distinct from other NURSE words, then speakers of TE would not have had to pick these words apart from other NURSE and NORTH words, since they were already different from them. That is, speakers already had a head start in implementing the reversal of the 'NURSE-NORTH Merger' along StE lines, since some of the words which constitute NURSE and NORTH in more standard varieties of English were already distinct. It is possible that the former variable/partial distinction between ME /ɛr/ (with [ɑ:]) and other NURSE (and NORTH) words (with [ɔ:]) is the reason why there is a tendency for the SERVE lexical set in the TLS to have, on average, a more front vowel than the rest of NURSE, even when the highly frequent word *work* is excluded (see Section 7.5). Since there was already a partial/variable distinction between SERVE (ME /ɛr/) and the rest of NURSE, this distinction might well have enabled the SERVE words to separate out from the 'NURSE-NORTH Merger', giving the distributions we see in the TLS data. It is clear, then, that the history of the NURSE and NORTH lexical sets has an important bearing on the status of the 'NURSE-NORTH Merger' and its apparent reversal, and that an uncritical use of Wells' lexical sets, without due account of their history, may lead to misunderstanding of the changes under consideration. It has been one of the aims of this thesis to show that a proper understanding of traditional dialect data and an integration of it with the results of more recent sociolinguistic research is necessary for a fuller understanding of present-day phonetic and phonological patterns.

2) How did the 'NURSE-NORTH Merger' develop?

Closely related to the answer to the previous question are the mechanisms of and the motivations for the series of changes which led to the merger of NURSE and NORTH in the traditional dialects of the northeast of England. Understanding these not only allows us to understand the changes, but also to better understand the result of the changes (i.e. the 'merger'), since different kinds of change predict different kinds of things about the outcome.

If the argument in Chapter 3 is correct, the 'NURSE-NORTH Merger' proceeded as follows:

1) Phonetically motivated change of ME /ʊ/ before /r/, leading to phonetically gradual merger (by drift) of ME /ʊr/ and /ɒr/;
2) Externally motivated change of ME /ɪr/ and /ɛr/ (and perhaps /ʊr/, although this is unrecoverable) to /ər/ and externally motivated transfer of ME /ɔ:r/ to the ME /ɒr/ category; since these changes proceeded by lexical diffusion, they were variable and/or partial, at least to begin with;
3) Phonetically motivated change of the sequence /ər/ towards the phonetic space occupied by (the merged) ME /ʊr/ and /ɒr/ words, due to the phonetic nature of the post-vocalic /r/ – a uvular fricative, perhaps with some lip-rounding; since this change was phonetically motivated, it applied gradually (by drift) to all relevant words.

That is, the 'NURSE-NORTH Merger' came about through a combination of internal, phonetically gradual drift, and externally motivated transfer from one phonetic target to another. As was discussed in Chapter 1, change by transfer is lexically gradual, and, in its initial stages at least, is variable and partial. As such, we can assume that the transfer of ME /ɪr/, /ɛr/ and /ɔ:r/ was also variable and partial, at least to begin with, and this is demonstrably the case for many of the varieties of north-eastern English recorded in, for example, the OC and the SED. In Tyneside, the lexical transfer of ME /ɪr/ and /ɔ:r/ appears to have been carried through to its conclusion (with the possible exception of the THIR- subset), but the lexical transfer of ME /ɛr/ words was only partial/variable, and, as a result, the variable cases would have maintained a separate phonological identity, despite variable phonetic identity. As

was discussed under Question 1 above, this seems to have been the case until relatively recently in TE, up to and beyond the point at which the 'NURSE-NORTH Merger' began to disappear from the dialect, and it is likely that the partial/variable distinctiveness of this group of words would have contributed to and aided the apparent reversal of the 'merger'.

But since the merger of ME /ʊr/ and /ɒr/, and the subsequent change, under the influence of post-vocalic uvular /r/, of the sequence /ər/ was phonetically gradual and proceeded by drift rather than transfer, then it is possible, as was discussed in Section 1.2.1, that these sequences drifted very close together without ever becoming identical in their phonetic distributions. As noted in Section 1.4, we must be very careful not to assume that just because two sounds are phonetically very similar that they are identical. It is possible that, in merger by drift/approximation, we may in fact have an intermediate stage in the change, where complete phonetic identity of the two merging classes is yet to be achieved, even though they are phonetically very close. Indeed, it may be the case that the two 'merging' phonemes have drifted very close phonetically but they still might never merge completely. In both such cases we would be dealing with a near-merger rather than a merger, and special attention would need to given to the precise phonetics of the two lexical sets in order to determine whether they have merged or not. In the case of the 'NURSE-NORTH Merger', this would mean that ME /ʊr/ words might never have become phonetically identical with ME /ɒr/ words, or that ME /ɪr/ and /ɛr/ words, transferred to /ər/, might never have become identical with the rest of NURSE (or NORTH). The result, in either case, would be that the 'NURSE-NORTH Merger' was not, in fact, a merger but, rather, a near-merger.

Whether or not the 'NURSE-NORTH Merger' was a merger or a near-merger is a question of central importance in this thesis, since this dramatically affects our understanding of its apparent reversal. As was discussed in Chapters 1 and 4, the reversal of near-mergers is unproblematic, since there is no complete phonetic and, hence, no phonological identity. The original phonemic distinction is maintained, allowing the two phonemes to continue to develop in separate ways. The reversal of mergers, on the other hand, is much more controversial, to the point where Labov (1994) established a general linguistic principle whereby the reversal of mergers is

impossible. If the phonetic (and phonemic) identity of NURSE and NORTH in TE is established, the apparent reversal of this 'merger' would constitute evidence that Labov's principle of the irreversibility of mergers is not inviolable, and needs to be reconsidered.

3) What does Wells mean when he questions whether the 'NURSE-NORTH Merger' was "categorical"?

Although Wells (1982: 375) raised the intriguing question as to whether the 'NURSE-NORTH Merger' was ever "categorical", he did not elaborate on what he meant by this, nor did he analyse sufficient data for us to intimate what this might have involved. Although a number of interpretations of the meaning of the term 'non-categorical' were offered in Chapter 1 and Chapter 4, it is now possible, given my analysis of the traditional dialect data and the TLS, and the review of Watt and Milroy's analysis of the PVC, to give concrete examples of what Wells (1982: 375) might have meant in suggesting that the 'NURSE-NORTH Merger' was not "categorical".

In the TLS and, perhaps, the PVC,[1] speakers of TE with identical NURSE and NORTH (in production terms at least) coexist, in the same urban location, with speakers who have completely or partly distinct NURSE and NORTH. That is, within the Tyneside community, the 'NURSE-NORTH Merger' is not categorical in as much as it is found only in the speech of some (in fact, a minority of) individuals. Since some of the oldest speakers in the TLS (e.g. G321, female, socio-economic group 1, born between 1890 and 1891) do not have any merger of NURSE and NORTH, this situation is clearly of long standing. As was discussed in Section 7.4, this means that at the time traditional dialect surveys such as the OC and, particularly, the SED were carried out, there were many speakers in Tyneside who did not have merger of NURSE and NORTH, despite it being recorded consistently in the area, and it is not unreasonable to think that such a situation also existed beyond Tyneside itself. As noted in Chapters 2 and 7, the very fact that traditional dialect surveys went to great lengths to ensure that their informants spoke a certain way suggests that the majority of speakers who were not suitable for their purposes were not suitable precisely

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[1] Although the lack of analysis at the individual level makes this impossible to ascertain.

because their speech was characterised by a lack of the most traditional phonological patterns, such as the 'NURSE-NORTH Merger'. As discussed in Chapter 2, this special selection of informants is not just a phenomenon of the 20th century, since it is also a methodological principle in Ellis (1889) and Wright (1905), both of whom collected their data in the second half of the 19th century. In fact, it is difficult to imagine a time in the history of the northeast of England when there were not some speakers present in the community who would not have had the 'NURSE-NORTH Merger', even if it was more general in the population then than it is in our recorded sources. In Section 3.7, I discussed (and dismissed) the possibility that Irish immigrants in the middle of the 19th century may have been instrumental in the development of the 'NURSE-NORTH Merger'. It seems, in fact, that the speech of these numerous immigrants was not characterised by a 'NURSE-NORTH Merger' at all and, as such, they further contributed towards the non-categorical nature of the 'merger' in Tyneside. Even before the middle of the 19th century, it is very likely the case that people from all over Britain, who did not have the 'NURSE-NORTH Merger', lived in Tyneside at one time or another, even if all natives, upper, middle and lower class, did have it (and they might not).[2]

This, then, is one meaning of the term 'non-categorical' which may have been intended by Wells (1982). If so, it is unclear why Wells attaches so much importance to it, since it is hardly unusual that in any speech community characterised by a particular merger, there are some speakers, either non-natives or of some specific social profile, who do not have it. There may be *different amounts* of people with or without a particular merger in any given speech community, but the term 'categorical', by its very definition, does not mean *more* or *less*. Unless a merger is characteristic of every speaker in a given sharply defined geographical area, perhaps even within the language as a whole itself, it is difficult to define exactly what might be meant by describing a particular linguistic feature as categorical.

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[2] Note that there is no evidence for the 'NURSE-NORTH Merger' in Spence (1775) – see also Beal (1999) – either because middle-class English speakers in the northeast of England did not have it at that time or because it had not yet developed. See Section 2.4, however, which suggests that the 'NURSE-NORTH Merger' may well have been in existence then.

If Wells does not intend 'categorical' in this sense (although he might, and, if so, it was an injudicious choice of words), what other meaning of 'non-categorical' might he have intended as an explanation for the development of the 'NURSE-NORTH Merger' in TE? In Chapter 1 and Chapter 4, I suggested that other meanings of the term 'non-categorical merger' might include partial merger, variable merger, or near-merger. That is, the term 'categorical' might be applied at the level of the individual speaker. If this is what Wells (1982) meant (and he does not explain his use of the term), then we can imagine a situation whereby speakers produce NORTH-like tokens of NURSE under one of the following circumstances:

1) They do so only variably, such that the NORTH-like tokens of NURSE are only one possible pronunciation; other non-NORTH-like pronunciations would coexist with them; i.e. the 'merger' is variable;
2) They do so only for some part of the NURSE lexical set, such that some NURSE words (as defined by Wells 1982) have NORTH-like pronunciations, whilst others do not; i.e. the 'merger' is partial;
3) They do so for all NURSE words, but the NORTH-like pronunciations of NURSE are very close to NORTH but not identical to it; i.e. the 'merger' is, in fact, a near-merger;
4) NURSE and NORTH are pronounced identically, but speakers have knowledge of which lexical items belong (in the speech of others in the community) to each lexical set and might, if put on the spot, be able to implement the distinction; i.e. the 'merger' is a merger in production only, but not in perception;
5) Some combination of the preceding four situations – for example, the near-merger situation might (and quite likely would, given the evidence surveyed in Chapter 1) involve variable identity of the two lexical sets, or the 'merger' might only be partial in production.

Some or all of these situations are apparent in the TLS data, although the nature of the data (recorded conversations) means that we remain in the dark concerning the perceptions which the speakers had about the identity or otherwise of the NURSE and NORTH lexical sets. As was noted above, the 'merger' of NURSE and NORTH (as defined by Wells 1982) is partial for some speakers, since some words deriving

from ME /ɪr/ (the THIR- subset), from ME /ɛr/ (the SERVE subset), and from ME /war/ remain distinct from the rest of NURSE and NORTH. Other speakers (e.g. G054) show a considerable degree of overlap of NURSE and NORTH, to the extent that they often identical in pronunciation but have subtly (but significantly) different phonetic distributions. For such speakers, the term near-merger, with variable identity of the two lexical sets, seems entirely appropriate.

As was discussed above, traditional dialect studies carefully selected their informants to ensure that they were the kinds of speakers most likely to produce particular linguistic features, such that the patterns observed cannot necessarily be projected onto the community as a whole. In addition, it seems likely, as was discussed in Chapters 2 and 7, that the data collected in traditional dialect studies only represents part of the linguistic repertoire, not only of the community, but of the informants themselves. The inclusion of 'bi-dialectal' speakers, and the kinds of elicitation techniques used in traditional dialect studies suggests that many of the informants had more than one phonetic (or, indeed, phonological) form for many lexical items. Not all of these forms were of equal interest to the traditional dialectologist and, as such, it is entirely possible, perhaps even likely, that alternative phonetic/phonological variants for many lexical items were excluded from the data. If this is the case, then it is extremely likely that many mergers recorded in traditional dialect data were, in fact, variable or partial in nature rather than complete. And what goes for production must necessarily go for perception – if the features recorded were only variably and/or partially present in the speech of the informants (never mind the community as a whole), then it follows that the knowledge these informants had of possible distinctions and mergers is equally unrecoverable from the traditional dialect data. The result of this is that any of the five 'non-categorical' situations described above could be applicable to the individual informants in traditional dialect surveys without it being apparent in the data themselves.

So it seems that Wells (1982), if he had in mind any of the senses 1-5 given above, is right to suggest that the 'NURSE-NORTH Merger' is not categorical, at least for some speakers. Given my contention that the term 'categorical' often cannot be applied to communities, perhaps Wells did indeed intend 'non-categorical' to apply at the individual level. But even here there is a problem. If any of scenarios 1-5 applies to

the 'NURSE-NORTH Merger' in Tyneside English, it is not clear that the term 'merger' is at all appropriate for the phenomenon and, consequently, describing the 'merger' as 'non-categorical' is illogical; in effect what Wells is saying in this case is that this thing which is not a merger in the first place is not categorical. I turn to this contradiction in my discussion of the next question.

4) Is it possible that the 'NURSE-NORTH Merger' was never a merger in the first place and, if so, how?

The discussion in Chapter 2 and 3 suggests that NURSE and NORTH were identical in the traditional dialect data from the northeast of England (e.g. as found in the OC and the SED), although some earlier lexical distinctions did survive. Despite this, I have argued that the very stringent methods of informant selection and techniques for elicitation of the linguistic data mean that we only get a very limited idea of the phonetic and phonological distribution of NURSE and NORTH at the time the data were collected. As noted above, it is difficult to know whether they were representative of the wider speech community, but the suspicion is that they were not. If we add to this the possibility that subtle phonetic differences between NURSE and NORTH were not detected in the impressionistic phonetic analysis made by the traditional dialectologists, it is entirely possible that the 'NURSE-NORTH Merger' was not, in fact, a merger, but was, rather, a near-merger or a variable merger.

And although the selection of informants and the elicitation and analysis of the data were entirely different in Watt (1998a) and Watt and Milroy (1999), we are similarly left in a position of not knowing for certain whether the two lexical sets were ever the same in TE. As the discussion in Chapters 4 and 7 indicates, Watt and Milroy's failure to analyse NORTH in detail, their amalgamation of the frequency of NURSE variants into social groups, and the late date of their data collection (coupled with no specific targeting of speakers likely to have a high frequency of back NURSE variants) means that their data cannot tell us whether or not NURSE and NORTH are/were identical.

The analysis of the TLS data in Chapter 6 reveals that although NURSE and NORTH are not identical for most speakers, they are identical, in both the auditory and acoustic analyses, for some speakers, in production at least. It is possible that even

in these cases the two vowels are distinguished by some other subtle phonetic feature that has not been noticed in the present analysis (for example vowel length or phonation), but it is my opinion that this is not the case. Furthermore, we have no way of knowing how those speakers who produce identical vowels in NURSE and NORTH perceive the two lexical sets: are they aware that a distinction exists between them and could they, if put on the spot, reproduce this difference or tell which words belong to which group? The fact that the traditional dialectologists encountered speakers who were 'bi-dialectal' suggests that this might, in fact, be possible, and the research by Warren and Hay (2005) and Hay *et al.* (2006) on the NEAR-SQUARE merger in New Zealand English, discussed in Chapter 1, indicates that this is indeed possible.

The result is that we can be relatively sure (if not certain) that NURSE and NORTH were merged, in production terms at least, for some speakers, but it is possible that this merger was only ever variable for the speakers that had it. Further phonetic analysis of older recordings of English from the northeast of England (e.g. the Orton Discs and the recordings made for the SED), of the PVC recordings, and of new data gathered from speakers who are likely to have or retain traces of the 'merger' would go some way to answering this question for us. Perception tests, such as the minimal pair tests and commutation tests advocated in Labov (1994), might allow us to probe whether the 'merger' was a feature of production only or whether it was a feature of both production and perception, but it is entirely possible that there are no longer any speakers for whom this would be possible, given the disappearance of back variants of NURSE discussed in this thesis.[3] Only further fieldwork would give us the answer to this crucial question.

If the 'NURSE-NORTH Merger' was partial, variable, a near-merger, or a merger in production but not in perception, are we right in calling it a merger in the first place? As was discussed in Chapter 1, the defining feature of mergers is identity, not just at a surface phonetic level, but at the deeper levels of phonology and perception. If a merger does not involve identity in this way (because it is partial, variable, near or in

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[3] Recall the similar difficulties encountered by Milroy and Harris (1980) in their analysis of the entirely variable MEAT-MATE 'merger' in BVE.

production only), then it is certainly of a different order to those mergers which do involve identity at all levels, production, perception and phonology. If Labov is right in excluding near-mergers from the category 'mergers' (and I suggest he is since the original phonological distinction is still recoverable; i.e. the phonemes are not identical), then ought we not exclude variable mergers and mergers-in-production-but-not-perception from the category 'mergers' too?

5) Have speakers of Tyneside English reversed the 'NURSE-NORTH Merger'?

The discussion, in Chapter 7, of my analysis of the TLS data and the comparison of it with the NURSE and NORTH data in traditional dialect studies and in the PVC, suggests that the 'NURSE-NORTH Merger' is disappearing. The evidence from the real-time and apparent-time analyses of the data both point in the same direction. As noted there, the differences between the traditional dialect data and the later sociolinguistic corpora may well reflect a change in the pronunciation of these two lexical sets, but they may also (or alternatively) be the result of differing methodologies.

Suggesting that the phenomenon called the 'NURSE-NORTH Merger' is disappearing is not the same as suggesting that there has been a reversal of a merger of the NURSE and NORTH lexical sets in TE, however. To do so would be to suggest that the 'NURSE-NORTH Merger' is, in fact, a merger (whatever that might be – I return to this in my discussion of Question 12 below). As the discussion of Question 3 and 4 in particular makes clear, it is not certain that the 'NURSE-NORTH Merger' was categorical at any time for the speech community as a whole, and it is impossible to be sure whether it was categorical within the speech of certain individuals within the speech community (it is much easier to show that it was not for others).

The analysis of the TLS data suggests that NURSE and NORTH were identical, in production, for some speakers in 1970, at least during the period of the interview. As has been noted throughout this thesis, we have no idea what the phonetic profiles of these two lexical sets were in the speech of these individuals outside of this, although we can draw inferences from the data contained in the interviews. We know even less (i.e. next to nothing) about how these speakers perceived the NURSE and

NORTH lexical sets, although the fact that they maintained phonetic identity of them in a semi-formal interview situation suggests at least that they were not the kind of bi-dialectal speakers who could produce traditional features such as the 'NURSE-NORTH Merger' at the behest of the investigator but who did not normally implement the 'merger'. The most we can say is that for some speakers in the TLS, NURSE and NORTH were pronounced identically in the data we have, and we can infer from that, and from the lack of evidence to the contrary, that they might have had complete merger in production and perhaps in perception too. But they might not.

If we accept that NURSE and NORTH were identical for some speakers in the past, as the TLS data indicate, and that the real-time and apparent-time evidence points towards a shift away from this situation, then the disappearance of back variants of NURSE is tantamount to reversal of the 'NURSE-NORTH Merger'. If Wells (1982) is correct that there has been no hypercorrection of NORTH in TE, this would, then, appear to constitute an exception to Garde's 'Principle of the Irreversibility of Mergers' (Labov 1994: 311).

6) Have speakers of Tyneside English been "unusually successful" at sorting out the 'merger' into its two contributing lexical sets, and is it true that there has been no hypercorrection of NORTH in the apparent reversal of the 'NURSE-NORTH Merger'?

Wells (1982) appears to be correct in his assertion that there is no obvious hypercorrection of NORTH in TE (to [ø:] for example), and Watt and Milroy's (admittedly superficial) analysis of NORTH does not reveal any evidence of hypercorrection of NORTH whatsoever (see Chapter 4). As discussed in Chapter 7, however, the phonetic distribution of NORTH does extend towards the central part of the vowel space for many speakers in the TLS, such that NORTH not only occurs with [ɔ:] (the most common variant), but also with [ɵ:] and, in a very few instances, with a vowel close or identical to [ɜ:]. In Section 7.2.4, I interpreted these centralised pronunciations of NORTH as a special kind of hypercorrection, since the combined expansion of NURSE and NORTH suggests that NORTH is expanding for the same reason as NURSE is. This kind of hypercorrection does not lead to items from one lexical set being transferred into the distinct phonetic space of another, but rather involves a subtle shift in the phonetic distribution of the second lexical set as the first one separates from it. This results in hypercorrection on a much narrower phonetic

scale than that envisaged by Wells (1982) and, once the two lexical sets separate completely, does not result in items belonging to the 'wrong' lexical set. If this interpretation is correct, then Wells is right in his assertion that no hypercorrection of the sort *[ʃø:t] for *short* occurs, but he is not correct in his assertion that there has been no hypercorrection of NORTH.

If the centralised pronunciations of NORTH are the result of hypercorrection, as I believe, then this has important implications for our understanding of the status and apparent reversal of the 'NURSE-NORTH Merger'. Firstly, hypercorrection of NORTH suggests that NURSE and NORTH were indeed merged, since hypercorrection of NORTH would be meaningless otherwise. Secondly, this would suggest that Labov (1994) is at least partly right in his claim that reversal of merger is impossible without hypercorrection, although the subtle nature of the hypercorrection involved, and the mechanism by which the 'merger' appears to have reversed do not fit with the kind of hypercorrection envisaged by Labov. I return to this issue in my discussion of Question 11 below. For now, it is unclear if speakers have, in the words of Wells (1982: 375), "been unusually successful in sorting the two sets out again", since they have managed to avoid obvious hypercorrection of the sort hypothesised by Wells, but they have done something interesting and unusual with NORTH.

8.2. The general questions

It should by now be obvious that the examination of the NURSE and NORTH lexical sets in this thesis raises a number of crucial questions regarding the nature of mergers, their origins and development. In this section, I discuss the general questions, 7 to 12 in light of the discussion of the 'NURSE-NORTH Merger' in the first part of this chapter and in previous chapters. Central to this discussion is the idea, expressed in Chapter 1, that mergers are, in reality, rather diverse and complex sociolinguistic phenomena.

Question 7: How do mergers develop?

Section 1.2.1 detailed three mechanisms by which mergers may develop: merger by transfer, merger by drift/approximation, and merger by expansion. It was suggested there that the type of development which occurs may have consequences for our

understanding of the (apparent) merger which develops. In merger by transfer, the merger is direct, such that we should not expect to find either of the merging phonemes passing through intermediate phonetic space. Since this transfer is towards some predefined phonetic (and phonological) space, it follows that mergers which have occurred by transfer cannot be near-mergers – it is illogical to assume that speakers are transferring words with one phoneme into the phonetic space of another which already exists in their dialect but don't quite get it right. Of the mergers discussed in Chapter 1, the FOOT-GOOSE, MEET-MEAT and /ʍ/ - /w/ mergers appear to be of this type. Note that this kind of merger by transfer is often the result of lexical redistribution of the phonemes of a dialect towards some kind of standard or supralocal variety (i.e. speakers have a reason to shift the phonemes to a particular target), and that it may be variable or partial.

Merger by drift/approximation, conversely, proceeds by the movement of phonemes *gradually* across the intervening phonetic space until they are no longer distinct. As such mergers develop, we should be able to detect intermediate stages, where the phonetic distance between two phonemes is reduced (often considerably so) but they still remain distinct. As Figure 1 in Chapter 1 illustrates, the final stages of merger by drift/transfer are characterised by the phonetic space of the two phonemes overlapping to a considerable extent but with subtle differences remaining in their phonetic distributions. In this respect, they are very similar to near-mergers and, in dealing with suspected mergers by transfer, we must be open to the idea that the two phonemes only appear to have merged when, in fact, they might actually be in a position of near-merger. It is possible that the phonetic distributions of two phonemes can move together in what looks like an instance of merger by drift/approximation, but halt the movement at the last moment, giving rise to an instance of near-merger instead.

The NEAR-SQUARE and, perhaps, the NORTH-FORCE mergers appear to have developed by drift/approximation. Similarly, the SAUCE-SOURCE, MEAT-MATE (in Belfast) and LINE-LOIN (in Essex) near-mergers must have developed by drift/approximation. It is important to note that, with change of this sort, there is no necessary pre-existent phonetic target towards which the phonemes are moving. As

such, we cannot assume that drift/approximation leads to complete phonetic merger without close examination of the pronunciation of the phonemes involved.

As was discussed in Section 1.2.1, merger by expansion involves an instantaneous removal of the lexical boundaries of two phonemes which are in relatively close approximation, such that the newly merged phoneme occupies the whole phonetic space of the original two phonemes. Since it is instantaneous, we can expect to find no intermediate stages in this development but, as was the case with the merger of /o/ and /oh/ in Tamaqua, we can expect to find members of the same speech community with the merger alongside members of the speech community without it. Bearing in mind the statement by Warren and Hay (2005: 26) that in situations where speakers with merger exist alongside speakers without, "their own merged production system exists alongside a perceptual system that is sensitive to characteristics of the speaker", it could be suggested that, in cases of merger by expansion, merging speakers retain knowledge of the original distinction.

As was discussed above, in reference to the 'NURSE-NORTH Merger', a detailed analysis of the history of a particular merger is necessary in order to determine the kind of change that gave rise to it and the possible end results of this change.

Question 8: What constitutes evidence of a merger?

One of the key aspects in understanding the status and nature of mergers and near-mergers is the need to assess the kind of evidence that is available for them. The answer to Question 8 depends not only on the kind of merger that has developed, but also on the distribution of the merger within the community and the period of its attestation. The discussion of the mergers and near-mergers throughout this thesis makes it clear that different kinds of evidence for or against the existence of a particular merger are available to us depending upon the type of merger under investigation.

In the case of historical mergers, we must, in addition to comparison with present-day phonological patterns, rely on the evidence provided by contemporary spellings, rhymes, puns and comment (as is the case with the MEAT-MATE and LINE-LOIN (near-)mergers in Early Modern English, discussed in Sections 1.4.1 and 1.4.2

above). That evidence of this sort is inconclusive is demonstrated by the debate over whether these two mergers were ever mergers in the first place. Detailed phonetic analysis and testing of native speakers is obviously not possible in such circumstances and, as such, we cannot hope to understand historical mergers in the same way as modern ones. This is so even accepting the *uniformitarian principle*, that the kinds of linguistic patterns observable today were also found in the past (see Labov 1994: 21-23, 302 for discussion), since we cannot be sure which kind of pattern is represented in historical spellings, rhymes, puns and comment.

At the opposite end of the scale are mergers and near-mergers which are current or on-going in the speech community, such as the NORTH-FORCE, MEET-MEAT and NEAR-SQUARE mergers. Since these mergers are found in the present-day speech of millions of speakers of English, they can be subjected to a battery of analyses which are not available for historical mergers and near-mergers. In the case of NORTH-FORCE and MEET-MEAT, native speaker judgements, including those from linguists, are readily available. Similarly, minimal pair tests and commutation tests can easily be carried out on such mergers, and, as the research reported in Warren and Hay (2005) and Hay *et al.* (2006) indicates, a variety of other perception tests can be used to probe the status of the phenomena under consideration.

Present-day mergers and near-mergers also allow us to conduct phonetic analysis, either auditory or acoustic, in order to determine the precise relationship between the two relevant categories. Acoustic analysis is only possible because of modern recording techniques and, hence, is not available for historical mergers and near-mergers, and auditory analysis is considerably aided by the ability to listen to the data repeatedly. One of the crucial insights developed from acoustic analysis is that all sorts of phonetic dimensions can be important for distinguishing two phonemes: formant values (particularly F1, F2 and F3), phonation, vowel length, amplitude, etc.[4]

Between the historical (near-)mergers and these present-day mergers lie another group of phenomena which combine properties of both. These (near-)mergers, such as the MEAT-MATE near-merger in Belfast English, are often attested historically,

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[4] See Section 5.7.2 for further discussion.

but are restricted to a small number of present-day speakers, and even then they are, in the words of Harris (1985: 243), "deeply submerged in the vernacular". The result of the submersion in the vernacular is that linguists cannot access the (near-)mergers in the same way that they can access commonplace mergers such as those of NORTH and FORCE or MEET and MEAT. In the case of the MEAT-MATE near-merger in Belfast, for instance, Harris (1985: 243) points out that the non-standard variants are "restricted to extremely informal and intimate settings". This results in a situation, noted in Chapter 1, whereby:

> In formal circumstances, such as during the reading of wordlists, vernacular speakers almost invariably used the standard /i/ variant and could not be persuaded in a natural way to produce the non-standard mid variant. Whenever the researchers tried to elicit MEAT items pronounced in 'broad Belfast' together with examples from the MATE class, speakers quite clearly interpreted the classes as having merged. We treated this interpretation with some scepticism, especially since other pairs of vowel-classes which were clearly distinguished by most speakers in spontaneous speech were also reported in formal tests (such as the reading of minimal pairs) as being the same.
> (Harris 1985: 243)

It is clear from the discussion and analysis throughout this thesis that the 'NURSE-NORTH Merger' is similar (in terms of the evidence for it at least) to the MEAT-MATE near-merger. In addition to a variety of non-linguistic data such as spellings and rhymes, there is a large body of traditional dialect transcriptions and sociolinguistic recordings, but because the feature is so deeply submerged in the vernacular, formal elicitation techniques might well produce the same (non-)results as those reported in Harris (1985).

Mergers and near-mergers of this sort, then, are not necessarily amenable to many of the tests that more widespread and entrenched (near-)mergers are. As such, linguists are forced to rely more heavily on historical records and phonetic analysis of informal speech. As Milroy and Harris (1980: 203) and Harris (1985: 243) point out, however, phonetic analysis of this kind of data can be problematic because of the quality of recordings and the infrequency of suitable tokens for analysis, even in relatively large corpora.

It is inevitable, then, that our evidence for some (near-)mergers will be better than our evidence for others. In some cases, such as the merger of MEET and MEAT, we can be relatively certain of our findings, given the frequency and commonplace nature of the merger. In others, such as the MEAT-MATE merger in Early Modern English, our evidence is indirect and our conclusions must remain inconclusive. Still others (the 'NURSE-NORTH Merger' and the MEAT-MATE near-merger in Belfast) lie between these extremes.

Question 9, Can mergers be non-categorical and, if so, what does this mean?

For almost every merger in the historical period, it is possible to think of some dialect of English which (at least potentially) maintains the contrast, if even only variably so. That is, many of the phenomena which are called 'merger' by linguists are not categorical in some way. For example, the merger of MEET and MEAT is characteristic of the vast and overwhelming majority of English speakers, but a distinction between these vowel pairs survives for some speakers in the British Isles, particularly in Ireland.

The further we go back in time, the more likely we are to find mergers which *are* found in all varieties of English, for example the merger of Old English (OE) /hn/ and /n/, Proto-Indo-European (PIE) /a/ and /o/, and of PIE /k/ and /k'/ (Lass 1992, Sihler 1995). The fact that we must go back as far as OE, Proto-Germanic, or even PIE to find mergers which are shared by all varieties of English indicates that care must be taken in labelling any merger as 'categorical'. Of all the mergers reviewed in this thesis, the majority cannot truly be described as 'categorical' if, by categorical, we mean that the merger is found in all relevant phonological environments in all varieties of English (and in the speech of all the speakers of those varieties) all of the time.

Many of the mergers discussed are non-categorical in some way. Firstly, most of them are all restricted geographically to parts of the English-speaking world, to a greater or lesser degree. Some of them (e.g. NEAR-SQUARE) are restricted to small parts of the English speaking world, whilst others are characteristic of large swathes of the English speaking world, including most of its major population centres (a distinction between NORTH and FORCE only survives in regional British and

(particularly) Irish varieties and some North American varieties, whilst a MEAT-MATE distinction only survives, if at all, in some regional British and (again particularly) Irish varieties). Still others (e.g. /ʍ/-/w/) lie somewhere between these extremes.

Secondly, they are often restricted to only parts of the population within their area of geographical occurrence. In the cases of the /o/-/oh/, NEAR-SQUARE and /ʍ/-/w/ mergers, for example, members of the same community, even those who are closely related, may differ as to whether they have a merger or not. As was discussed in Section 1.2.1.3, J. Hogan (aged 81) of Tamaqua, Pennsylvania, has no merger of /o/ and /oh/, but his son, W. Hogan (aged 46) has complete merger of the two phonemes. Similarly, the distinction between /ʍ/ and /w/ is never made in my own speech, from County Tyrone in Ulster, whilst it is made consistently in the speech of my parents.

Thirdly, some of these mergers are variable, for certain speakers at least. The clearest examples of this are the MEET-MEAT and FOOT-GOOSE mergers, which, for some speakers in Ulster, are only variably merged. In this case, alternative, phonetically distinct pronunciations exist, such that the original historical lexical sets contributing to the mergers remain distinguishable. In this respect, variable mergers are similar to near-mergers since, in both cases, phonetic identity of two phonemes on certain occasions is counteracted by phonetic non-identity in others.

As pointed out in Chapter 1, however, what appears to be a clear cut line between variable mergers and near-mergers, on the one hand, and other non-categorical mergers on the other, need not be clear cut after all, particularly when we consider how speakers perceive mergers as well as how they produce them. In cases where speakers with a merger and speakers without it coexist in the same speech community (as, for example, the NEAR-SQUARE merger in New Zealand, the /o/-/oh/ merger in Tamaqua, and the 'NURSE-NORTH Merger' in Tyneside), it may well be the case that there is a disjunction between production and perception for some speakers. In the case of speakers like G052 in the TLS, for example, the fact that they produce identical NURSE and NORTH vowels does not mean that they do not know that there is a distinction between NURSE and NORTH in the speech community, and it is perhaps possible that they could determine which words belong

to which lexical set if the situation required. In other words, speakers like G052 might have a variable distinction between NURSE and NORTH too. Since it is the case that many non-categorical mergers exist in sociolinguistic settings similar to this, it is possible that some speakers with any of the non-categorical mergers discussed in this thesis also only merge in production but not in perception.

The upshot of all of this is that many of the mergers discussed in the literature are 'non-categorical', often in more than one way, although some are nearer to being categorical than others. That is, there is a continuum from completely categorical mergers (such as that of PIE /a/ and /o/ in Germanic) through mergers which are characteristic of the vast majority of speakers of a language all of the time (such as the merger of MEET and MEAT), mergers which are characteristic of most speakers of a language (such as NORTH-FORCE), to mergers which are characteristic of only a small portion of the speakers of a language (such as NEAR-SQUARE).

If we answer Question 9 in the negative, then, the vast majority of phenomena called 'mergers' in the linguistic literature are not mergers. To take this position would be to say that a merger such as that of NORTH and FORCE, which is characteristic of the speech of millions of speakers of English all around the world, is not a merger at all, even though many of the speakers who have this merger have neither knowledge of the etymological differences in these words nor the fact that they are pronounced differently in other parts of the world. If, on the other hand, we allow that mergers can be non-categorical, this means that not only must we consider mergers which are characteristic of the vast majority of the English speaking population to be mergers, we must also categorise as mergers those which are characteristic of very restricted subsets of the English speaking population.

And if we take non-categoricalness as a prerequisite for "unusually successful" reversal of merger, then should it not be the case, in such a scenario, that all of these non-categorical mergers could be reversed with equal success (if not equal ease), given the right circumstances?

Question 10, Can mergers be reversed and, if so, how?

As was discussed in Chapter 4, Labov (1994: 311) states that "It is generally agreed that mergers are irreversible: once a merger, always a merger". Labov (1994: 312) qualifies this very definite statement by noting that, when speakers try "to learn a phonemic distinction not native to their own dialect", they inevitably hypercorrect, such that the split is not perfectly along etymological lines. It is clear from Labov's discussion of mergers and near-mergers that he considers this linguistic principle ('Garde's Principle') to apply not only to mergers which have occurred across a language as a whole but also to mergers which have occurred within some subset of a language. In particular, Herzog and Labov's formulation of 'Herzog's Principle' (Herzog 1965, Labov 1994: 313) relies on the fact that once a merger enters a subset of a language, it will spread rather than retract, since those who have it cannot unlearn it.

The issue of the possibility of reversal of mergers is central to this thesis, and is discussed at length in Chapters 4 and 7. The evidence presented suggests that the answer to Question 10 is that they can be, but with difficulty. When speakers attempt to reverse them, there appears to be a high chance that some words, at least, will be assigned to the 'wrong' historical lexical set. Of the three potential mergers which appear to have been reversed (the /w/-/v/, MEAT-MATE and LINE-LOIN mergers), alternative explanations are possible for the second two. On the one hand, it has been suggested (by, for example, Wyld 1936 and Kökeritz 1953) that MEAT-MATE and LINE-LOIN *were* mergers and that they *have* been reversed due to a variety of social factors, including dialect contact and the influence of spelling. In both cases, this reversal has fallen slightly short of perfect, since there is a residue of words which have ended up in the wrong historical lexical set (e.g. *break, great, groin*). On the other hand, it has been suggested (Milroy and Harris 1980, Harris 1985, Labov 1994) that neither MEAT-MATE nor LINE-LOIN was a merger in the first place, but rather that they were near-mergers. As such, there was no identity of the two lexical sets and, hence, no issue of reversal of merger.

In the case of the /w/-/v/ merger, Trudgill *et al.* (2003) are convinced that there has been a reversal, again with some etymological misplacement. The research by Trudgill *et al.* (2003) gives an intriguing insight into the processes by which mergers

might be reversed and the way in which hypercorrection occurs. From a starting point of phonetic identity between (originally distinct) /w/ and /v/, as [β] or [β̞], speakers appear to have crystallised this into a complementary distribution of [w] (in onsets) and [v] (in codas), before 'sorting out' the onsets into words with [w] and words with [v]. This 'sorting out' placed [w] and [v] in parallel distribution, hence creating a phonological difference between /w/ and /v/, usually, but not always in the correct words.

Beyond cases where hypercorrection arises, Labov (1994: 342) admits that it is theoretically possible to reverse a merger: "Given the right social conditions, it is reasonable to think that a distinction can be reintroduced into a speech community in a consistent way". But Labov believes that this is extremely unlikely and depends upon rather special social circumstances, such as being "under the control of an educational system that places strong emphasis on remaking behaviour to eliminate all social variation" (Labov 1994: 348), and only then in "preadolescent years". Nevertheless, some linguists have suggested that reversals of merger can occur in another particular social circumstance: that of intense dialect contact, where speakers with a merger are exposed to a large number of speakers without it. As was discussed in Chapter 1, Wyld (1936) and Kökeritz (1953) both suggest that the MEAT-MATE and LINE-LOIN mergers disappeared from early StE due to contact with speakers from other parts of England who did not have these mergers. Even so, both Wyld and Kökeritz admit the possibility of hypercorrection in the reversals of these mergers, suggesting that Garde's Principle has held even here. Likewise, Thomas (2006: 490) states that, despite Labov's claims, "mergers can occasionally be reversed through social developments" such as "the influence of a standard dialect" or when there is "heavy immigration that swamps the older inhabitants of an area". In such cases, Thomas suggests, hypercorrection and lexical inconsistency may result, but he does not state that these are necessary outcomes of such dialect contact. In addition, Thomas makes the important point that "Mergers that affect only a portion of a population are easier to reverse", and he gives the example of the disappearance of the merger of the vowels in START and NORTH in Texas since the Second World War, a merger which was only ever characteristic of "fewer than half" of the speakers in Texas at the time.

In a similar way, Watt (1998a) explains the reversal of the 'NURSE-NORTH Merger' in TE without any hypercorrection as the result of dialect contact with speakers within the same community who did not have the merger (see Section 4.4.4). Unlike Wyld and Kökeritz, however, Watt (1998a) does not seek to justify his claim by citing examples of hypercorrection (since they don't appear to exist in Watt's data) and, as such, his hypothesis most definitely runs counter to Garde's Principle. Rather than accepting Garde's Principle, Watt (1998a: 277) suggests that it is in need of reformulation, such that "Mergers are irreversible by phonologically internal processes". Watt's reformulation of Garde's Principle means that reversals of merger of the sort he identifies are not fatal to it.

Milroy (2004: 50) also allows that mergers can be reversed. In her reply to Minkova's analysis of the apparent reintroduction of the lost [ʍ]-[w] distinction in the 16th and 17th centuries (Minkova 2004), Milroy notes that:

> it is plain that it affected only some speakers in some communities, and that other speakers sometimes merged the relevant word classes and sometimes did not.

This leads Milroy (2004: 50) to suggest that:

> In other words, the merger was variable. This point is important, for if a merger is assumed to be variable rather than categorical, the puzzle of how "unmerging" takes place dissolves. What is happening is not unmerging at all, but a sizable shift in frequency and distribution of unmerged and merged variants ... Since some reported mergers have never taken place in the systems of some speakers and some communities, the unmerged pattern is present in the wider speech community and so has the potential to spread and re-establish itself more strongly as the sociolinguistic landscape changes.

As noted in Chapter 1 and in preceding sections in this chapter, variable mergers, like near-mergers, present no difficulty in terms of reversal if they are variable for all members of the speech community, since the original distinction has not been lost. Milroy's definition of variable merger is somewhat different here, however: she implies that any merger that is not categorical, in the speech community (perhaps even the language) or in the speech of individuals, is 'variable' and, as such can be reversed without difficulty. As discussed in Chapter 1 and under Question 9 above,

many mergers are non-categorical in some way, but this doesn't necessarily mean that they can be reversed without difficulty.

Milroy's further comment, "What is happening is not unmerging at all", recalls Wyld's hypothesis that the 'reversal' of the MEAT-MATE merger "is not in the nature of a sound change as some writers seem to suggest, but is merely the result of an abandonment of one type of pronunciation and the adoption of another" (Wyld 1936: 211). What both Wyld and Milroy fail to explain, however, is how these mergers were reversed by those individuals and speech communities which had them most consistently (i.e. which did not have variable merger). Furthermore, Milroy does not comment upon the degree to which such "a shift in frequency and distribution of unmerged and merged variants" would lead to hypercorrection. Given that Garde's Principle allows reversal of merger with hypercorrection, it is not certain that Milroy's model of reversal of merger is an exception to it.

Thus the answer to the question *Can mergers be reversed and, if so, how?* depends very much upon the result of that reversal: certainly, mergers can be reversed given the right social conditions, but this reversal may not be perfect. Garde's Principle does not rule out such cases and is, in fact, supported by them. It does appear, however, that other mergers may have been reversed without any obvious hypercorrection, particularly in cases where the merger is characteristic of only a subset of the speech community, as Thomas's comments suggest. However, what most of these attempts to explain apparent reversal of merger in contradiction to Garde's Principle fail to account for is how some non-categorical mergers are reversed with hypercorrection whilst others appear to be reversed without any obvious hypercorrection. It seems to be the case that dialect contact is involved in both scenarios. Watt's suggestion that dialect contact within the same speech community allows for reversal of merger without hypercorrection does not account for why other reversals which were equally non-categorical result in hypercorrection. In my discussion of Question 11 immediately below, I consider the nature of hypercorrection in reversal of merger (and lexical split) and suggest a mechanism by which obvious hypercorrection might be avoided.

Question 11, What is hypercorrection, and what are the mechanisms which give rise to it?

In Chapter 1, I discussed the mechanisms by which merger can be achieved. These three mechanisms are: (1) merger by approximation (or drift); (2) merger by transfer; and (3) merger by expansion. Of these three mechanisms, merger by transfer involves the direct shift from one distinct phonetic form to another, with no forms falling into the intermediate phonetic space. It is precisely the opposite of this process which Wells (1982) assumes when he predicts the kind of hypercorrection that might occur in the reversal of the 'NURSE-NORTH Merger'. Starting with a combined NURSE-NORTH lexical set with the vowel [ɔː], Wells predicts that reversal, were it to occur, would involve the transfer of some NORTH items, as well as the NURSE items, directly from [ɔː] to [øː] and, presumably, [ɜː]. That is, lexical items from the combined NURSE-NORTH lexical set would bypass the intervening phonetic space to achieve, rightly or wrongly, a particular phonetic target. The phonetic distance between [ɔː], on the one hand, and [øː] and [ɜː], on the other, means that any hypercorrection of NORTH should be readily identifiable. This perhaps explains how Wells (1982), Watt (1998a), and Watt and Milroy (1999) are able to state confidently that no such hypercorrection has occurred, despite none of them having conducted a detailed phonetic analysis of NORTH.

That lexical split and any attendant hypercorrection is normally regarded as a process of transfer to a particular, distinct phonetic target, is clear from the examples of hypercorrection discussed in Section 4.4.3. In the case of the implementation of the FOOT-STRUT distinction, for example, speakers transfer STRUT (and, in instances of hypercorrection, FOOT) directly to [ʌ]. A similar process would explain the apparently exceptional words in the reversal of the MEAT-MATE and LINE-LOIN mergers in Early Modern English. It seems, then, that transfer is one mechanism of reversal of merger or lexical split. Since merger may proceed in other ways, however, the questions arises as to whether reversal of merger or lexical split (and hence hypercorrection) can also proceed by these means, but in reverse.

It is certainly possible to envisage the opposite of merger by approximation/drift, at least. The key difference between merger by transfer and merger by approximation or drift is that in merger by approximation/drift, the intervening phonetic space is filled

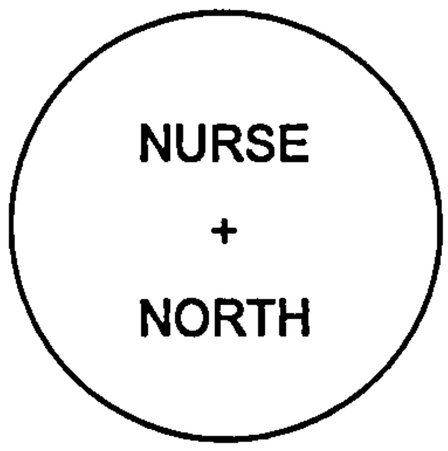
as one phoneme gradually approaches the phonetic space of another. The reverse of this process is for a split to occur in a lexical set, but instead of particular members of that lexical set 'leaping' (rightly or wrongly) to some phonetically distinct target, they would instead move gradually to that phonetic target, through the intervening phonetic space. The result of such a reversal mechanism would be forms which lie intermediate between the original phonetic domain of the lexical set and the new target area. Hypercorrection, were it to occur in such a scenario, would, in all likelihood, involve the spread of at least some wrong lexical items to this new intermediate phonetic space before their correct lexical distributions are established stochastically. Depending on the phonetic distances involved, these hypercorrect forms may well be less obvious than hypercorrections as the result of transfer.

This process is represented graphically in Figure 55 (with NURSE and NORTH standing in as example splitting lexical set(s)).

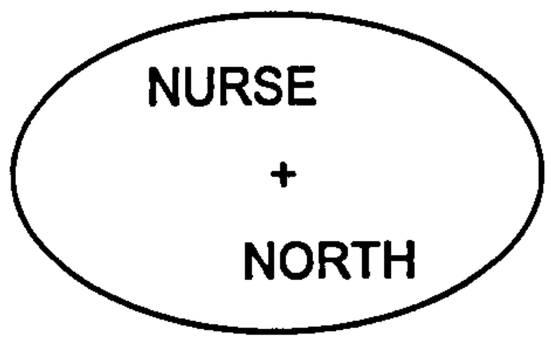
At Stage 1, there is one combined lexical set, the result of a merger or of etymologically homogeneity. At Stage 2, things begin to change, although the two groups of words still occupy the same phonetic space. There is perhaps some overall widening in the phonetic distribution and it may be the case that there is some statistical tendency for words of one set to occur more frequently in one part of the space than the other, but there is no exclusive phonetic space for either set. At Stage 3, the phonetic distribution of the lexical set continues to widen, and there is a definite tendency for each lexical set to occupy a different (though largely or completely overlapping) part of the phonetic space. It is not impossible that tokens from both groups of words can appear at any place in the phonetic distribution, despite this tendency (i.e. phonetically subtle hypercorrection). At Stage 4, the difference between the two sets of words begins to crystallise sharply, although there is still a degree of overlap, and stray tokens of each may occur in the phonetic space of the other (again, phonetically subtle hypercorrection). At Stage 5, the two lexical sets have separated, although they remain phonetically very close to each other. With each successive stage up to this point each word has become less and less likely to be found in the phonetic space of the other lexical set, and, by Stage 5, there should be no 'wrong' assignments. After this separation, the two lexical sets are free to develop separately (Stage 6).

Figure 55: 'Reversal of merger by drift'.

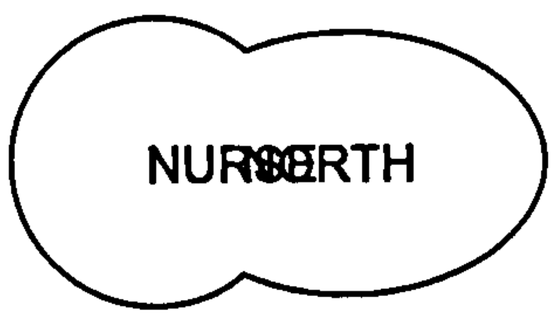
Stage 1:



Stage 2:

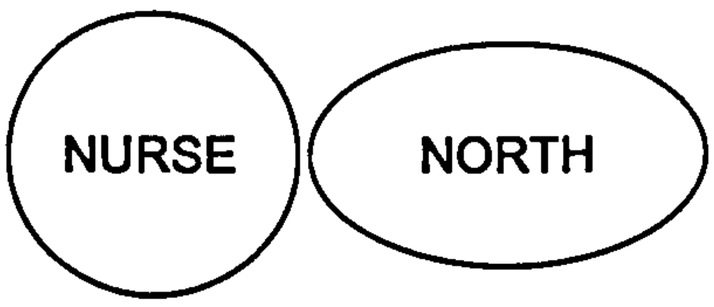


Stage 3:

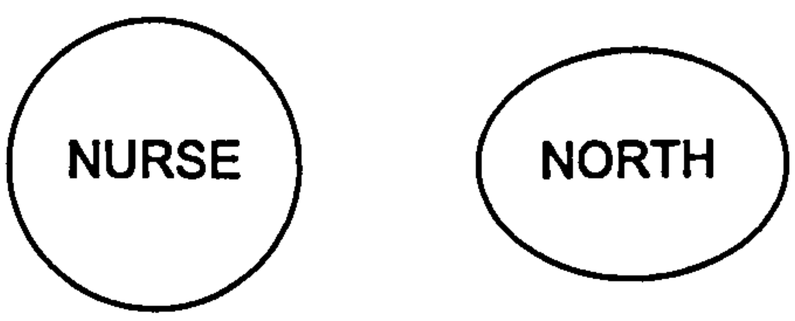


Stage 4:

Stage 5:



Stage 6:



This model of 'reversal of merger by drift' predicts a number of things. Firstly, it predicts that hypercorrection, if it occurs, need not be as obvious as when it occurs as a result of lexical split by transfer. Rather, hypercorrections in this model are on a narrower phonetic scale, and may only be apparent in a detailed phonetic analysis. Secondly, this model predicts that where a lexical split is taking place, the intermediate stages of such a change should be observable. With lexical split by

transfer, it is assumed that there are two states of affairs: lexical unity in one part of the vowel space (the initial state of affairs), and lexical differentiation in two parts of the vowel space (the resultant state of affairs, with or without hypercorrection). There should be no phonetically intermediate states, although there may well be variation between the two phonetic poles for some words at least. With 'reversal of merger by drift', a range of speech types, from complete merger to completely distinct lexical sets, and everything in between, should be observable, potentially with varying degrees of hypercorrection.

Since no obvious hypercorrection of NORTH has previously been reported, and since it appears to be the case that NURSE and NORTH were, in fact, merged for some speakers (see Chapter 6 and Section 8.1 above), is it possible that the scenario just outlined lies behind the reversal of the 'NURSE-NORTH Merger' in TE? If so, the reversal of the 'NURSE-NORTH Merger' by drift might be modelled as follows:

1) The original combined lexical set, NURSE-NORTH, had an [ɔ:] type vowel;
2) Assuming a target of [ɜ:] for NURSE lexical items, there was a gradual phonetic shift from [ɔ:] to [ɜ:] *via the intermediate phonetic space*;
3) At such an intermediate stage, we might find that NURSE has [ɵ:], whilst NORTH has [ɔ:]; the two lexical sets are phonetically close;
4) This intermediate stage may well have involved much hypercorrection, with many NURSE items remaining, at least variably, in [ɔ:], and many NORTH items spreading to [ɵ:];
5) As the reversal of NURSE and NORTH progresses, the precise lexical distributions of the two lexical sets are established; once this is done, the two lexical sets are free to develop independently (e.g. NURSE can move further forward, to [ø:], and NORTH back to [ɔ:]).

Such a model predicts that although there may well be hypercorrection of NORTH as the merger is reversed, this hypercorrection need not be so obvious as that which results from reversal by transfer. Rather than NORTH words being transferred to [ɜ:] (or even [ø:]), they need not proceed any further forward in the vowel space than [ɵ:]. Compared with hypercorrection to [ɜ:] or [ø:], hypercorrection on this scale would be relatively hard to detect in superficial phonetic examinations of the NORTH lexical

set. Recall that Watt (1998a) and Watt and Milroy (1999) divided the phonetic range of NURSE into only three categories, [ɔ:], [ɜ:] and [ø:]. It is unclear where NURSE (or NORTH) tokens with [ɵ:], were they to occur, would fit in this categorisation. If this model of 'reversal of merger by drift' is possible, it could account for the fact that neither Wells (1982) nor Watt (1998a) report any hypercorrection of NORTH.

Thus far, I have presented lexical 'split/reversal of merger by drift' as a hypothetical possibility only, but it is clear that such a scenario fits the phonetic distribution of the NURSE and NORTH lexical sets in the TLS. As discussed under Question 5 above, the 'NURSE-NORTH Merger', in [ɔ:], does appear to be disappearing from TE, with NURSE changing to a central or front vowel. The TLS data reveal, however, that there is no phonetic 'clear water' between the traditional back variants of NURSE and NORTH, on the one hand, and the central and front variants of NURSE, on the other. Rather, NURSE and, to a lesser extent, NORTH, fill the intermediate phonetic space in a continuous manner, both within the speech of many individuals and across the sample as a whole (see Figure 33 in Chapter 6 and Appendix 10), such that NURSE may be pronounced [ɔ:], [ɵ:], [ɜ:], [ø:] and [ø:] and NORTH pronounced [ɔ:], [ɵ:] and, on rare occasions, [ɜ:]. If this reversal was implemented by transfer, we would not expect this pattern of distribution, whereas it is exactly what is predicted by the hypothesis of 'reversal of merger by drift'. Furthermore, this model predicts that there will be some movement of NORTH, but on a much narrower phonetic scale than expected, towards the target phonetic space of NURSE, but that this movement will not result in obvious hypercorrect pronunciations of NORTH far from its original phonetic distribution.

This model of 'reversal of merger by drift' seems, then, to fit with the pronunciation of NURSE and NORTH in the TLS data. But is there any evidence that this mechanism of reversal has occurred elsewhere? If so, this would strengthen the claim that it lies behind the reversal of the 'NURSE-NORTH Merger' and is, in fact, a valid form of sound change. It seems that there is at least one, and possibly two, other examples of a lexical split proceeding by drift. The evidence for this comes from the behaviour of the STRUT lexical set in the East Midlands and East Anglia and the apparent reversal of the NURSE-SQUARE merger in Greater Manchester.

I have already discussed (see Section 4.4.3) instances of hypercorrection when speakers from northern England attempt to learn the STRUT-FOOT distinction. These hypercorrections reflect the fact that such speakers have attempted to implement the lexical split by transfer.

Chambers and Trudgill (1980) consider the rather interesting question as to what happens on the geographical boundary between northern dialects with [ʊ] and southern dialects with [ʌ]. Since, according to Chambers and Trudgill (1980: 127-130), this change began in London, and is a feature of Standard (RP-like) English which has been spreading slowly northwards, speakers have been continuing to implement the lexical split in FOOT-STRUT throughout its history.

In addition to finding speakers who use both [ʊ] and [ʌ] in STRUT (so called 'mixed lects'), Chambers and Trudgill find that at some locations on the transition between northern [ʊ] and southern [ʌ] in STRUT speakers have a range of possible pronunciations: not only [ʊ] and [ʌ], but also an intermediate variant, [ɤ]. These three variants are broad categories in what Chambers and Trudgill reveal to be in reality a phonetic continuum, [ʊ̟] ~ [ʊ] ~ [ʊ̞] ~ [ɤ̟] ~ [ɤ] ~ [ʌ̟] ~ [ʌ] ~ [ʌ̞]. Rather than speakers having either [ʊ] or [ʌ] in any given STRUT token, they use a range of intermediate pronunciations, which Chambers and Trudgill (1980: 135) describe as:

> a fudge between the contending phone types of this change in progress, a way, as it were, of being at neither pole on the continuum or conversely of being at both poles at once.

Although we lack detailed data on the exact distribution of these pronunciations in each location and for individual speakers, and although Chambers and Trudgill do not analyse FOOT lexical items, this situation in the East Midlands and East Anglia closely resembles the hypothetical model of lexical 'split/reversal of merger by drift' rather than by transfer as seems to have occurred in the reversal of the 'NURSE-NORTH Merger' as evidenced in the TLS.

Barras (2006) finds a similar situation as regards the NURSE and SQUARE lexical sets in Greater Manchester. The NURSE and SQUARE vowels are reported to have merged in parts of northwest England, including Liverpool, south Lancashire, and

parts at least of Greater Manchester (see Wells 1982: 361). Barras (2006) finds evidence that younger speakers in Walkden and, to a lesser extent, Bolton, two areas previously characterised by a merger of NURSE and SQUARE, are implementing a split of NURSE and SQUARE along the lines of the situation in the nearby Manchester. Rather than transferring SQUARE words from a central [ɜ:]-type vowel directly to [ɛ:], however, these speakers are using a variety of intermediate 'fudged' forms such as [ɜ̟:] and [ɛ̝:], with [ɜ:] and [ɜ̟:] being more characteristic of NURSE, and [ɛ:] and [ɛ̝:] more characteristic of SQUARE, but with no definite clear separation between them for many speakers. Although Barras's results are only preliminary, they suggest that 'reversal of merger by drift' may be one strategy which avoids obvious hypercorrection, and further research into this situation would certainly reap rich rewards.

The movement of NORTH part of the way towards the NURSE target before separation of the two lexical sets in TE is very similar to the fudging found in the implementation of the FOOT-STRUT and NURSE-SQUARE splits and is, I suggest, tantamount to a kind of hypercorrection, but on a much narrower phonetic scale than is usually expected. Furthermore, this kind of hypercorrection does not result in the etymologically wrong words (NORTH) ending up as part of the NURSE lexical set, but rather in the etymologically wrong words moving part of the way with NURSE as it separated from NORTH. This subtle kind of hypercorrection appears to have been missed in previous (superficial) analyses of NORTH in Tyneside English. The consequences for this kind of change for models of sound change and phonology are examined in Section 8.3 below. It is clear that speakers of TE with the 'NURSE-NORTH Merger' have for some time (and perhaps always), been surrounded by speakers who do not have the merger. If Warren and Hay (2005) and Hay *et al.* (2006) are correct in their hypothesis that merging speakers in such situations can maintain a perceptual distinction between the merged lexical sets which they never produce, then it seems not unreasonable that they can, using one mechanism or another, implement the distinction in production too.

Question 12: What is a merger?

As noted in Chapter 1, the answers to questions 7 to 11 all depend upon the answer to one overarching question: *What is a merger?*. It is apparent, given the discussion

throughout this thesis, that there is no simple answer to this question, since the term 'merger' has been applied to a range of often rather different phenomena. It is relatively easy to imagine what is definitely a merger (invariable identity of two formerly distinct phonemes in the speech of every speaker of a language, something which is usually only characteristic of mergers at remote periods in history) and what is definitely not a merger (invariable non-identity of two phonemes in the speech of every speaker of a language), but between these two extremes lies a continuum of patterns, some closer to complete merger, some closer to complete distinction.

If we decide that near-mergers, which involve close phonetic similarity but non-identity of phonemes (even to the point where they are pronounced the same much of the time), are not mergers, then it seems reasonable to suggest that variable mergers (such as MEET-MEAT in Mid-Ulster English) are not mergers either. As discussed above, variable mergers involve phonetic identity, in some respect, of two lexical sets *some of the time only*, and non-identity at other times. As such, the membership of the two variably merged lexical sets can still be determined by speakers and, it seems reasonable to suggest, the development of the two lexical sets could continue separately in the same way that 're-separation' of near-mergers is considered possible.

Excluding near-mergers and variable mergers still leaves a wide range of non-categorical mergers which fall short of being found in the speech of all speakers of the language all of the time, however. Since speakers with this kind of merger are surrounded, socially and/or geographically, by speakers who do not have the merger, it is inevitable that many merging speakers are in contact, to one degree or another, with speakers who do not have the merger. Thus, for example, speakers in New York who merge SAUCE and SOURCE are surrounded by speakers who nearly merge them and by speakers who keep them entirely distinct (Labov 1994: 359). Similarly, speakers with the NORTH-FORCE merger are more or less likely to be surrounded by speakers who do not have the merger, depending upon their geographical and social location. That this may, in fact, impact upon the status of the merger in the speech of those individuals who have it is highlighted by the research on the NEAR-SQUARE merger in New Zealand (Warren and Hay 2005, Hay *et al.* 2006) – recall Hay *et al.*'s finding (p. 481) that "despite the identical phonemic labelling of the lexical

items, the phonetic memories still occupy distinct exemplar clouds". That is, even those speakers who do have merger of NEAR and SQUARE are sensitive to the distinction between the two lexical sets because of the presence of non-merging speakers in their community. And if this is the case for the NEAR-SQUARE merger in New Zealand, might it not also be the case for other instances of intimate contact between merging and non-merging speakers, such as the /o/-/oh/ merger in Tamaqua, the /ʍ/-/w/ merger in Ulster, and the NORTH-FORCE merger throughout much of its geographical range?

In a sense, then, mergers of this kind may be variable too, if not in production then in perception at least. As a result, the line between variable mergers and other non-categorical mergers is blurred – it is very easy to imagine a situation in Ulster, for example, where speakers with complete merger of MEET and MEAT in production are surrounded by speakers who, to one degree or another, only variably merge MEET and MEAT in production and, as a result, the speakers with merger of MEET and MEAT are aware of the difference between them. In a situation like this, it is difficult to draw a line between speakers with variable merger on the one hand and speakers with complete merger on the other. So if we exclude variable mergers from the our definition of merger, must we also exclude non-categorical mergers which exist side by side with variable mergers and non-mergers?

To do so would be to suggest that the MEET-MEAT or NORTH-FORCE mergers are not mergers, even though they are categorical for millions of speakers of English across the world. In suggesting that all non-categorical mergers are not mergers is to risk throwing the baby out with the bathwater and, as such, we need to come up with some other definition of merger which recognises that there are degrees of non-categoricalness.

A major problem here is that there is an ambiguity at the heart of much research into mergers and merger-like phenomena – it is unclear whether researchers of merger and near-merger are studying something which is the property of individuals, of speech communities, or of both. The precise focus of their investigations might well have important repercussions for our understanding of the terms 'merger' and 'near-

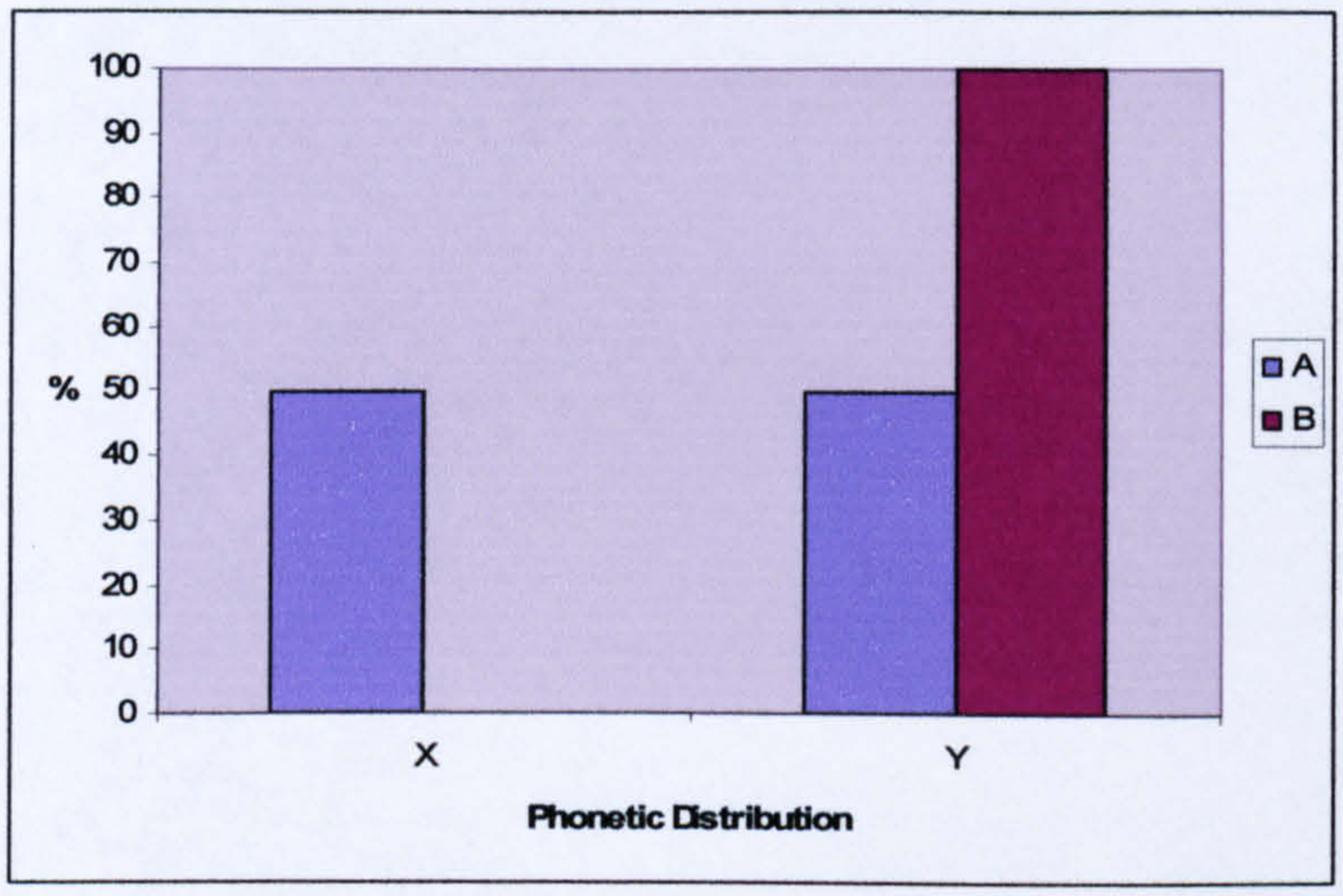
merger' – do the same problems exist if we view merger as the property of one or the other? Do some problems disappear if we view it one way of the other?

That is, a tension, between analysing (near-)merger as the property of individuals or as the property of speech communities, is apparent in the analyses of the (non-historical) mergers and near-mergers reviewed in this thesis, in that two different methods of analysis are discernible. On the one hand, the distribution of certain (near-)mergers is examined in the community or particular social groups as a whole rather than at the level of the individual. On the other, the distribution of a number of (near-)mergers is examined at the level of the individual only rather than at the level of the wider speech community. Both of these approaches have advantages and disadvantages which impact on our understanding of what a (near-)merger is.

In the studies of the MEAT-MATE near-merger in Belfast (Milroy and Harris 1980, Harris 1985) and the NEAR-SQUARE merger in New Zealand (Warren and Hay 2005), the distribution of the (near-)mergers is analysed in terms of social groups rather than at the level of the individual. Milroy and Harris (1980) and Harris (1985) give composite figures for the distribution of MEAT and MATE variants for all of the informants who produce MATE-like pronunciations of MEAT (eight working-class males). This has the advantage of allowing meaningful statistical testing of their results, since there is a relatively small number of tokens produced by each speaker, and gives us a good overall impression of the behaviour of MEAT and MATE in a particular subsection of the community. What it does not do, however, is tell us what MEAT and MATE variants are being produced by each speaker – it is very likely that different speakers produce different proportions of the MEAT and MATE variants, and it is entirely possible that the two lexical sets *are* identical for some speakers but not for others. Because we are only given composite figures for all eight speakers, we can only assume, but not be certain, that these replicate the patterns for each individual speaker. In their phonetic analysis of NEAR and SQUARE, Warren and Hay (2005) similarly give composite figures for the two groups (Wellington and Christchurch) only, despite indications that individual speakers are doing different things. This comparison of gross figures illustrates very nicely the different relationships between the two lexical sets at the two locations, but does not reveal whether individual speakers within these two locations have complete merger, near-

merger, or completely distinct NEAR and SQUARE. The following hypothetical situation illustrates this problem. In Figure 56, composite figures for the phonetic distribution of two lexical sets, A and B, in the speech of four speakers, suggests that there is overlap of A and B (on phonetic space Y) but not complete merger.

Figure 56: The phonetic distribution of hypothetical lexical sets, A and B.



Since the percentages in Figure 56 are composites for the 4 'speakers', they can be interpreted in a number of different ways. Firstly, we might assume that the pattern in Figure 56 is common to all of the speakers involved, such that A and B are not completely merged for any of them (i.e. that they all have a variable merger or near-merger), with A being found in phonetic space X 50% of the time, and in phonetic space Y 50% of the time. However, it possible for other patterns in the speech of the four individuals to give rise to the distribution in Figure 56. For example, it might be the case that two speakers have no merger of A and B, whilst the other two have complete merger of A and B. Alternatively, one speaker might have complete merger of A and B, a second speaker have complete distinction between A and B, and the other two speakers have some degree of partial or variable merger of A and B. Composite figures of this sort, then, can obscure rather divergent patterns of behaviour which would be revealed by analysis at the individual level.

In the studies of the NORTH-FORCE merger in North America (Thomas 2001), /o/-/oh/ merger in Tamaqua (Herold 1990, Labov 1994) and the LINE-LOIN merger in Essex (Labov 1994), the distribution of phonetic variants is analysed at the level of the individual rather than at the level of the social group. In all of these analyses,

turn, use fewer central and back variants of this vowel than the adults in the same social class, and this potentially gives us insight into change of this vowel over time in Glasgow.

Macaulay's analysis of his data at the level of the individual allows him to quantify the range of variation within the social groups and to identify typical and atypical patterns of behaviour. Macaulay notes (p. 138) that there is "almost exact correspondence" between the scores for the individuals as compared with the group scores – not unsurprisingly, perhaps, speakers with particular phonological patterns are members of social groups which are typified by that pattern. Macaulay notes (p. 138), for example, that only one speaker (a ten-year-old female) has scores which are not compatible with the social class to which she belongs. Nevertheless, Macaulay (1978: 139) also finds that "the results also reveal considerable variation within each of the social class groups", suggesting that although the scores for the social groups tell part of the story, there is more going on than they indicate. Macaulay gives as an example the case of speaker 19-23 who "deviates somewhat from the pattern of other speakers in her social-class group" (p. 139), and suggests that this may be because this speaker "was the most formal and constrained of the whole sample during the interview" (p. 139) and held a different set of beliefs and views than the other members of the group (p. 140).

Thus Macaulay, analysing his data at both the group and individual levels, gets the best of both worlds, and is able to draw a detailed picture of the distribution of variants in his sample. This approach reveals the gross patterns in the speech community and the myriad individual patterns which they are comprised of. Despite his interest in the behaviour of individuals, however, Macaulay (1978: 142) very clearly believes that these individual patterns must be set in the context of the wider speech community: "The existence of differences among individuals in each population should not be allowed to obscure the extent to which this cultural identification, including its linguistic manifestations, is a group phenomenon".

As was discussed above, analyses of (near-)mergers have been made at either the group or the individual level, but usually not both. In light of the discussion of Macaulay's analysis and the tension between analysing merger as either a group or

an individual phenomenon, I suggest that analysing mergers in both ways is essential if we wish to better understand their nature, and this is precisely how the 'NURSE-NORTH Merger' has been analysed in this thesis.

Analysing at the level of the social group gives us a better insight into the distribution of the (near-)merger across the speech community – a catalogue of the behaviour of variants in the speech of each individual surveyed without any attempt to synthesise this into more general social groups might well leave us unable to see the wood for the trees. Since it is not the case (see, for example, Warren and Hay 2005, and Hay *et al.* 2006) that speakers exist in a vacuum, but are informed by those around them, we can only understand the behaviour of individual speakers in the context of the behaviour of the wider speech community.[6] Furthermore, the distribution of variants across the various social groups in the community may well tell us more about the historical and current development of a merger – in particular, the distribution of variants in different age groups may indicate a change in progress in apparent-time.

Analysing at the level of the individual allows us to determine precisely the distribution of the relevant phoneme(s) in the speech of speakers rather than as averages across a social group. In doing so, we can determine whether all speakers have the same distributions or whether there are differences in distribution between and within social groups. As was the case with the merger of /o/ and /oh/ in Tamaqua, this method allows us to determine whether individual speakers with merger are in everyday contact with speakers who do not. And since analysing speakers at the individual level removes the risk of interpreting composite analyses wrongly (see Figure 56 and the associated discussion above), we are able to determine more precisely the mechanism by which the particular merger has developed. As discussed above, differing behaviour within a social group can give the appearance of variable merger or near-merger where there is none, and it is only with analysis at the individual level that this problem can be overcome. As Foulkes and Docherty (2006: 25) put it, we need "a focus on how individuals perform and

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[6] See also the quote from Macaulay (1978: 142), given above, which states that "The existence of differences among individuals in each population should not be allowed to obscure the extent to which this cultural identification, including its linguistic manifestations, is a group phenomenon".

interpret sociophonetic variability in a range of communicative settings" in sociophonetic research.

It is important to note here that although it is desirable to analyse merger at the level of the individual as well as at the level of the social group, this certainly does not imply any expectation of finding "an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly" (Chomsky 1965: 3). Rather, it is a necessary methodology for gaining a full understanding of the "structured heterogeneity" of language (Weinreich *et al.* 1968: 101). In fact, the research on (near-)mergers reviewed in this thesis very strongly suggests that ideal speaker-listeners in completely homogeneous speech-communities do not exist. Rather, the behaviour of speakers is frequently variable (as in, for example, the cases of the MEET-MEAT and the SOURCE-SAUCE mergers), and the communities they exist in are, in respect of the mergers concerned, almost always characterised by considerable variation (as in, for example, the NEAR-SQUARE and NORTH-FORCE mergers). Although Chomsky (1965: 3-4) states of his view of language that "no cogent reason for modifying it has been offered", the very fact that merger, which involves structural alteration of a language, is often characterised by variation, suggests that Chomsky's view of language is untenable. The same must also true of phonological theories which seek to model the sound patterns of natural human languages whilst adhering to this "homogeneity myth" (Berdan 1975, Macaulay 1978, Docherty and Foulkes 2000). In this respect, this research supports the statements of Martinet (1963: vii) that "a linguistic community is *never* homogeneous" and of Weinreich *et al.* (1968: 101) that:

> nativelike command of heterogeneous structures is not a matter of multidialectalism or 'mere' performance, but is part of unilingual linguistic competence. One of the corollaries of our approach is that in a language serving a complex (i.e., real) community, it is *absence* of structured heterogeneity that would be dysfunctional.

Nowhere more than in the study of mergers, which lie at the intersection of phonetics and phonology, is this true.

So how, then, might we answer the question, *What is a Merger?* Since speech communities characterised by mergers often contain speakers who do not have the

merger and speakers who have it only variably or in production as opposed to perception, I suggest that an individual rather than a speaker-group definition of merger is appropriate. That is, merger involves identity, at the phonological level, within individual speakers. But since these individual speakers can be, and frequently are, surrounded by speakers with different phonologies, we must also take perception into account (as Warren and Hay 2005 and Hay *et al.* 2006 suggest). The degree to which a merging speaker, exposed to non-merged variants, can be said to have collapsed the distinction entirely is something which demands further investigation. For now, the boundary between merging speakers and non-merging speakers can, at best, be described as fuzzy, and, consequently, so must the definition of 'merger' itself. To answer the question *Is this a merger?* about a particular phonetic/phonological development with a straight 'yes' or 'no' is, in the majority of cases, to dramatically and erroneously simplify what is a complex mix of social, historical, phonetic, phonological and perceptual factors which require detailed analysis and equally complex answers.

8.3. 'Reversal of merger by drift' and theories of phonology and sound change

Bloomfield (1933) makes a now classic distinction between phonetics, which is continuous, gradual and variable, on the one hand, and phonology, which is discrete, categorical and invariant, on the other. Bermúdez-Otero (2007: 6)[7] sums up this "fundamental" assumption of phonology as follows:

> phonological representations cannot behave as holistic articulatory or auditory patterns because they do not contain continuous phonetic information, but are rather composed of discrete units.

This is particularly so for what he calls (following Pierrehumbert 2002) "modular feedforward models" of phonology, such as Lexical Phonology (see, for example,

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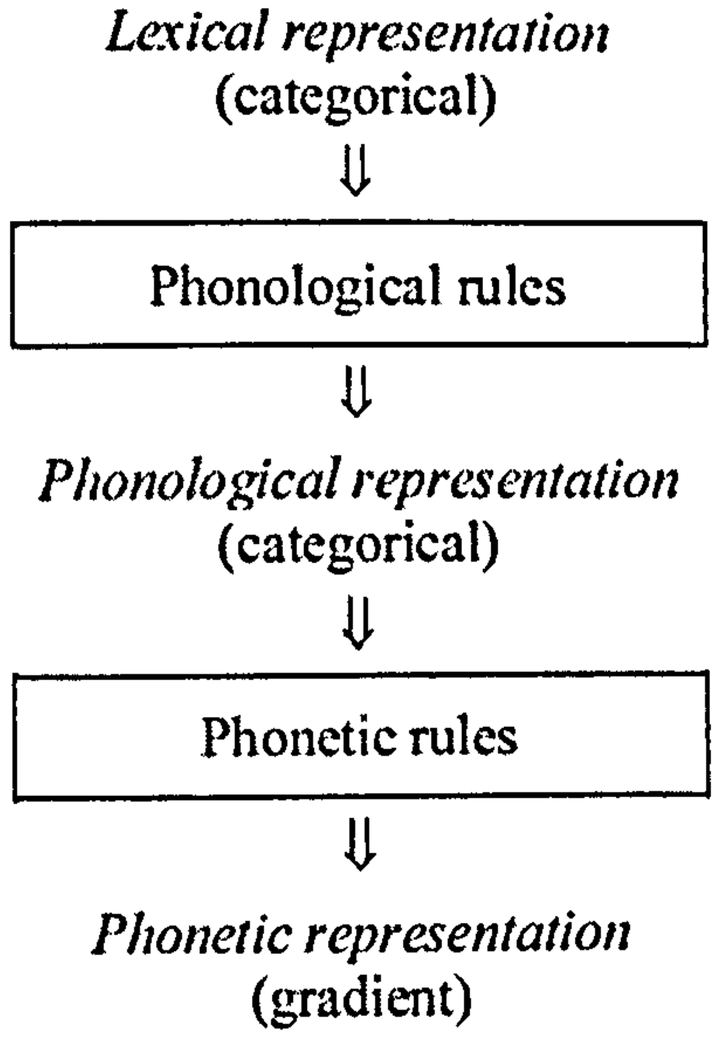
[7] Page numbers for Bermúdez-Otero (2007) refer to the PDF version, available at: <myweb.tiscali.co.uk/bermudez/research.htm?B1=Research>.

Kiparsky 1982 and McMahon 2000), which he models diagrammatically as follows (Bermúdez-Otero 2007: 5):



Bermúdez-Otero (2007: 6) notes that such models of phonology make two central assumptions:

1) *Lexical and phonological discreteness:*
   In lexical and phonological representations, attributes have discrete values.
2) *Modularity:*
   Phonetic rules cannot refer directly to lexical representations.

Furthermore, Bermúdez-Otero points out that this model of phonology predicts certain things about possible sound changes in natural language. If it is true that "In lexical and phonological representations, attributes have discrete values" (see (1) above), then it follows that "phonetically gradual change can take place only through the alteration of the phonetic rules that assign realizations to phonological categories" (Bermúdez-Otero 2007: 6). Additionally, if it is true that "Phonetic rules cannot refer directly to lexical representations" (see (2) above), then "any such alteration must be free of lexical conditioning", thus predicting that phonetically gradual change will apply equally to all instances of a given phoneme in a particular phonological environment. Conversely, Bermúdez-Otero (2007: 6) points out that diffusing changes which involve "the alteration of the lexical representations where lexical

information is stored … must be categorical" if we accept that "In lexical and phonological representations, attributes have discrete values" (see (1) above). That is, lexically gradual changes are phonetically abrupt. Bermúdez-Otero (2007: 7) notes that (1) and (2) above also predict that it is possible for changes to be both phonetically abrupt and lexically abrupt, i.e. that all instances of a given phonemes change, regularly, from one particular pronunciation to another directly, and that this involves change in phonological rules. He summarises (p. 7) the possible types of sound change in a modular feedforward model of phonology as follows:

Table 29: Types of sound change predicted by modular feedforward models of phonology.

Mode of Implementation		Possible?	Innovation in what component of grammar?
phonetic dimension	*lexical dimension*		
abrupt	gradual	Yes	lexical representations
abrupt	abrupt	Yes	phonological rules
gradual	abrupt	Yes	phonetic rules
gradual	gradual	No	

As Table 29 indicates, Bermúdez-Otero finds that three kinds of sound change are possible in modular feedforward models of phonology. The first of these, where change is phonetically abrupt but lexically gradual is equivalent to lexical change, as discussed in, for example, Wang (1969), Wang and Cheng (1977), Krishnamurti (1978) and Labov (1994). The second possibility, whereby both phonetic and phonological change are abrupt is described by Bermúdez-Otero (2007) as involving change in phonological rules, such that all of the lexical items which are subject to a particular phonological rule are affected, and the output for all of these lexical items is changed. The third kind of change, which is lexically abrupt (i.e. all lexical items which contain a particular phonological sequence are affected at the same time), and phonetically gradual, is equivalent to classical Neogrammarian exceptionless sound change (see Section 2.3.2.2). In addition to these three possible kinds of sound change, Bermúdez-Otero (2007) identifies another kind of change, which is impossible because of (1) and (2) above: change which is both lexically gradual and phonetically gradual. In such a change, only some relevant lexical items would be

affected, and the change that they undergo would be phonetically gradual. If evidence were found for change which is both lexically *and* phonetically gradual, this would constitute a significant problem for modular feedforward models of phonology.

If the model of 'reversal of merger by drift' described in the discussion of Question 11 above is correct, this would constitute exactly such a problem for modular feedforward models of phonology. In the case of 'reversal of merger by drift', we have a clear case of phonetically gradual change. In addition, this change does not apply to all of the relevant lexical items together – rather, it affects a subset of the merged lexical set, such that one part of it drifts away from the phonetic space of the other. That is, 'reversal by drift' is not lexically abrupt, since only some of the relevant lexical items undergo the change. This is still so even if some of the 'wrong' lexical items hypercorrect in a phonetically subtle way, since 'reversal of merger by drift' still involves gradual separation of two lexical sets. It may even be the case that the lexical change is even more gradual than a single lexical set splitting into two, as is suggested in Section 7.5 – in the case of the reversal of the 'NURSE-NORTH Merger', the very frequent word 'work' appears to lag behind other words in its phonetic distribution.

Thus, 'reversal of merger by drift', if it occurs, would fill the gap in Bermúdez-Otero's table (Table 29) above, since it is phonetically gradual and lexically gradual. It is clear that further research is needed to validate the notion of 'reversal of merger by drift', although the development of fudged forms in the FOOT-STRUT split and the reversal of the NURSE-SQUARE merger suggests that the development of NURSE and NORTH in this manner is not an isolated case. If 'reversal of merger by drift' is confirmed to be a kind of sound change, this will have important consequences for our understanding of sound change in general, and for modular feedforward models of phonology in particular, and will support the contention by Bybee (1998, 2001) that change can indeed be both lexically and phonetically gradual.

8.4. Conclusion

This thesis has aimed to answer the questions *What is a merger?* and *Can mergers be reversed?*, examining, as a test case, the so-called 'NURSE-NORTH Merger' in

the northeast of England. Taking as its starting point the description of it in Wells (1982), and his suggestion that the reversal of this merger is problematic, the issue of the 'NURSE-NORTH Merger', and of mergers in general, was deconstructed into a series of specific and general questions which help us to answer the questions contained in the title of this thesis.

A review of previous research on mergers and merger-like developments very quickly revealed that the term 'merger' has been applied to a wide range of sociolinguistic phenomena, suggesting that it might, in reality, be something of an idealisation to categorise particular linguistic patterns as either mergers or non-mergers. Rather, there appears to be a continuum, from completely uncontroversial cases of merger shared by all speakers of a language all of the time, to cases of complete distinction maintained by all speakers of a language at all times. In between these two poles lies a range of states, some of which are more like complete mergers and some of which are more like complete distinctions. Near- and variable mergers allow for a distinction to be maintained, even when the surface phonetics are, some of the time, the same. Partial mergers are very similar to complete mergers, but only affect a portion of the suitable lexical items. Other mergers are restricted in one way or another, e.g. geographically, socially and historically, to a lesser or greater degree. That is, they are only characteristic of a subset of the population. Perhaps most crucially of all, a disjunction between production and perception was identified, such that identity in phonetic form need not entail identity of the underlying categories to which the particular items belong. And, in many cases, there is some combination of these different states of affairs.

With this in mind, an analysis was made of the 'NURSE-NORTH Merger', from evidence found in spelling and rhyme, through detailed examination of traditional dialect data for the phenomenon, to analysis of the two lexical sets in a large socially stratified sample of TE (the TLS), and a comparison of all of these with Watt and Milroy's examination of NURSE in the later PVC data. It was very quickly determined that definitive answers to all of the attendant questions might not be possible, given the types of data available to us for the 'merger', and the social distribution and historical development of it. Nevertheless, it became clear, equally quickly, that a simple definition of the 'NURSE-NORTH Merger' is not possible, not only because of

the data available to us, but because the term 'merger' escapes easy definition and may, in fact, be meaningless without substantial qualification.

As far as the traditional dialect data are concerned, the NURSE and NORTH lexical sets appear to have been merged, although the heterogeneous origins of these lexical sets means that the terms 'NURSE' and 'NORTH', as applied by Wells, are not completely suitable for our purposes. That said, there is much that the traditional dialect data do not make explicit, and it is quite possible that the theoretical underpinnings and methods of traditional dialectology (particularly informant selection, data elicitation, and transcription) give us a false picture of complete merger of NURSE and NORTH in a part of the northeast of England. It seems very likely indeed that at least some speakers in the community did not have the 'merger' all or even any of the time, and that it might even have been only variably present in the speech of some of the traditional dialect informants themselves.

The analysis of the TLS data found that, less than 20 years after the SED was conducted, complete phonetic identity of NURSE and NORTH was the exception rather than the norm in Tyneside. In addition to a small number of speakers who did have phonetic identity of NURSE and NORTH, a much larger group had some degree of phonetic overlap of the two lexical sets without identity, and many other speakers had no overlap in the phonetic distributions of NURSE and NORTH whatsoever. The social distribution of the phonetic variants of NURSE and NORTH in the TLS suggests that phonetic identity of the two lexical sets is an older feature, and is one which is disappearing. If we accept the evidence from the traditional dialect data and from the merging speakers in the TLS, this would suggest that not only are back variants of NURSE disappearing but also, since these are identical to NORTH, that there *is* a reversal of the 'NURSE-NORTH Merger' in TE. Nevertheless, problems remain – the phonetic analysis of NURSE and NORTH in the TLS was not, nor could not be, exhaustive. More importantly, we know nothing of how the speakers in the TLS perceived the NURSE and NORTH lexical sets or how they behaved linguistically outside of the 30-45 minutes of conversation available to us. In other words, all of the evidence we have for the 'NURSE-NORTH Merger' points towards it being a merger in production (at least) which is disappearing from the community, rather than, let's say, a near-merger, but, as is the case with many other mergers,

numerous questions still remain which may or may not be answerable now, given the continued disappearance of this merger from the community.

The reversal of mergers is, justifiably, considered to be extremely difficult, if not impossible, by Labov in particular (if, by 'reversal', we mean reversal without getting it wrong). Labov suggests rather that where reversal of genuine merger is attempted, hypercorrection will result. The lack of obvious hypercorrection in the reversal of the 'NURSE-NORTH Merger' is clearly problematic in that case, and has led Wells (1982) to question the nature of the 'merger' in the first place and Watt (1998a) to suggest an alternative solution to the reversal – that of dialect contact. Although Watt is almost certainly correct that dialect contact has had a major part to play in the reversal of the 'NURSE-NORTH Merger', this cannot be the whole story, as it does not explain how speakers have avoided the obvious hypercorrections predicted by both Labov and Wells.

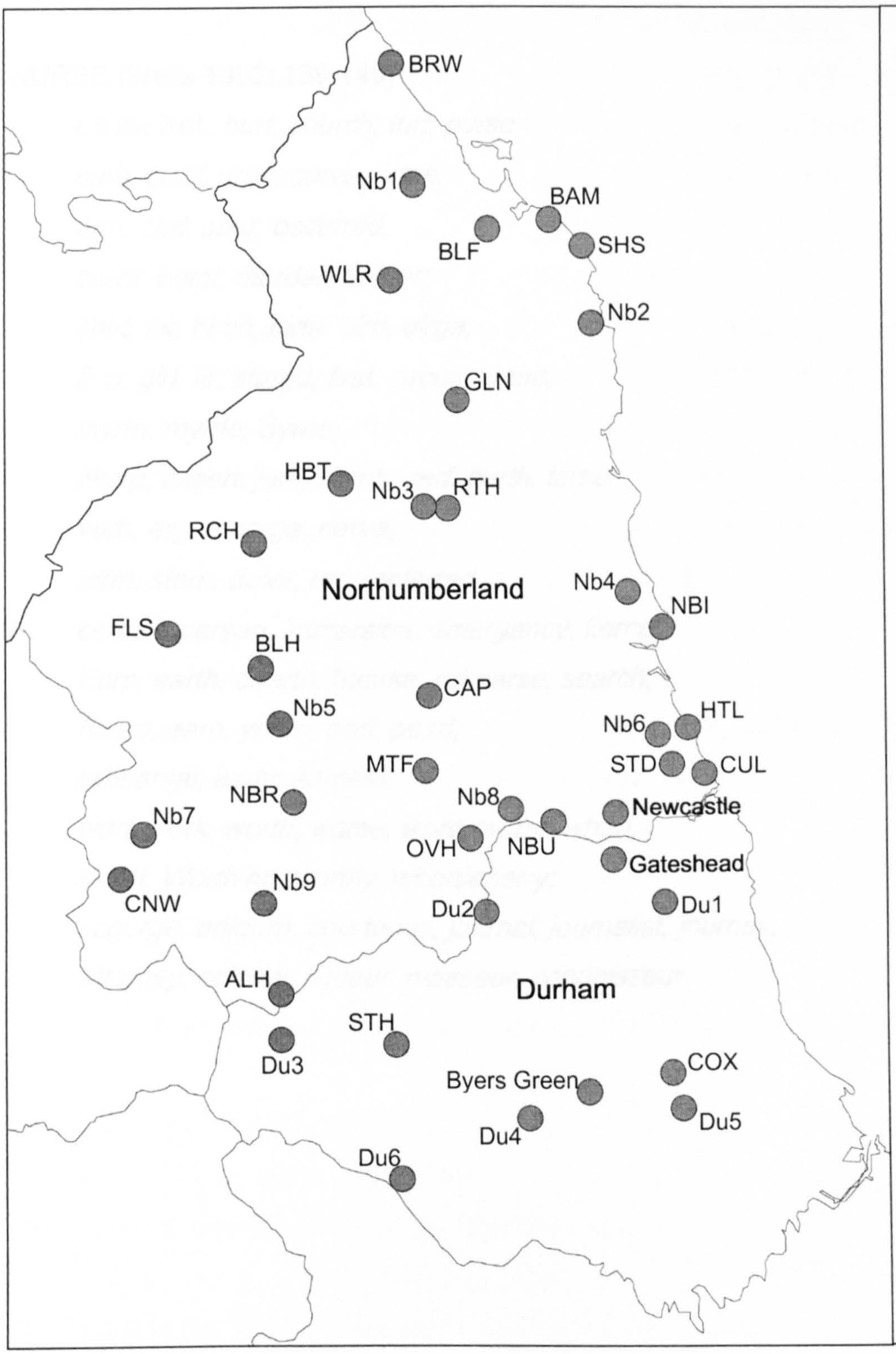
The results of the analysis of the TLS data suggested another solution, however. Although evidence for obvious hypercorrection of NORTH, of the sort hypothesised by Wells (1982), is absent, it appears that NORTH has not remained unaffected by the forward movement of NURSE in the vowel space. Rather, NORTH has come part of the way with NURSE, leading to frequent centralised pronunciations such as [ɵ:]. These intermediate forms remind us of the fudged forms identified by Chambers and Trudgill (1980) in the development of the STRUT vowel in the geographical interface between northern English FOOT-STRUT unity and southern English FOOT-STRUT split. They suggest that it is possible for a merger to be reversed (or a split to be implemented) without straight transfer from one phonetic target to another, perhaps phonetically distant, one. Rather, in what looks like a reversal of merger by drift, the two lexical sets drift apart, such that they gradually assume different phonetic profiles. In the intervening period, a continuum of intermediate pronunciations develops, such that items from the 'wrong' lexical set do move, but on a much more subtle phonetic scale than is predicted by Wells (1982). This solution allows us to 'have our cake and eat it too' – we do not, in the face of substantial evidence for the 'merger' and an equal lack of evidence for obvious hypercorrection, have to deny that it ever existed, and we can allow that mergers can be reversed successfully given the right social conditions.

This solution to the problem comes at a certain cost however. If we adopt modular feedforward models of phonology, it should be impossible for phonetically gradual change (as 'reversal of merger by drift' is) to also be lexically gradual, since phonetically gradual change should affect all relevant instances of a phoneme equally. Where we have lexically specific change, we expect change in underlying representations, which would lead to an instant phonological distinction being made between two lexical sets (whether all relevant lexical items were correctly allocated or not). What need then for phonetically gradual change? If we accept that 'reversal of merger by drift' is possible, then we must also accept that modular feedforward models of phonology are not correct, a position which is, in light of detailed sociophonetic research, becoming increasingly common.

Thus we began with what looked like a well-defined, narrow topic (*What is a merger, and can it be reversed?*) and find that, like all interesting questions in linguistics, it has important consequences for models of sound change, models of phonology, and of definitions of central linguistic concepts such as 'phoneme' and 'language'. That the 'NURSE-NORTH Merger', a merger which is geographically restricted, socially restricted, partial, for some speakers variable in production, for others not (of perception we are more ignorant), which is disappearing from the speech community, should raise such important questions and, perhaps, go some way to answering them, suggests that mergers are an extremely fruitful avenue for future linguistic research.

Appendix 1: Map of locations

(pre-1974 county boundaries)



Orton Corpus:

ALH: Allenheads
BAM: Bamburgh
BLF: Belford
BLH: Bellingham
CAP: Capheaton
CNW: Coanwood
COX: Coxhoe
CUL: Cullercoats
FLS: Falstone
GLN: Glanton
HBT: Harbottle
HTL: Hartley
MTF: Matfen
NBl: Newbiggin
NBR: Newbrough
NBU: Newburn
OVH: Ovingham
RCH: Rochester
RTH: Rothbury
SHS: Seahouses
STD: Seaton Delaval
STH: Stanhope
WLR: Wooler

SED:

Northumberland

Nb1: Lowick
Nb2: Embleton
Nb3: Thropton
Nb4: Ellington
Nb5: Wark
Nb6: Earsdon
Nb7: Haltwhistle
Nb8: Heddon
Nb9: Allendale

Durham

Du1: Washington
Du2: Ebchester
Du3: Wearhead
Du4: Witton-le-Wear
Du5: Bishop Middleham
Du6: Eggleston

Appendix 2: The NURSE, NORTH and FORCE Lexical Sets (Wells 1982)

NURSE (Wells 1982: 139-140)

usurp, *lurk*, *hurt*, *church*, *turf*, *purse*,
curb, *curd*, *urge*, *curve*, *furze*,
turn, *curl*, *spur*, *occurred*,
burnt, *burst*, *murder*, *further;*
shirt, *irk*, *birch*, *birth*, *bird*, *dirge*,
firm, *girl*, *fir*, *stirred*, *first*, *circus*, *virtue;*
myrrh, *myrtle*, *Byrne;*
twerp, *assert*, *jerk*, *perch*, *serf*, *berth*, *terse*,
verb, *erg*, *emerge*, *nerve*,
term, *stern*, *deter*, *err*, *preferred*,
certain, *person*, *immersion*, *emergency*, *kernel;*
Earp, *earth*, *dearth*, *hearse*, *rehearse*, *search*,
heard, *earn*, *yearn*, *earl*, *pearl*,
rehearsal, *early*, *earnest;*
wort, *work*, *worth*, *worse*, *word*, *worm*, *whorl*,
worst, *Worthing*, *worthy*, *whortleberry;*
scourge, *adjourn*, *courteous*, *journal*, *journalist*, *journey;*
attorney, *colonel*, *liqueur*, *masseur*, *connoisseur.*

NORTH (Wells 1982: 160)

or, for, nor, Thor;

war;

Thorpe, assort, cavort, consort, distort, exhort, resort, retort, short, snort, tort, cork, fork, stork, torque, York, scorch, torch, morph, horse, remorse, orb, absorb, accord, chord, cord, lord, record (v.), George, gorge, corm, form, reform, storm, adorn, born, corn, horn, morn, porn, scorn, shorn, thorn, corpse, porpoise, torpid, torpor, fortify, fortunate, fortune, important, corporal, importunate, mortal, mortar, shorten, tortoise, orchestra, orchid, Dorking, torture, forfeit, morpheme, morphia, morphine, orthodox, torso, orbit, order, border, ordinary, organ, organism, organize, Morgan, dormer, Mormon, normal, ornament, corner, forward, fortress;

quart, quarter, quartz, sward, swarm, swarthy, warble, ward, warden, wardrobe, warlock, warm, warmth, warn, warp, Warsaw, wart[166]

FORCE (Wells 1982: 162)

ore, adore, afore, before, bore, chore, core, crore, deplore, explore, fore, galore, gore, ignore, implore, more, ore, pore, restore, score, shore, snore, sore, spore, store, swore, tore, whore, wore, yore;

boar, hoar, oar, roar, soar;

floor, door;

four, pour;

deport, export, fort, import, port, report, sport, support, pork, porch, forth, divorce,

afford, ford, horde, sword, forge,

borne, shorn, sworn, torn, worn,

portent, porter, portrait, proportion, Borneo;

coarse, hoarse, board, hoard, boarder;

court, fourth, course, resource, source, mourn, courtier, mourning[167]

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[166] Wells adds *aura*, *aural*, *Laura* and *Taurus* to NORTH, though I do not consider words of this type in this thesis.

[167] Wells also lists a number of FORCE words where the vowel is followed by /r+V/. These are not considered in this analysis.

Appendix 3: The NURSE and NORTH Vowels in Traditional NbTE

1) The Orton Corpus

ALH (Allenheads)

[ʊə]
afford, board, born, course, curtains, hoard, horn, morning, short, sword, word, worth

[ʊəɹ]
afore

[ɒə]
bird, burden, church, corner, curse, first, force (=waterfall), fork, furr, gorlin, horse(s), hurt, mourn, murder, nurse, spurtle, turn, urchin

[ɔrə]
shirl

[ɛəɹ]
birk, earth, girn, girse, girsle, kirn, kirn-supper, Kirsmas, Kirsty, stirk, third, virgin

[jɛəɹ]
earnest

[ä:]
sermon, serpent, servant, serve, service, vermin, work (n.)

BAM (Bamburgh)

[ɒ:]
acorn, afford, before, birch, bird, boar, board, burn (n.), church, corbie, cord, corner, door, earn, earnest, first, forced, ford, fore-arm, fork, furniture, gormer, heard, horn, horse, learn, morning, Morpeth, murder, Northumberland, oar, sergeant, shirt, slurp, storm, sturdy, surgeon, sword, third, thorn, Thursday, turkey, turmit, turn, turnip, word, work (n.), work (v.), world, worn, worse, worst, worth, yearn

[ɒ˙]
birth, earth, Geordie

[ɔʁə]
bird, born, burn (n.), corn, horn, thorn, word, worm

[ɒ˙ə]
corn, thorn

[ɒ:ʁə]
corn

[ɒə]
swore

[eɐ]
birch, birk, earn, girdle, girn, girth, herd (of animals), herd (v.), kirk, kirned, Kirsenmas, stirk,

[ɛʁə]
birl, earn, girl, herd (shepherd), kirn, learn, third

[ɜ:]
kirsen

[ɑ:]
concern, heard, sermon, servant, service, vermin

[iɐ]
heard, hearse, Percy

[ɷɵ]
door, floor, poor, swore,

[ʊɵ]
floor, moor

BLF (Belford)

[ɔ:]
birch, bird, board, burn (v.), Burton, church, corn, corner, course, curl, curse, dirty, first, ford, fork, fortune, furnace, furnish, horse, hurt, mirth, morning, murder, nurse, purse, short, skirt, sort, storm, third, Thursday, turf, turkey, turn, urchin, verses, word, work (v.), worth

[ɔʁə]
morn

[ɷɐ] ~ [ɷɵ]
afford, afore, board, born

[eɐ]
early, girse, kirn, kirsen, skirt, third

[ɛ:]
girls

[ɜ:]
kirsen, Kirsmas, third

[ɑ:]
certain, clergy, clerk, concern, earth, herb, learn, merchant, mercy, sermon, serpent, serve, service, stern (a.), university, vermin

[a:] (?[ɑ:])
earn

BLH (Bellingham)

[ɒ:]
acorn, afford, astir, bird, boar, board, burn (n.), church, corner, court (v.), curds, curse, earnest, ford, fork,

furniture, horse, morning, mourn, oar, perch (fish), purple, short, stir, store, storm, sturdy, swore, term, third, thirty, turn, turnip, word, world, worst, worts

[ɔ˞·]
earth

[ɔ˞ːʁ]
oar

[ɷɐ]
afford, board, born, corn, court (v.), ford, forenoon, fork, heck-board, hoard, horn, morning, porch, short, sort, storm, stormy, thorn, word

[ɷɒ]
bore (v.), furr, glore

[eɐ]
bird, birk, earn, earnest, earth, girdle, girse, girth, herd (=shepherd), herd (v.), hirsel, kirn, kirsen, learn, perch (fish), stirk, third, thirty

[ɑː]
earth, heard, learn, shirt, stern (n.), work (v.)

BRW (Berwick)

[ʌr]
birth

[ʌrə]
curds, purl, third

[ɔː]
Burgon, or

[ɔ·]
burst, first

[ɔrə]
corn

[ɋɐ]
sorts

[oɐ]
door

[oə]
corner

[o·ə]
swore

[ɷɐ] ~ [ɷə]
door

CAP (Capheaton)

[ɔ˞ː]
absurd, afore, birch, bird, birse, birth, board, born, burly, burst, chirp, church, churn, corn, corner, court (n.), curds, curl, first, force, ford, fork, fortnight, furnish, furniture, Geordie, girn, hoard, horn, horse, kirk, morn, morsel, mortar, mourn, murder, north, northern, nurse, orchard, porch, purse, shirt, shorn, short, spur, stir, store, storm, thir, third, thirty, thorn, turf, turn, word, work (v.), worth

[oː] (?[ɔ˞ː])
board, corn, curds, force, fork, girn, short, skirt

[oːə] (?[ɔ˞ːə])
corn

[ɔʁə]
born

[ɷɐ]
afford, born, coarse, cord, corduroy, corn, court (v.), force, ford, fork, heck-board, hoard, horn, morn, north, shorn, short, storm, thorn

[ɷɐʁ]
thorn

[ɷɒ]
afore, ashore, bore (v.), door, floor, fore, furr, moor, poor, score, whore

[ɷə] (?[ɷɐ])
bore (v.)

[ɷəʁ] (?[ɷɐ])
bore (v.)

[ɷːɒ]
door, floor, moor, poor, whore

[eə] (?[eɐ])
birch, bird, birk, birl, birse, birsle, birth, blirt, earl

[eɐ]
bird, early, earth, girdle, girn, girse, girsle, girth, herd (=shepherd), kirk, kirn, kirn-supper, kirsen, Kirsmas, Kirsty, learn, skirl, third

[ɛ(ː)ɐ]
bird, third

[ɛɐ]
earl, earth, herd (=shepherd), kirk, learn, third, thirty, whirl

[ɛːɐ]
thirty

[ĕɐ]
girn, girsle, girsly, kirsen, Kirsmas, Kirsty

[ɛə] (?[ɛɐ])
girse

[eĕ]
girsly

[æə] (?[æɐ])
girse, herd (=shepherd)

[ɑː]
certain, concern, early, earn, earnest, earth, earthnut, heard, herb, learn, mercy, search, sermon, servant, serve, service, vermin, work (n.)

[ɑːʁ]
heard

CNW (Coanwood)

[ɒ:]
bird, birk, birth, burn (n.), church, clerk, dirt, fern, first, fork, fortnight, fortune, gird, girdle, gorcock, hurt, Kirkby, Kirkhaugh, Kirkstee, kirn, kirtle, nurse, purple, scurvy, skirt, spur, spurling, stirk, thirteen, torment, turkey, turn, word, world, worm

[ɔ]
Yorkshire

[ɔr]
Thursday

[ɒ·:]
furr

[ɔ:ə]
porr

[u·ə]
acorn, afford, affore, board, course, corn, Geordie, hoarse, horn, horse, morning, north, purse, score, short, sort, sport, storm, thorn, turn

[ɛə]
kirn, kirn-supper

[ä:]
certain, servant, serve, service, vermin, work (n.&v.)

COX (Coxhoe)

[ɔ:]
afford, birch, bird, birth, board, border, Bowburn, burden, burn (n.), church, churn, curse, dirt(y), disturb, dursn't, fir, first, force, ford, fork, fortnight, furnace, furnish, furniture, hoarse, horse, hurt, kirk, Kirsmas, mirth, morning, mourn, murder, nurse, purse, shirt, skirt, thirst, thirty, Thursday, turd, turf, turmit, turn, turnip, word, work (v.), world

[ɔ·ə]
boar, corn, door, oar, pork, short, storm

[ɔ]
hoard, horse

[ʊ]
burst, curse, first

[u·ə]
afford, afore, coarse, corn, corner, course, coursing, court (n.), court (v.), door, fork, hoard, morning, short, sort, storm, swore

[ɑuwə]
poor

[ä:]
certain, clergy, concern, deserter, deserve, earn, earnest, earth, fern, heard, learn, mercy, person, search, sermon, serpent, servant, serve, service, shirt, vermin, work (v.), worse

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CUL (Cullercoats)

[ɔ:]
afford, birch, bird, birth, birthday, Birtley, burden, burglar, burn (n.), church, cord, cork, corner, course, court (n.), court (v.), curb, curse, curtain, curtsey, curve, dirt, disturb, dursn't, earnest, Earsdon, earth, firm, first, force, forenoon, fork, fortnight, furnace, furnish, further, Geordie, girdle (1), girdle (2), girdle-cake, herb, horgen, horling, horse, hurt, journey, kernel, morn, morning, mourning, murder, nurse, organ, pork, purpose, purse, scurvy, search, shirt, short, skirt, sort, third, thirsty, thirteen, thirty, Thursday, turbot, turf, Turk, turkey, turn, urn, word, work (n.), work (v.), world, worst, worth

[ɔ·]
earth, furniture

[ɒ:]
girdle (1)

[ɔʁ]
turn, urchin

[ɒʁ]
birch, curse, first, gird, mirth, murder, nurse, purse, turf, worm, worse

[ɒ:]
boar

[ɔ:ʁ]
burn (v.), clergy, dirty, fortnight, hoard, hurt, sermon, skirt, sort, stern (a.), thirteen, Thursday, worth

[ɔʁə]
bird, burden, burn (n.), disturb, first, sword, third, thirst(y), thirty, thorn, turn, word, work (v.)

[ɔ·ʁə]
thirty

[ɔ:ʁə]
afford, bird, board, born, corn, fork, horn, storm, thorn, world

[ɔ:ʁᵘ]
afford

[ɒʁə]
burden, churn

[ɒʁᵘ]
bird, third, word, world

[ɔʁʊ]
curl

[ɔʁᵘ]
storm

[ɒ̈:]
kirk

[ɒ̈:]
birthday, first, thir

[ɒ̈·]
earn

[ɵʁə]
bird, word

[ʔʁə]
north

[o·ə]
curse

[ʊ]
bust

[uə]
horse

[u·ə]
coarse, corner, course, court (n.), court (v.), horse

[uɐ]
sword

[u·ɐ]
cord

[u·ɵ]
afore, core, score, swore

[üə]
thorn

[aʁᵚ]
stern (n.)

[ɑ:]
certainly, clergy, concern, deserve, earn, fern, Germany, heard, herb, jersey, learn, merchant, merciful, mercy, nerve, person, search, sermon, servant, serve, service, shirt, stern (n.), vermin, work (n.), worst

[ɑ:ʁ]
earnest, sermon, serpent, servant, serve, service, shirt, vermin, worst

[ɑ:ʁə]
concern

[ɑ·ʁə]
concern

[ä:]
search, work (n.)

[æ:]
Ferguson

[e:ʁə]
earn, learn

[e:ə]
girl

[e·ə]
search

[eɐ]
girdle (1)

[jɔ]
earth

[(j)ɔ:ʁ]
herb

FLS (Falstone)

[ɒ:]
acorn, afford, birds, born, corn, fork, furniture, heck-board, horse, word

[o:] (?[ɒ:])
afore, board, morning, short, world

[uə]
afore, short, storm

[uɐ]
corn, horn

[ʊɵ]
door

[ɷɐ]
born, ford, hoard

[ɷɵ]
score

[eɐ]
earn

[ɑ:]
mercy

GLN (Glanton)

[ɔ:]
bird, birth, board, burden, church, corn, curse, curtsey, first, fork, hoard, horn, horny, horse, hurt, morn, murder, nurse, purse, short, storm, third, thirty, turmit, turn, turnip, word, work (n.), world, worth

[ɔʁə]
bird, board, corn, horn, morn, third, word, world

[uɵ]
afore

[ɛɐ]
bird, earl, earn, earth, girdle, girl, girsle, herd, kirk, kirn, kirsen, Kirsmas, learn, mirth, third, thirty, urchin

[ɛʁə]
earl, girl, herd, kirn, learn

[ɑ:]
certain, clergy, heard, herb, learn, learnt, mercy, perky, search, sermon, serpent, servant, serve, service, vermin

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HBT (Harbottle)

[ɒ:]
afore, birch, bird, birth, boar, board, burn (n.), church, churn, corbie, corn, corner, course, curds, curse, earth, first, force, fork, furniture, Geordie, hoard, hoarse, horn, horse, hurt, kirk, lord, morn, morning, morsel, murder, northern, nurse, purse, short, spurs, storm, sturded, swore, thir, third, thirteen, thirty, Thursday, Turks, turmit, turn, Turnbull, turnip, word, work (n.), work (v.), world, worth, Yorks

[ɔˑ]
curse

[ɔʁə]
bird, purl

[ɔ̟]
burnt

[ɔ̟ˑ]
unfortunately

[ɔ̟ʁə]
bird, burn (n.), burn (v.), burnt, turn

[ɔ̟:ʁə]
third

[œʁə]
bird

[o̟ɐ]
board

[uɐ]
ford, forenoon

[ʊɐ]
afford, board, coarse, corn, force, ford, foreman, forenoon, sorts

[ʊə]
corn, sorts

[ʊ:ə]
heck-board

[ʊɵ]
score

[ɛə]
bird, girl, girse, herd (of animals), kirk, kirn, third

[ɛɐ]
birses, birth, girse, herd (v.), hirsle, search, stirk, thirteen

[ɛʁə]
herd (shepherd), kirn, third

[eɐ]
earn, girl, kirk, kirn, third

[eə]
third

[ɑ:]
certain, concern, heard, herb, mercy, search, sermon, service, vermin, work (n.)

[ä:]
German, person

[a:]
German

HTL (Hartley)

[ɔ̟:]
afore, bird, birth, boar, born, burn (n.), burnt, burst, Chirton, church, coarse, concern, cord, corner, cornice, course (v.), curlew, dirty, disturb, dursn't, earth, earthen, first, floor, for, force, forehead, fore-shift, forky-tail, furniture, Geordie, girdle, girth, her, hoarse, horse, jerk, journey, lord, lurch, morning, north, nurse, oar, score, stir, sword, swore, thirteen, Thursday, turkey, turmits, turnips, urchin, whirl, word, work (v.), worm, worth

[ɔ̟ˑ]
jerk

[ɔ:ʁə]
burnt

[o̟:]
corn, door, floor,

[o̟ˑ:]
worm

[o̟:]
worm

[ʊɵ]
moor, poor

[ʊ̟ɵ]
moor

[ɑ:ʁə]
concern

MTF (Matfen)

[ʊɐ]
afford, board, cord, corn, court (n.), force, ford, fork, form, horn

[ʊɵ]
afore

[ɔᵚ:]
birch, birth, burden, certain, church, churn, concern, cord, course (v.), curb, curse, dirty, durst, earth, first, fortnight, furnace, furnish, further, girdle, hurdle, hurt, kirk, learn, mercy, nurse, purse, servant, serve, stern (a.), third, thirst, thirty, turkey, turn, work (n.), worse, worst

[ɔ:]
concern, corn, corner, deserve, forcible, foreman, fortunate, fortune, furnace, horse, morning, north, order, porter, servant, short, skirt, turnip, verse, worn

[ɑᵚ:]
certain, clergy, clerk, concern, deserve, earth, learn, mercy, search, sermon, servant, serve, service, stern (a.), vermin

[ɑ:]
earn, sermon, service, vermin

[ɐɐ]
earn, kirn, Kirsmas

NBl (Newbiggin-by-the-Sea)

[ɔ:]
aboard, afford, afore, before, birch, bird, birth, board, born, burden, burst, church, churn, churned, coarse, cord, corn, corner, curb, dirt, door, dursn't, earn, earnest, earth, first, ford, fore, fork, forky, form, fortune, fur, furniture, Geordie, George, gird, girdle, girn, girsle, gormer, gurndle, gurnet, heard, hearse, herd (shepherd), Hirst, hoard, horn, horse, hurt, journey, learn, morning, Morpeth, morsel, murder, oar, ornament, porpoise, port, purl, purple, purpose, score, shirt, shire, short, sort, stir, store, storm, surfeit, swore, thir, third, thirteen, thirty, thorn, thorny, Thursday, torn, turbot, turkey, turmit, turn, turnip, urchin, word, work (v.), working, world, worm, worse, worst, worth

[ɔ˙]
first, girth, gurnet, Kirkhouse, learnt, Morpeth, north, Percy, porpoise, short, sort, surfeit, thirteen, thirty, verse, working, worth

[ɔ]
birch, Kirkhouse, Yorkshire

[ɔʁə]
bird, board, born, burn (n.), curl, form, furniture, gurndle, herd (shepherd), hurl, morn, morning, murdered, sword, thorn, Thursday, torn, turn, word, world, worm

[ɔ:ʁə]
churned, gird, morn, worm

[ɔ̈ʁə]
curl, thorny, Thursday

[ɔ̈]
Kirkhouse

[œ:ʁə]
aboard, board, born, coarse, corn, George

[œ˙ʁə]
board, born, burn (n.), cord, George, turn

[œʁə]
bird, coarse, morn, short, torn

[œ:ʁ]
horn

[œ˙ɐ] ~ [œ˙ɐ̞]
afore, ashore, bore, door, fore, oar, score

[œ:]
fore

[o:]
fore-arm

[æ̝:ʁə]
aboard, afford, astern, board, concern, cord, corn, form, George, stern, storm

[æ̝˙ʁə]
George

[æ̝˙ɐ] ~ [æ̝˙ɐ̞]
afore, ashore, board, corn, fore, oar, roar, score, shore, store, thir

[æ̝˙ə]
heard

[æ̝:]
Germans, work (n.)

[ä:ʁə]
stern (n.)

[ä:]
certain(ly), concern, German(y), heard, learn, mercy, mermaid, person, sermon, serpent, servant, service, vermin, work (n.)

[ä:]
certainly

[ɛ:]
fore, work (n.)

[ɐɐ]
churn, earn, girl

[e:ʁə]
learn

[ɛ˙ɐ̞]
door

[ɛ:ʁə]
board, born

[ɛɐʁə]
church

[ɛʁə]
earn, George, heard, learn, shirt, third, word

[ɷɐ̞]
bore, door, floor, moor, poor, swore

[uɐ̞]
moor

[wɔ̝:]
coarse, curtain

[wɔ̝˙]
curtain

[ʊ]
kirsening, Kirsmas

[iɐ]
heard, Percy

[iɐʁə]
heard

NBR (Newbrough)

[ɷɐ]
afford, board, born, coarse, cord, corn, course, court (n.), court (v.), force (v.), force (= waterfall), ford, forenoon, furr, George, horn, lord, morn, morning, porch, short, sort, storm, sword, thorn, torch-light

[ɷɵ]
afore, bore, score, smore

[ɔ:]
bird, birth, blurt, boar, board, burden, burn (= stream), chork, church, churn, corbie, cord, corduroy, corn, corner, corp, course, curds, curl, curse, earnest, earth, first, fork, fortnight, furniture, Geordie, George, herb, hoard, horse, hurdle, hurt, lord, mirth, morning, morsel, mortice, mourn, murder, north, northern, nurse, oar, Percy, person, pert, porch, purse, search, sermon, servant, shirt, shorn, spur, spurlings, stern (a.), store, storm, sword, swore, sworn, thir, third, thirteen, thirty, thorn, Thursday, torch-light, torn, turn, turnip, word, work (v.), world, worn, worth

[ɔʁə]
birl

[ɑ:]
certain, clerk, concern, divert, earn, earnest, earth, German, heard, herb, learn, mercy, person, search, sermon, serpent, servant, serve, service, shirt, stern (a.), vermin

[eɐ]
berth, birch, bird, birk, birken, birl, birns, birny, birth, blirt, churn, dirdum, dirl, earn, earnest, earth, gird, girdle, girl, girn, girse, herb, herd (of animals), herd (shepherd), herd (v.), hurdle, kernels, kirk, kirn (churn), kirn (harvest), kirsen, Kirsmas, learn, search, shirt, stirk, third

[eə]
girse

[iɐ]
heard, hearse, perch (fish), Percy, pert

NBU (Newburn)

[ɔ:]
afore, astir, before, board1, board2, border, burden, burn (n.), burn (v.), burst, Burt, certain, church, churn, concern, corbie, core, corf, corner, curl(ed), curling, curly, curse, curve, determine, dirt(y), door, dursn't, early, earn, earnest, earnings, Ernest, expert, ferny-tickle, fir, firkin, firm (a.), first, for, fore, forebear, forechain, forenoon, fore-shift, fur, furr, furnish, furniture, further, Geordie, German, gird, girdle1, girdle2, girn, heard, heck-board, her, herb, Herbert, Herbie, horse, hurdle, hurdy-gurdy, hurt, jersey, Kerr, kirve, learn, lirk, lurch, lurcher, merchant, mercy, morn, morning, mortal, mortar, mourning, murder, nerve, nurse, oar, or, order, ordinary, perch (fish), perch (roost), Percy, pirn, purge, purl, purpose, purse, rehearsal, rehearse, search, sergeant, sermon, serpent, servant, serve, service, shirt, shore, short, sir, skirt, snore, sort, sport, spur, spurling, squirt, stir, store, storm, surfeit, surname, surplice, surplus, swore, third, thirst(y), thorn, torment, Turk, turkey, turmit, turn, turnip, turnpike, turse, university, vermin, verse, version, whirly, word, wore, work (n.), work (v.), world, worm, worse, worst, worth, wurzel

[ɔ:]
corn

[ɔ:r(ᵊ)]
burn (n.), morn

[ɷɐ̈]
coarse, hoarse, poor, whore,

[ɷɵ]
moor

[eɐ̈]
early, ferny-tickle, girl, girn, kirn-supper, learn

[eɐ]
girth

[jɔ:]
herb

[jɑ:]
herb

[ɑ:]
certain, concern, determine, early, earn, earnest, earnings, Ernest, expert, Ferguson, German, heard, jersey, learn, merchant, mercy, nerve, rehearsal, rehearse, search, sergeant, sermon, serpent, servant, serve, service, shirt, university, vermin, verse, version, work (n.), worse, worst

[ɑ:r(ᵊ)]
worse

NCL (Newcastle)

[ɔ:]
afore, churn, curb, door, earth, fir, first, ford, forecastle, heck-board, oars, purl, sort, sword, third, thirteen, thirty, whirl, word

[ɔˑ]
Percy

[ɔ:]
burst, church, curtain, earn, floor, furniture, girth, morning, sword, third, Thursday, turnip, work (n.), work (v.), world, worth

[ɷə]
floor, moor

[ɑ:]

earnest, learn, search, sermon, shirt, stern, vermin

[ɑːʁə]
earn

[ä:]
heard, stern, work (n.)

[eə]
girl

OVH (Ovingham)

[uːɵ]
furr

[ɷɐ]
afford, board, born

[ɷɵ]
afore

[ɔ̣ː]
board, born, corn, curds, dirty, fore-end, girdle1, horse, port (wine), short, sort, swore, thorn, torn, word

[ɔː]
absurd, birch, bird, birth, board, border, born, burden, burglar, burn (= stream), burr, burst, church, churn, corn, corner, curb-chain, curl, curse, curtain, dirt, dirty, divorce, first, force, ford, fork, form, fortune, furnish, furniture, girdle1, heard, herb, hoard, horn, horse, import, journey, kernel, lord, lurk, mirth, morning, morsel, murder, nerves, north, nurse, or, order, purse, return, short, skirt, sort, storm, third, thirst, thirteen, thirty, turkey, turmit, turn, turnip, turnpike, urge, word, work (v.), worth

[ɔˑ]
forebears

[ɔ]
turnip

[ɑː]
certain, clergy, clerk, deserve, early, earn, earnest, earth, fern, nerves, person, reserve, search, sermon, serpent, servant, service, vermin, work (n.)

[ä:]
heard, herb, serve

[aː] (?[ɑː])
learn

[jɑː]
herb

[ɐɐ]
girdle1, girdle2, girl, skirt

RTH (Rothbury)

[ɔː]
afore, bird, birth, born, burden, burn (n.), church, coarse, corn, corner, curse, dirty, first, fork, horse, hurt, lord, morn, morning, murder, nurse, purse, stirks, swore, third, thirteen, turn, word, work (n.), work (v.), world, worse, worth

[ɔ̣ᵚː]
board

[ɔʁ]
first

[ɔʁə]
bird, first

[ɷɐ]
horn

[ɛːʁə]
kirn

[eːʁə]
learn

[ɑː]
certain, concern, learn, mercy, search, vermin

[ä:]
certain, clerk, early, earn, earnest, earth, herb, learn, search, sermon, servant, serve, service, worse

[aː]
learn

[ä:]
learn

[ä:ʁə]
learnt

SHS (Seahouses)

[ɔː]
bird, burden, churn, first, gormer, murder, purl, shirt, thirty, work (n.), work (v.)

[ɔˑ]
shirt

[ɔʁə]
bird

[ɒː]
shore

[oː] (?[ɔ̣ː])
fore-fathers, fore-noon, oars

[oːʁə] (?[ɔ̣ːʁə])
board, corn

[ɛɐ] ~ [ɛɒ]
birth, first, girl

[ɛʁə]
bird, earn

[eːʁə]
learn, learnt

[ɑː]
Germans, heard

[ɑːʁə]
stern (n.)

STD (Seaton Delaval)

[ɔː]
course, Earsdon, first, horse, kirn-supper, Norfolk, thirteen, thirty, work (n.), work (v.)

[ɔ̣ː]
morning, nurse, sorts, work (v.)

[ɷɵ]
poor

[ɑː]
concerning, heard, shirt, work (n.)

[äː]
work (n.)

[ɐɐ]
kirn

STH (Stanhope)

[ɔ̣]
fortnight, horse

[ɔː]
fork, morning, snore, sword

[ɔɹɪ]
fork

[ɔˑə]
corner, sword

[ɒˑə]
birch, bird, burden, burn (v.), church, coarse, curse, dirty, fortune, hurt, purse, skirt, turn, worth

[ʊ]
curse, first, nurse, worth

[ʊɹə]
curds

[uˑə]
afford, afore, board, force (=waterfall), hoard, horn, short, turn

[uˑə(ɹ)]
door, floor, poor

[ʊ̆uˑə(ɹ)]
floor, moor

[ɜː]
earth, first, third, worm

[ɛ]
kirsen

[ɛɹɪ]
kirn

[ɛɹə]
kirn

[äː]
certain, concern, earnest, reserve, sermon, serpent, servant, serve, service, vermin, work (n.), worse

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WLR (Wooler)

[oː] (?[ɔ̣ː])
afford, swore

[ɔ̣ˑ]
afford, afore

[ɔː]
afore, birch, bird, birth, boar, born, burden, church, coarse, corner, course, court (v.), curds, curse, curtain, earn, first, fortune, furr, furniture, heck-board, herb, hoard, horse, hurdle, hurt, lord, lurch, morning, morsel, mourn, murder, nurse, purl, purse, search, shirt, short, spur, stirk, store, sturdy, surveyed, sword, third, thirteen, Thursday, turmit, turn, word, work (n.), work (v.), world, worse, worst, worth

[ɔ̣ː]
boar, board, burden, church, coarse, corn, corner, course, courtain, curds, curtain, first, fork, forpit, furr, hoarse, horn, horse, lord, morsel, murdered, pork, purse, sword, thorn, Thursday, word, work (n.), work (v.)

[ɔ̣ː]
board, corn, force, fork, horn, morn, morning, shirt, short, thirteen, yearn

[ɔˑ]
first, northern

[ɔʁə]
bird, born, burn (n.), corn-bing, curds, morn, murdered, Thursday, turd, turn, word, worm

[ɔ̣ʁə]
bird

[ɔ̣ˑə]
board

[oˑʁə] (?[ɔ̣ˑʁə])
corn

[oː] (?[ɔ̣ː])
swore

[ɔ̣ˑː]
thirteen

[ɷɐ]
furs

[ɛə]
herbs, mercy

[ɛɐ]
birch, birth, girdle, girth, kirsen, Kirsmas, learnt, mercy, search, stirk, third, yearn

[ɛ̆ɐ]
earnest, earth

[ɛˑ]
search

[ɛː]
vermin

[ɛːʁ]
birch

[ɛ̈ʁ]
birses

[ee]
churn, earn, girth, hirsel, kirn, learn

[ĕe]
yearn

[eɐʁə]
ferns

[e:ʁə]
learn

[ɛʁə]
concern, dirl, earn, fern, gird, girl, herbs, herd (of animals), herd (shepherd), kirn, learnt, pirn, third

[ɛ:ʁə]
ferns

[ɛ:]
hirsel

[ɛˑə]
Kirk-

[ɛᵉ]
kirsen

[ɑ:]
certain, clergy. concern, earn, heard, herb, learn, mercy, sermon, serpent, servant, serve, service, vermin, work (n.), worse

[ɑˑ]
nervous, worst

[ä:]
deserves, work (n.)

[jɑ:]
herbs

[jĕɒ]
earn, earnest

[jĕɒ:]
earth

[jɔ:]
earth

[ie]
pert

---

2) The SED

Nb1 (Lowick)

[ɔ̈ʷ:]
horse(s), fork (v.), forker, forks (n.), hay-fork

[ɔ̈ʁ:]
horse(s), fork (v.), forker, forks (n.), hay-fork

[ɔ:]
slurp

[ɔʷ:]
arse-board, bake-board, burglars, burn (n.), core, corpse, curdle, cursing, dirt, dursn't, first, fore-noon, fortnight, hoarse, house-work, hurts, morn, morning, mourners, north, shirt, sort (n.), spurns (n.), tail-board, thirsty, thirteen, turmits, turn(s), work (n.&v.), working, worms, worse, worst

[ɔʁə]
birds, burn (n.), corn, curds, morn, Thursday, turn(s)

[ɔʷʁə]
burnt, churn

[ʏʁə]
pirls

[ɷɔʷ]
ford

[ɛʁ]
perch (n.)

[ɛə]
Kirsmas

[ɛᵉʷ]
kirn

[ɛɔʷ]
ferny-tickle, girdle

[ɛ̨ɔʷ]
birses, earn, girth, kirk

[ɛ̨ˑɔʷ]
earn

[ɛˑɔʷ]
birch, ferns

[ɛʁə]
herd (= shepherd), learned, pirn

[aʷ:]
heard, third, thirteen, thirty

[aʁə]
learn

Nb2 (Embleton)

[ɔ:]
gorbets, hawthorn, slurping

[ɔˑ]
slurping

[ɔˑə]
hoarse

[ɔʷ:]
acorn, boar, church, churchyard, corn, corners, curd, cursing, earn, forenoon, forks (v.), hawthorn; heard, horse, hurts, more, morning, mourners, purpose, scurvy, side-boards, sort (n.), tail-board, thirsty, thirty, Thursday, turn, turnip, wash-board, weren't, work (n.), work (v.), working

[ɔ:ʁ]
moulding-board

[ɔʷ:ᵉ]

door, morning, north

[ɔʁ·ᵊ]
morn, morning

[ɔʁ·]
first, shirt, work (n.)

[ɔᵏ]
corpse, curses (n.), first, for, fortnight, halfpennyworth, purpose, scurf, tail-board, thirteen, turn, were

[ɔʁ]
birch

[ɔ·ʁ]
first

[ɔʁᵊ]
burn (n.)

[ɔʁə]
bird(s), burnt, morn('s), spurn-marks, worms

[ö·ᵏ]
bake-board

[öʁ:]
corn, dursn't, fork (n./v.), forker, forking, horse(s)

[ɔ:]
yorks

[ɔʁ:]
corn

[ɑʁ:]
ford, heck-board, side-board

[uɔᵏ]
floor

[uɔᵏʁ + V]
pour

[œ:]
sore

[œ:ə]

acorn

[ə:]
thirteen

[əʁ]
thirty

[əʁə]
ferny-tickles, third

[ɛʁ]
herd (of cattle), perches (n.)

[ɛəᵏ]
girth

[ɛʁə]
fern, herd (=shepherd), kirn

[ɛ·ə]
verger

[aʁ:]
learned

Nb3 (Thropton)

[öʁ:]
first, forking, furrow-horse, horses, land-horse, limber-horse

[ö·ᵊ]
horse

[öᵏ]
fork (v.)

[ɒ]
spurlings

[oʁ:]
forker

[ɔ:]
morning, slurping

[ɔᵏ:]
birds, burglars, corpse, cur, curds, cursing, dirty, end-board, ford, forenoon, fork (n.), fortnight, heck-

board, north, purpose, sort (n.), sword, turmits, worked, working

[ɔʁ:ʁ]
birds

[ɔʁ·]
curdle, dursn't, first, fortnight, morn, morning, Thursday, working

[ɔᵏ]
for, forty, halfpennyworth, thirsty, thirteen, thirty, turmit-dicky, turned, turning

[ɔᵏʁ]
birch, ferns, hurts, turn-out, worms

[ɔʁ]
burn (n.), morn

[ɷə]
pissy-moors

[u·ɔᵏ]
door, floor

[uɔᵏʁ (?+V)]
pour

[œ:]
mouldy-board, mourners (?moaners)

[œʁ:]
roar

[œ·ə]
boar

[ø:]
bake-board

[e·ɔᵏ]
girdle, kirk, kirn

[ęɔᵏ]
kirk-yard

[ɛᵏʁ]
verger

[ɛɔᵏ]

birses, girth

[ɛəʁ]
ferny-tickles

[ɛˑəᵊ]
third

[ɛʁə]
herd (=shepherd), pirn

[aᵊː]
earn, heard, learnt

[aᵊˑʁ]
worst

[aˑʁ]
heard

[aᵊ]
heard

[aᵊʁ]
work (n.)

[aʊə]
worse

Nb4 (Ellington)

[ɔᵊː]
hawthorn

[ɔˑ]
raw-gorbet, spurling(s)

[ɔᵊː]
acorn, bake-board, birch, birds, burglars, burn (n.), churn, core, corn, corners, corpse, curdle, curds, cursing, door, dursn't, earned, earth, fern, first, floor, ford, fork (n./v.), forker, fortnight, forty, girdle, girth, hawthorn, heck-board, horse, hurdles, hurts, Kirsmas, morn, morning, mouldy-board, north, perch (n.), purpose, shirt, side-boards, sort (n.), sports, storm, supports (n.), third, thirsty, thirteen, thirty, Thursday, turmits, turn, work (n.&v.), working, worms, yorks

[ɔᵊ]
forky-tail

[ɔᵊʁə]
burnt

[ɔᵊːᵊ]
morn

[œː]
forenoon

[œˑ]
morning

[øə]
mourners (?moaners)

[ʊə]
pissy-moors

[ʊɔᵊ]
floor

[uɔᵊ]
door

[uˑɔᵊ]
floor

[eɔᵊ]
kirk, kirk-garth, kirn

[ɛəʊ]
fern-tickles

[ɛʊə]
herd (= shepherd)

[aˑ]
heard

[aᵊˑ]
heard, learned, learning, work (n.), work-days, worse, worst

Nb5 (Wark)

[ʊˑᵊ]
morning

[ʊəᵊ]
-boards, morn, morning

[ʊˑəᵊ]
morning

[o̞ɔᵊ]
ford

[øː]
-board

[øə]
-board

[ɔː]
spurlings

[ɔᵊ]
churchyard, north, thirsty

[ɔᵊˑ]
dursn't, forty, thirty, turnpike

[ɔᵊː]
bird, boar, burglars, burn (v.), church, core, corner, corpse, cursing, dirty, dursn't, fern, first, fortnight, horn-burn, -horse, hurts, mourners, purpose(ly), support, swords, third, thirteen, Thursday, turmits, turn, work (n.), work (v.), work-days, worm, yorks

[ɔʁ]
burn (stream), burnt

[ɔᵊʁ]
horse

[ɔʁᵊ]
morn

[ɔʁə]
third

[ɔ̃ː]
horses

[ɔ̈ʶ:]
turn

[ɔ̈ʶ:]
fork, forker, horse(s)

[əʁ]
fern-tickles

[eɔʶ]
girdle, kirn (churn)

[ɛɔʶ]
birk, girth, kirk, Kirkfield, stirk

[ɛ̣ʁ]
herd (shepherd)

[aʶ:]
heard, learnt, nervous

[äʶ:]
earn

[ɑʶ:]
worse, worst

[ɪəʶ]
hearse

Nb6 (Earsdon)

[ɔʶ:]
birch, birds, burglars, burn (n.), burnt, church, churn, ?cork, cursing, dursn't, earned, first, for, ford, forenoon, forks, forky-tail, hay-fork, heard, heck-board, horseman, horses, hurts, learn, morn, morning, morning-glory, mourner, north, shaft-horse, sort, third, thirteen, thirty, Thursday, trace-horse, turning, work (n.), worms, yorks

[ɔʶ:ʁ]
morning

[ɔ:]
curdle, bake-board, heck-board, mould-board, slurping, spurlings

[oəʶ]
ford

[əʶ:]
circle, girdle

[aʶ:]
fern-tickles, heard, work (n.), work-days, worse, worst

[eə]
girl

Nb7 (Haltwhistle)

[ɔɹ]
first

[ɔ:]
fortnight, purpose, spurlings

[ɔʶ]
burglars, church-yard, turning

[ɔʶ:]
birds, burn (n.), burr, corpse, cursing, dursn't, forker, forks, forwards, horn-burning, horse, hurts, morn, mourners, porr (=poker), purpose, third, thirty, Thursday, turmits, turn, urchin, work (n.), work (v.), worker, worms, worst

[ɔ̈ʶ:]
furrow-horse, horses

[ɷə]
bake-board, boar, corn, end-board, fore-noon, horn, morning, mould-board, north, sorting, tail-board, thorn-dike, thorns, tomorn

[ɷɔʶ]
ford, roars

[uɔʶ]
door

[u·ə]
floor

[ɛʁ]
herd (=shepherd)

[ɛɔ]
thirsty

[ɛɔʶ]
birk, girth, kirk, stirk

[ɛə]
dirt, Kirsmas, shirt

[ɛ·ə]
perches (n.)

[ɛəʶ]
earn

[ɛ·əʶ]
earn

[ɛʁə]
fern

[ɛ̣ɔʶ]
girdle, kirn

[e·ɔʶ]
girth-rope

[ɪə]
learned

[a]
fern-tickles

[aʶ:]
thirteen, thirty, worse

Nb8 (Heddon-on-the-Wall)

[ɔʶ:]
bake-board, birch, birds, burglars, burn (n.), burn (v.), burnt, church, churn, corners, curdle, curds, cursing, dirty, dursn't, earth, fern, first, for, ford, fortnight, girdle, girth, heck-board, hurts, morn, morning, mould-board, mourners, north, ordinary, shaft-horse, shirt, sort, swords, third, thirsty,

thirteen, thirty, Thursday, turmits, turn, work (v.), working, worms, yorks

[ɔ:]
dirt, slurping, spurlings

[ɔᵊ]
further, trace-horse, turnips

[ɔ̈ᵊ:]
fork, forker, furrow-horse, hay-fork, horses

[ɔ̈:]
land-horse

[ɔ·ʁᵊ]
dursn't

[ɔʁᵊ]
dursn't

[ɔə]
boar

[aᵚ:]
fern-tickles, heard, learn, learnt, work (n.), work-days, worse, worst

[a:]
earn

Nb9 (Allendale)

[ɔ:]
cursing, fortnight, furr-horse, horse(s), north, purpose, shirl, slurps, thirsty, thirteen

[ɔᵚ:]
thirteen, thirty, working

[ɔə]
mourners

[ɔ·ᵊ]
hurt(s)

[ɔ·ə]
side-boards

[ɔ:ᵊ]
arse-first, boar, burn (n.), burner, curd (v.), curds (n.), ford, forks, gorling, horse(s), hurt(s), work (v.)

[ɔ:ə]
horse(s)

[ɔ̣:ᵊ]
hurdles

[ɔ̣:ə]
burr

[oə]
thir, sort

[o·ə]
thir

[o·əɹ]
furr-horse

[o̞ə]
arse-board, bake-board, birds, bour-tree, church, corn, door, first, forenoon, furze, horn-burn, horns (=calluses), morning, mould-board, nursed-lamb, side-board, sorting, spurlings, thorn-dike, Thursday, tomorn, turn, turnips, worms

[o̞əɹ]
furr

[o̞·ə]
furr

[ə:]
burglars, horn-burn

[əᵚ:]
church

[ɛə]
earn, heard, Kirsmas, third

[ɛ̣ə]
birch, girdle, kirn

[ɐə]
ferns, girl, herd (=shepherd)

[eə]
girth

[ɪə]
floor, learned

[a:]
fern-tickles, work (n.), worse, worst

Du1 (Washington)

[ɔᵚ:]
birch, bird(s), boar, bour-tree, bread-board, burglars, burn (n.), burnt, burr, church, churn, corners, cursing, dirty, dursn't, earth, earth-closet, fern, first, for, ford, forehead, forenoon, forks, forky-tail, fortnight, girdle, girth, hay-fork, heard, hoar-frost, hoarse, horn, horses, hurts, kirk-hole, morn, morning, mourners, north, perch (=roost), purpose, side-boards, sort, sorts (n.), spurlings, third, thirsty, thirteen, Thursday, turf, turnips, verger, work (n.), work-days, working, worms, yorks

[ɔᵚ]
birsles, ordinaries

[ɒ]
shaft-horse

[aᵚ:]
certain, heard, learn, learnt, shirt, worse, worst

[a:]
certainly

[ɑᵚ:]
shirt

Du 2 (Ebchester)

[ɔᵚ:]
acorn, birch, birds, boar, board, burglars, burn (n.), burnt, church, churn (n.), corn, corners, corpse,

curdle, cursing, dirty, dursn't, first, floor, ford, fork, fortnight, forty, girdle, gorse, horse, -horse, hurts, morn, morning, mourners, north, ordinaries, sort (n.), storm, support (v.), third, thirsty, thirteen, thirty, thorn, Thursday, turmits, turn(ed), work (n.), working, worms

[ɔ:]
-horse, slurping, spurlings, yorkers

[ɔᵛ]
-horse

[jɔᵛ:]
forker

[uə]
door

[eɔᵛ]
girth, herd (=shepherd)

[e·ə]
stirk

[aᵛ:]
earn, fern, fern-tickles, heard, learned, learnt, shirt, worse, worst

[a:]
fern-tickled

Du3 (Wearhead)

[ɒ]
chain-horse, farside-horse, fortnight, horses, nearside-horse, shaft-horse

[ɔ]
saw-horse

[ɔ·]
dursn't

[ɔ:]
corn, corn-chest, corners, corpse, forks, hay-fork, horn(s), horn-burn, morning, turn

[ɔ:r]
acorn

[ɔə]
hoarse

[ɔ·ᵊ]
morning, tomorn

[ɔ̣·ᵊɹ]
porr (=poker)

[ɷ]
first

[ɷɹᵊ]
shirl

[ɷə]
bake-board, birds, boar, burn (n.), church-garth, church-yard, end-board, ford, forenoon, north, thir, Thursday, turnips

[ɷəɹ]
mourners, purpose

[ɋə]
church, hurts

[ɋəɹ]
burn (n.)

[ə]
girt (=great), girth, thirsty, thirteen, thirty

[ə:]
burglars, curd, girdle, third

[əɹ]
cursing, girt (=great), Kirsmas, working

[ər]
hurdles

[əɹə]
kirn, worms

[ɜ:]
birch, fern

[ɛə]
spurlings

[jə:]
earn

[a]
worse

[a:]
heard, learned, worse, worst

[aɹ]
work (n.), work-days

[ar]
work (n.)

Du4 (Witton-le-Wear)

[ə]
burnt, church, cursing, first, girdle, girth, learnt, shirt, thirsty, thirteen, thirty, turn, worse, worst

[ə:]
birch, birds, bour-tree, burn (n.), churn, curd(s), curdle, door, fern, forenoon, forward, furr, further, girdle, hurdles, morning, purpose, spurlings, third, Thursday, tomorn, turn, turnips, work (n.), working, worms

[ə̨]
fortnight

[ə̨:]
fork(s), morning

[ə̈]
fortnight

[œ:]
back-board, end-board, ford, horns, mourners

[ɔ:]
acorn, corners, door, ford, fork, forker, hand-fork, hay-fork, horn(s), mould-board, mourners, side-boards, sort

[ɔːᵊ]
tomorn

[ɔ]
north, shaft-horse

[ɒ]
forty, furr-horse, horse(s), land-horse, nearside-horse, offside-horse, trace-horse, wooden-horse

[ɷ]
burnt, turnip(s)

[ɷə]
board

[ɷə]
yorks

[uə]
door

[uˑə]
door, floor

[aː]
work (n.)

[eː]
burglars (*sic.*)

Du5 (Bishop Middleham)

[ə]
burnt, cursing, first, girth, hurts, third, thirsty, thirteen, thirty, turds, turn, turnip(s), working

[əː]
birch, birds, bour-tree, burglars, church, curd(s), curdle, fern, for, forenoon, fork(s), furr, girdle, girls, hag-worms, hurdles, kirn, morning, perch (=roost), scurf, side-boards, Thursday, urchin, worms, yorks

[œː]
back-board, board, burr (-ɹ+V), corpse, floor, forenoon, fork(s), hay-fork, horn(s), horning, long-fork, mould-board, short, sort, spurlings, tomorn

[œːᵊ]
picking-fork, pitch-fork

[ɒ]
fortnight, forty, furr-horse, horse(s), land-horse

[ɔ]
horse(s), near-horse, north, shaft-horse, trace-horse

[ɔː]
corn, far-horse, floor, fork(er), forward, horns, morning, mourners, tomorn

[ɔːᵊ]
boar

[oə]
ford

[ᵊuːəɹ]
door

[ɤ]
turds

[aː]
work (n.)

[æː]
learnt, work (n.), worse, worst

Du6 (Eggleston)

[ə]
cursing, earth, first, girse, girse-nail, girth, Kirsmas, thirsty, thirteen, thirty, ?trace-horse, worst

[əɹ]
fork(s), fork-lightning, hay-fork

[əː]
birds, birk, burglars, burr, church, curd(s), fern, forenoon, furr-horse, herds-man, horn-burn, hurdles, hurts, kirn, mourners, purpose, shirl, third, Thursday, turn, urchin, working, worms

[əɹə]
worms

[œː]
birch, birk

[œː]
fore-finger, girdle, shaft-horse

[ɵ̈ː]
side-boards

[ɒ]
fortnight, furr-horse, horse(s), horse-man, inside-horse, land-horse, north, saw-horse

[ɔ]
forty

[ɔː]
acorn, boar, board, corn, end-board, ford, fork(er), horn(s), horn-burn, morning, mould-board, pitch-fork, porr, snorking, sort, store-pig, supports, tomorn, Yorks

[ɷɹ]
church, kirning

[ɷə]
fern, furr, Thursday, turnip(s)

[ɛɷə]
door

[aː]
?ford, work (n.), worse

[eˑə]
learnt

[ẹˑə]
learnt

[ɪə]
floor

Other Sources

Orton (1933) (Byers Green)

[ə:]
astir, birch, bird, birk, birth, birthday, burden, burglar, burn, chirp, church, churn, circle, course, cur, curb, curse, curtain, curve, dirty, disturb, early, earnest, earth, fern, firm, first, ford, fur, furnace, furnish, furniture, furr, further, Germany, girdle, girl, girth, girt, hurdle, hurt, journey, kernel, Kirk, kirn, murder, nurse, pearl, purpose, purse, skirt, stir, surface, surgeon, sword ([wə:]), third, thirst, thirteen ([ə]), thirty, Thursday, turf, turmit, turnip, word, work (v.), world, worm, worse, worst, worth

[œ:]
afore, afford, board, border, bore, born, cord, core, cork, corn, corner, cornet, cornice, door, floor, force (n. & v.), force (n.), ford, forge, fork, form, fortune, forward, Geordie, George, horn, hornet, horse, inform, Lord, morn, morning, mortal, mortar, north, orchard, ordained, order, ordinary, organ, ornament, porch, pork, port (wine), porter, roar, scorch, score, scorn, short, snore, sort, sport, store, storm, sworn, thorn, worn, York, Yorkshire

[œ]
fortnight

[æ:]
certain, clerk, concern, court (v.), earn, German, Germany, learn, nerve, reserved, sergeant, sermon, servant, serve, service, shirt, term, verdict, verge, vermin, verse, work (n.), world, worse, worst

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Viereck (1966) (Gateshead)

/ɔ/
bird (x2), board, cord, curve, dirt, earth, first, fork, fur, George, Geordie (x10), girl (x2), heard, hurts (v.), lurch, organ, person, third, turns (v.), work (x3), worse

[ɔ:]
first, Geordie (x8), hurts (v.), third, turns (v.), work

/ɑ/
worn

Appendix 4: Social Data Gathered by the TLS

(Jones-Sargent 1983: 149-157)

1) Citiness of informant
2) Regionality of informant
3) Parents' regionality
4) Number of moves per 5-year period before marriage
5) Number of moves per 5-year period after marriage
6) Age
7) Sex
8) School leaving age
9) Tertiary and further education
10) Attitude to education (self)
11) Attitude to education (children)
12) Distinction between education of girls and boys
13) Positive distinction between parental and school roles
14) Method of parental control of children
15) Marital status
16) Religion
17) Nuclear family size
18) Sex distribution of children
19) Average gap between offspring
20) Distance of spouses' primary regionality
21) Micro-environmental preference (sentiment)
22) Micro-environmental preference (housing)
23) Assessment of décor and furnishing
24) Rateable value of dwelling
25) Macro-environmental preference (type/size)
26) Positive Tyneside consciousness
27) Social integration with neighbours
28) Informant's father's occupation
29) Informant's occupation
30) Informant's first occupation
31) Job preference
32) Job satisfaction
33) TV/radio - patterns of viewing/listening
34) Regular drinking habit
35) Leisure satisfaction
36) Hobbies
37) Connection between occupation and voting behaviour
38) Voting preference

Appendix 5: An Orthographic Transcription of a TLS Interview (G325)

See the NECTE website: www.ncl.ac.uk/necte

interviewer: [TLS/01]
speaker(s): [TLS/G325]
other participants: [TLS/G325a] husband

[TLS/01] *0000 eh that's right ehm well just start at the beginning could you tell us eh where you were born please? [TLS/01]
[TLS/G325] where was I born? in morrison-street gateshead [TLS/G325]
[TLS/01] were you yes [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] and eh whereabouts else have you lived since then you-know? how long did you stay there? [TLS/01]
[TLS/G325] I've always lived here I lived down there until I was married [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] and when *0020 I was married I moved into this [ii] house [TLS/G325]
[TLS/01] moved here? so just the two places? [TLS/01]
[TLS/G325] just the two places [TLS/G325]
[TLS/01] ehm .. which did you like best you-know as a place to live [ii] {x} [TLS/01]
[TLS/G325] between the two? [TLS/G325]
[TLS/01] yeah [TLS/01]
[TLS/G325] oh well that's my home @ down there [TLS/G325]
[TLS/01] is it? [TLS/01]
[TLS/G325] yes this is my second home it's just .. mmhm [TLS/G325]
[TLS/01] yeah do you think it's a good part of the town to live down there? [TLS/01]
[TLS/G325] *0040 well not now it was when we were j- .. kiddies like-you-know children because we used to have to make our own enjoyment and-that [TLS/G325]
[TLS/01] mm [TLS/01]
[TLS/G325] you-know [TLS/G325]
[TLS/01] did you find it a very friendly sort-of place? [TLS/01]
[TLS/G325] oh yes very much is when everybody gets together [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] there was no vandalism and anything when we were kids you-know [TLS/G325]
[TLS/01] no [TLS/01]
[TLS/G325] nothing *0060 like that [TLS/G325]
[TLS/01] done a good few interviews down there you-know [TLS/01]
[TLS/G325] have you? [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] ah [TLS/G325]
[TLS/01] that's right [TLS/01]
[TLS/G325] people are eh .. they would help each other eh neighbours in those days you-know sort-of poverty sort-of kept us together I think [TLS/G325]
[TLS/01] yes mm eh would you say that you were fairly attached to gateshead as a place to live in [ii] you-know do you think you would *0080 ever leave? [TLS/01]
[TLS/G325] oh I should think yes I'm attached to gateshead [ii] yes definitely [TLS/G325]
[TLS/01] aye you'd never go to newcastle for-instance {xx do you think you would ever live over there} [TLS/01]
[TLS/G325] not to live I would never go there to live no I like to go and visit but shop but not to not live [TLS/G325]
[TLS/01] aye what about eh you-know tyneside compared to the rest of the country? do you think tyneside's a better place than .. you-know? [TLS/01]
[TLS/G325] *0100 well personally myself I think the you see we've c- advanced a lot in gateshead eh .. {xx I think} gateshead council have done wonders you-know in gateshead [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] myself I've eh apart from here I think eh I've always liked down south if I if I wanted to move like it would have been down london {x} [TLS/G325]
[TLS/01] yes have you been down there on holiday? [TLS/01]
[TLS/G325] *0120 visiting yes I used to have a brother lived down there [TLS/G325]

[TLS/01] mm yes eh do you find that eh tynesiders are very different from people from other parts of the country you-know in your experience [TLS/01]
[TLS/G325] oh yes I think eh it's a bit of a fallacy that they're all friendly mind [TLS/G325]
[TLS/01] @ yes [TLS/01]
[TLS/G325] I found that out I *0140 think this is myself because even in these places you can if you were living on your own I think you could be lonely [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] in the northeast ... myself [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] I've always found the cockneys don-t get such a grand name but I've always found them very nice people mmhm very nice friendly people {xx} ((backgroud noise caused by a vehicle)) [TLS/G325]
[TLS/01] eh *0160 whereabouts were your parents born they were born in gateshead as well? [TLS/01]
[TLS/G325] well I-mean my mother was fetched up in blackhill [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] and my father lived in newcastle and then he went to work at during the war at coventry
[TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] that's a place I like I visit that [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] because his {xx} he still keeps in touch *0180 with we and he's been dead for about eighteen year we still keep in touch [TLS/G325]
[TLS/01] yes seems to be a nice place that I've never [ii] been [TLS/01]
[TLS/G325] oh it's nice lovely shopping centre [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] nice shopping centre [TLS/G325]
[TLS/01] ehm what was your father'z occupation what did he do? [TLS/01]
[TLS/G325] he was a general labourer [TLS/G325]
[TLS/01] yes .. ehm *0200 ... ((4 second pause)) could you tell us please eh which age group you come into on that card? if you could just say the letter [TLS/01]
[TLS/G325] which age group eh .. well I'm in between the two shall I say the one nearest or go on to eh the last one? [TLS/G325]
[TLS/01] @ complement yourself [TLS/01]
[TLS/G325] compliment *0220 oh well I'll say between the forty-ones and fifties you-see [TLS/G325]
[TLS/01] @ eh .. and on what basis do you occupy this house? again if you could just say the letter [TLS/01]
[TLS/G325] well it's just rented this one yes [TLS/G325]
[TLS/01] yes mm mm ehm ... ((5 second pause)) eh you're doing a you are *0240 working at the moment?
[TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] yeah whereabouts do you work? [TLS/01]
[TLS/G325] the post-office [TLS/G325]
[TLS/01] ehm where wh- which one {xx} [TLS/01]
[TLS/G325] the telephone exchange [TLS/G325]
[TLS/01] oh I see in [ii] newcastle? [TLS/01]
[TLS/G325] newcastle carlyle-house [TLS/G325]
[TLS/01] yeah is that what what kind of a job's that [ii] do you enjoy it? [TLS/01]
[TLS/G325] I'm cleaning oh I like it yes uhhuh and I like it uhhuh [TLS/G325]
[TLS/01] ehm .. *0260 what sort of ehm .. what sort of other jobs have you done in your life you-know?
[TLS/01]
[TLS/G325] shop assistant I've always been a shop assistant [TLS/G325]
[TLS/01] have you? [TLS/01]
[TLS/G325] yeah [TLS/G325]
[TLS/01] is that what you did when you first left school? [TLS/01]
[TLS/G325] ah yes I went to the shop and eh .. mostly from one shop to another you-know not a lot of shops but eh what I did I went from one shop to another *0280 I was in the {xx} and grocery line you-know that's what I like [TLS/G325]
[TLS/01] aye did you used to work around here [ii] in shops? [TLS/01]
[TLS/G325] I used to work in the co-op over the road [iia] it used to be a fruit shop I used to work over there [iib] [TLS/G325]
[TLS/01] [iia] did you? [iib] oh [TLS/01]
[TLS/G325] then eh I had to give it up for the little girl then I went into the cleaning work because it was part-time you-see [ii] couple of hours in the morning and couple of hours at night [TLS/G325]
[TLS/01] yes is it yeah is it just part-*0300 time that you work now like? [TLS/01]
[TLS/G325] eh well no now I work full-time but it still shifts you-know I still go morning and night [TLS/G325]

[TLS/01] yes what what time do you start? [TLS/01]
[TLS/G325] I start at six-o-clock in the morning mmhm [TLS/G325]
[TLS/01] @ yeah [TLS/01]
[TLS/G325] I've done a shift by dinnertime nearly [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] I'm finished then I go back tonight again you-see gan about four-o-clock [TLS/G325]
[TLS/01] do you? [TLS/01]
[TLS/G325] mmhm [TLS/G325]
[TLS/01] yes .. *0320 ehm ... ((4 second pause)) eh .. eh .. how old were you when you left school? [TLS/01]
[TLS/G325] when I left school? fourteen [TLS/G325]
[TLS/01] yes? [TLS/01]
[TLS/G325] mmhm [TLS/G325]
[TLS/01] do you think do you think you were glad to leave school at the time or not? [TLS/01]
[TLS/G325] well I wanted to .. but it was only just to make money it wasn-t with the idea of leaving school I don-t [ii] think you-know [TLS/G325]
[TLS/01] *0340 oh I see yes [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] eh [TLS/01]
[TLS/G325] because you really wanted to help your parents and everything [TLS/G325]
[TLS/01] yes {xx} ehm .. would you say you know looking back on your on your education would you say it had been worth very much to you in your life since you left school? [TLS/01]
[TLS/G325] no not a great deal no I well *0360 I-mean I I was good quite a good scholar when I left school I could have went to the grammar school but eh we couldn-t afford the uniformmy mother couldn-t afford the uniform you-see we couldn-t you had to buy all your books and uh pencils in those days [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] ((background vehicle noise)) you all had to have a uniform it was compulsory in those days and eh .. *0380 my father wanted to send us I-mean he wa- because his father was well-educated because my father paid to go to school because his parents were pretty well-off but eh I didn-t want to go I always thought they were a bit toffee-nosed compared to the likes of us you-know we thought they were [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] I would be unhappy in them places you-know [TLS/G325]
[TLS/01] I see [TLS/01]
[TLS/G325] through them we never bothered [TLS/G325]
[TLS/01] I-see you you so you wouldn-t you wouldn-t *0400 even have gone if you had [ii] had the chance really you don-t think no [TLS/01]
[TLS/G325] yes I don-t think so not even if I had had the money it was just the idea [TLS/G325]
[TLS/01] mm eh what do you think about eh the same problem now you-know? I-mean for kids these days do you think [ii] they should carry on their education? [TLS/01]
[TLS/G325] oh my daughter yeah well she's she she goes to senior high but she would have passed for the grammar well my son went to the grammar school and he's in the air force now [TLS/G325]
[TLS/01] *0420 yes [TLS/01]
[TLS/G325] but ehm .. oh I think it's a good opportunity I wouldn-t let her miss it I would eh tell her to keep take the idea away from her head that she was underneath anybody else now [TLS/G325]
[TLS/01] mm [TLS/01]
[TLS/G325] because you're as good as anybody else [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] doesn-t matter what circumstances in life you-know [TLS/G325]
[TLS/01] yeah yes [TLS/01]
[TLS/G325] definitely I would just tell her to go anywhere as high as *0440 she could get if she had it in her I don-t know whether she has you-know she's a scholor bright she's good at the languages [TLS/G325]
[TLS/01] yeah yeah [TLS/01]
[TLS/G325] she goes to senior high in august [TLS/G325]
[TLS/01] that's right up {xx} [TLS/01]
[TLS/G325] eh saltwell-senior-high [TLS/G325]
[TLS/01] oh yes [TLS/01]
[TLS/G325] it's the nearest from here I think she might have went to the dryden if we'd moved [TLS/G325]
[TLS/01] uhhuh [TLS/01]
[TLS/G325] you-know but eh all her friends [ii] are going *0460 anyway [TLS/G325]
[TLS/01] is that eh avenue-road? [TLS/01]
[TLS/G325] avenue-road it is saltwell-senior-high [TLS/G325]
[TLS/01] is that eh eh co-educational now like is it? [TLS/01]
[TLS/G325] oh yes they all are there's no eh grammar in gate- she would have went to the grammar if it had been on because eh I think she's pretty well top in her class you-know [TLS/G325]

[TLS/01] aye I knew they were like eh .. comprehensive like but I didn-t know that they were eh boys and girls all in the same [ii] school [TLS/01]
[TLS/G325] oh yeah she's been *0480 eh at the school about three year they've been boys and girls about three year now comprehensive uhhuh [TLS/G325]
[TLS/01] do you think eh do you think schools have changed very much since you were at school? [TLS/01]
[TLS/G325] oh yes definitely [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] well they're not frightened of teachers like we were @ [TLS/G325]
[TLS/01] @yes [TLS/01]
[TLS/G325] no aye [TLS/G325]
[TLS/01] do you think eh that's a good thing or a [ii] bad thing? [TLS/01]
[TLS/G325] oh I think it's a good thing myself [TLS/G325]
[TLS/01] do you {x} [TLS/01]
[TLS/G325] long as it's not carried *0500 too far I don-t believe in too fami- you-know familiar like eh they call them by their first name teachers [TLS/G325]
[TLS/01] do they? [TLS/01]
[TLS/G325] sometimes I don-t know whether it's a good point or a bad point [ii] you-know [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] but eh she just talks to her teachers as if she was talking to anybody [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] where we didn-t dare look around [TLS/G325]
[TLS/01] yeah do you think they were too strict like when you were in school? [TLS/01]
[TLS/G325] *0520 well a little bit too strict we used to get strapped if we turned our head you-know [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] very strict I think sometimes it stopped you from learning if you wanted to learn it might prevent you from learning [TLS/G325]
[TLS/01] yes yes [TLS/01]
[TLS/G325] oh yes I think it's a good thing but I think teachers should be a bit more stricter in a .. the way kiddies go on these days *0540 you-know [TLS/G325]
[TLS/01] yeah [TLS/01]
[TLS/G325] bit more stricter in the way they talk and-that [TLS/G325]
[TLS/01] yes ehm eh when you were fairly young yourself that you-know when you were under twelve say you were living down in eh [TLS/01]
[TLS/G325] morrison-street [TLS/G325]
[TLS/01] morrison-street [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] did you eh did you think that was a good place to live you-know from your point of *0560 view as a child then like [ii] did you enjoy yourself? [TLS/01]
[TLS/G325] oh no not to live no I would have liked to had a better place to live {x} house in them days you-know because there was no modern {xx} like carpet or you-know [TLS/G325]
[TLS/01] that's true yes [TLS/01]
[TLS/G325] but it was nice the houses but eh as my mother had a big family and it was on the flat you you-know so they stayed *0580 there [TLS/G325]
[TLS/01] yeah yes but I think I think kids sometimes don-t really notice these things you-know I-mean you might did you not would you not say [ii] you had a fairly good childhood? [TLS/01]
[TLS/G325] oh well I noticed because I've always been a bit on the proud side I had all brothers you-know [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] and ehm boys I don-t think take any notice [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] but with me being a girl I was very eh watchful and-that but oh yes I used to *0600 wish I'd had a better type of house and things like that {xx} [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] and it's took me twenty-odd years to get myself out now and then buy what I wanted [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] to improve [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] you-know [TLS/G325]
[TLS/01] are you you're buying a new house? [TLS/01]
[TLS/G325] yes I'm buying the well they're bought actually it's just eh I'm I'm buying it for my mother and taking my mother with us [TLS/G325]
[TLS/01] *0620 yeah ah it's it's just [ii] like a pair of flats is it? [TLS/01]

[TLS/G325] yes I'm going to take her downstairs and then I'm putting eh bathrooms on you-know and all modernised I've tried to do a lot in here {x} especially {xx} landlords because they won-t do anything so eventually the job that I took I thought well I've found I'll buy flats you-know {xx} *0640 well she could have one {xx} and they might move her too far away and it's she's getting old you-know a lot for me to do
[TLS/G325]
[TLS/01] yes these ones here are coming down aren-t they? [TLS/01]
[TLS/G325] no not this one here {x} no [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] I've put a bath in and you-know hot water and that myself and put fireplaces in myself and *0660 sort-of hardboard and try to make it decent but that's as far as you can go with them you can-t do much more {xx} [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] unless you're go get with {xx} you-know-what-I-mean? [TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] I-mean I've spent about two eh .. it's cost about two thousand pound in rent since I've come in well I've got nothing to show for it you-see [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] so .. what I spend on future'll be for *0680 my own benefit [TLS/G325]
[TLS/01] yeah eh .. oh yes ehm these are just a few questions about eh some words that you use for things could you tell us please just eh what you call each of the rooms of your house you-know? what your normal word is [ii] for each room [TLS/G325]
[TLS/01] oh well I'll dare say I'm still old fashioned now and I *0700 call that the scullery I suppose it's the kitchenette now [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] that's the scullery and eh we call that the living room what you call now is the kitchen you call it a kitchen [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] the bedrooms but my sitting room I've got a sitting room yeah we could have been in there it's cooler aye? and that's we call I call that the sitting room people call them *0720 the lounge these days
[TLS/G325]
[TLS/01] yes eh and eh .. to to get out the back door you have to lift the .. what do you call [ii] that? [TLS/01]
[TLS/G325] you go through there [TLS/G325]
[TLS/01] what do you call the what do you call the thing you have to lift to get out? [TLS/01]
[TLS/G325] oh that's eh .. the bolt the catch? [TLS/G325]
[TLS/01] eh well not the bolt the thing you actually lift [TLS/01]
[TLS/G325] the turn thing on the top the catch I would call [ii] that catch [TLS/G325]
[TLS/01] *0740 catch do you yeah okay [TLS/01]
[TLS/G325] {xx} [ii] what I call the catch {xx} maybe [TLS/G325]
[TLS/01] yeah @ [TLS/01]
[TLS/G325a] the latch actually [TLS/G325a]
[TLS/G325] aye [TLS/G325]
[TLS/01] ehm and eh what do you call the thing you stand in front of the fire to get it going? sheet of tin you stand in front of the fire [TLS/01]
[TLS/G325] oh well I know what you call it a bleezer @ generally call it the {x} @ [TLS/G325]
[TLS/01] ehm *0760 .. eh can you tell us please just eh you-know how you like to spend your spare time and-that assuming you ever get any? [TLS/01]
[TLS/G325] oh jus- I just like watching television and maybes going out one night a week to the club that's all
[TLS/G325]
[TLS/01] aye which club do you go to? [TLS/01]
[TLS/G325] we go to the railway-club [TLS/G325]
[TLS/01] yeah whereabouts is that? [TLS/01]
[TLS/G325] *0780 that's down beside gateshead-station [TLS/G325]
[TLS/01] oh aye yes yeah is it very good? [TLS/01]
[TLS/G325] well it's you-know pretty decent like eh you get good shows on sometimes you get bad shows you-know [TLS/G325]
[TLS/01] yeah .. ehm what eh what sort of things do you like to watch on television you-know-what-I-mean?
[TLS/01]
[TLS/G325] I like watching television oh I *0800 like to see a good film to tell you the truth [TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] mm I'm not for coronation-street I don-t watch coronation-street [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] eh I like mostly mainly watch american shows I like [TLS/G325]
[TLS/01] aye [TLS/01]

[TLS/G325] uhhuh I like watching american eh you-know mmhm [TLS/G325]
[TLS/01] do you eh do eh you watch it very much you-know I-mean is it on? [TLS/01]
[TLS/G325] oh no *0820 not eh not a great lot in fact I like to read the evening-chronicle [TLS/G325]
[TLS/01] aye it's you don-t you don-t set out [TLS/01]
[TLS/G325] I watch it and read the evening-chronicle at the same time [TLS/G325]
[TLS/01] aye you don-t si- ehm .. is it usually sort-of on all the time from six-o-clock til eleven or or do you just [ii] put on when you? [TLS/01]
[TLS/G325] well I like I'll tell what I put it on it goes on at quarter-to-six every night because I love to hear the news [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] I like to hear the news *0840 {xx} the b-b-c news the northeast I listen to that every night from then on it's a matter of just being on [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] sometimes we watch [ii] {xx} [TLS/G325]
[TLS/01] you don-t particularly watch it? [TLS/01]
[TLS/G325] but eh I'm mostly reading [TLS/G325]
[TLS/01] yes yes ehm .. ehm do you think like-you-know in the way of like recreation activities do you think there's *0860 any sort-of things that you would like to have done but you've never got round to or you've never had the chance to? [TLS/01]
[TLS/G325] yes I've always wanted to go dancing and I never went dancing [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] I never get round to it [TLS/G325]
[TLS/01] like ballroom dancing [ii] and-that? [TLS/01]
[TLS/G325] yes I always wanted to go dancing [TLS/G325]
[TLS/01] you could go and learn some places in [ii] gateshead [TLS/01]
[TLS/G325] I could you-know uhhuh there's one on the high-street isn-t there? [TLS/G325]
[TLS/01] that's right yes [TLS/01]
[TLS/G325] I know I could go it's just I think I'm getting *0880 a bit old now [TLS/G325]
[TLS/01] @ [TLS/01]
[TLS/G325] you-know I would like it I suppose I it's always something I've wanted to do it's eh .. I've liked it you-know [TLS/G325]
[TLS/01] yes eh .. what do you think eh what do you think would happen if you won sort-of a very large sum of money tomorrow you-know if you won the pools or [ii] something? [TLS/01]
[TLS/G325] what would I do? [TLS/G325]
[TLS/01] yeah [TLS/01]
[TLS/G325] *0900 buy a beautiful house [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] a really lovely house [TLS/G325]
[TLS/01] whereabouts? [TLS/01]
[TLS/G325] well that's something I've never decided but it wouldn-t be too far away from gateshead I'm afraid [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] it would be eh up low-fell or just somewhere lo- or round saltwell-park that area [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] up you-know up that way [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] I'd like eh .. in fact I tried to get *0920 one up low-fell before I bought these flats that's what I'd definitely would love a sum of money for we to buy a nice house [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] a really nice house yes it's always been my ambition a really nice house [TLS/G325]
[TLS/01] yeah do you think it would sort-of change your way of life very much you-know you? [TLS/01]
[TLS/G325] not really no it would never t- change me no [TLS/G325]
[TLS/01] no [TLS/01]
[TLS/G325] I would still have the same *0940 thoughts and ideas [TLS/G325]
[TLS/01] aye yeah ... eh .. these are just a .. few questions about your opinions on uh some things ehm .. what what do you think that parents should do when their children misbehave you-know? how do you think they should [ii] control them? [TLS/01]
[TLS/G325] what parents should *0960 do? I always believe that two eh parents should agree with children not one take one side and the other not you-know [TLS/G325]
[TLS/01] aye I see yes uhhuh [TLS/01]
[TLS/G325] they should agree or if you don-t agree to keep quiet til the other one's finished that's definitely one thing I do eh believe in [TLS/G325]
[TLS/01] yes [TLS/01]

[TLS/G325] I'm very strict I must say that I'm rather strict with children [TLS/G325]
[TLS/01] *0980 {xx} like would you smack them quite often? [TLS/01]
[TLS/G325] I don-t smack them no but I do definitely shout I think it's the only thing I've got and I have {xx} [TLS/G325]
[TLS/01] @ [TLS/01]
[TLS/G325] but she can be a good girl if if she wants to she's {xx} I think I'm a bit frightened she gets in company you-know [TLS/G325]
[TLS/01] aye yes [TLS/01]
[TLS/G325] because you have to worry *1000 about these things they've more temptation than we had that's one thing I will say [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] course they get more money than we ever had she gets more for pocket money than I got for [ii] working for a week [TLS/G325]
[TLS/01] for your wages yes [TLS/01]
[TLS/G325] she does [TLS/G325]
[TLS/01] eh going on to eh something different like and this is eh a question you don-t have to *1020 answer if you don-t want because some people don-t eh which way do you vote? [TLS/01]
[TLS/G325] which way do I vote? labour socialist mmhm[TLS/G325]
[TLS/01] yes y- you always vote the same? [TLS/01]
[TLS/G325] always [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] I've never changed my views [TLS/G325]
[TLS/01] yes eh why do you think it is that you always vote the same way you-know do you eh? [TLS/01]
[TLS/G325] well that's probably could because of upbringing but eh no I definitely *1040 think that if well I tell you what my mind goes back to the the tory days when lots of people were unemployed [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] and this country never had any money but when war was declared they found millions of pounds for a war and up to then my father'd been out of work [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] and on work and out of work and yet all that money was there to *1060 be got when there was a war that's something I'll always vote labour I've seen too much eh poverty [TLS/G325]
[TLS/01] yes aye [TLS/01]
[TLS/G325] I had brothers who were at home you-know and they served their time til they were twenty-one and when they were twenty-one my father was unemployed and when he went up they told him that his sons would have to keep him [TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] he couldn-t get any more money so my father *1080 said "well my sons have never kept me and they never will keep me" so they had to go away from home [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] because they wouldn-t give him any money you-see if they stayed at home [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] so they well they were more-or-less finished soon as they served their time and their jobs was finished they worked for nothing for years [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] and my mother struggled to put them in apprentice put them in a trade each one in a trade and they both left *1100 home and that it was the breaking up of a family [TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] that was [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] that was the start of the family breaking up you-see [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] so ... so that's why I would never could never vote any other way [TLS/G325]
[TLS/01] aye do you think that ehm .. do you think labour governments have sort-of done [ii] been reasonably good? [TLS/01]
[TLS/G325] I think so they try to they should never been put out in my my opinion that's my [ii] opinion [TLS/G325]
[TLS/01] aye you're *1120 right there [TLS/01]
[TLS/G325] it's just a tragedy they were but mind I do believe the tory government won-t have it all their own way like they did have conservatives [TLS/G325]
[TLS/01] mm [TLS/01]
[TLS/G325] they'll never have it their own way like they did have [TLS/G325]
[TLS/01] no [TLS/01]
[TLS/G325] because people won-t stand for it now [TLS/G325]

[TLS/01] yes [TLS/01]
[TLS/G325] where they have done in their time [TLS/G325]
[TLS/01] mm [TLS/01]
[TLS/G325] that's my opinion so [TLS/G325]
[TLS/01] eh *1140 do you usually vote in every election you-know do you vote in [TLS/01]
[TLS/G325] every election local council government every one both of we do he's the same like in [TLS/G325]
[TLS/01] if we could just eh if we could just eh go on to talk for a bit about eh you-know what we are most interested in like that's the way you *1160 talk and that and what you think about it ehm firstly do you think that you ever change the way you speak according to you-know like the person you're talking to or any other circumstances? [TLS/01]
[TLS/G325] well I might do ehm I don-t really talk very geordie suppose I say it myself you-know I've never talked sort-of real rough eh you-know-what-I-mean I-mean we never have none of we have *1180 but I-mean I suppose if anybody's talking ordinary then you're trying to talk ordinary back I wouldn-t eh sort-of talk slang to them you-know I don-t swear that I {xx} very rare I-mean I talk in [ii]
[TLS/G325a] excuse-me [TLS/G325a]
[TLS/01] you don-t eh you don-t think that you ever talk sort-of more more more localised to more *1200 local people you-know? if you get somebody who talks very rough and broad do you [ii] {xx} [TLS/01]
[TLS/G325] no I don-t like it mes- I don-t like them talking like that I don-t think I do answer them that way you-see in fact the more they talk I more cringe eh really with the dialect [TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] because eh I always remember it was the first time I ever went down south my brother lived down there it was when they first left home and he went *1220 down the south and he was getting married so he took us to meet her in-laws his in-laws I should say [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] and they said eh well they do- you don-t think he was coming from the same place I talked english I thought me @ [TLS/G325]
[TLS/01] @ [TLS/01]
[TLS/G325] that was the first time ever anybody I always thought I just talked ordinary well I've talked like this all my life I just talk that was eh *1240 just ordinary to me you-know suppose I thought it was geordie [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] the way I talked [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] but they said that they could understand me and not my brother and he's been down there for about four year [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] but they could with me [TLS/G325]
[TLS/01] yeah eh so you don-t really ehm you don-t really like tyneside accents [ii] really? [TLS/01]
[TLS/G325] not really no now when I when *1260 sometimes I listen on the television it makes me cringe [TLS/G325]
[TLS/01] does it? [TLS/01]
[TLS/G325] yes I I like geordie songs mind I like to hear them singing [ii] them you-know [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] I like local eh songs but I don-t like the geordie voice [TLS/G325]
[TLS/01] yeah is ehm are there many people around who you-know whose whose accent you dislike you-know is there many people broad enough for you to *1280 dislike? you-know-what-I-mean? [TLS/01]
[TLS/G325] very few and far between I must tell you the truth very few eh I might hear an odd eh odd rough person but very few even my mother we don-t talk eh real geordie you never hear we talk you-know [TLS/G325]
[TLS/01] what s- yeah what sort of people do you think it would be? I-mean old people for-instance do you think? [TLS/01]
[TLS/G325] that should talk like *1300 that? [TLS/G325]
[TLS/01] that would be the broadest people [TLS/01]
[TLS/G325] well I don-t know I've heard some of the young ones coming up and they're worse than the the older generation [TLS/G325]
[TLS/01] yeah .. yes because eh a lot of people think you-know the only people who talk the really broad tyneside are [ii] sort-of like old blokes [TLS/01]
[TLS/G325] would be old people uhhuh no no my mother doesn-t not really no eh *1320 just an odd word that eh you might get because she never had any education I-mean she never went to school at all she was an orphan but eh I-mean maybe odd words that she comes out with but eh some of my eh family's took it up course I never did because I used correct her that's how I know I never you-see I would put her right [TLS/G325]
[TLS/01] *1340 yes [TLS/01]
[TLS/G325] you-know she would say "boots" for shoes and you-know it was always boots it was never shoes you-see I would correct her I've always been the one sort-of corrected them [TLS/G325]

[TLS/01] aye [TLS/01]
[TLS/G325] so I had to keep myself you-know so more-or-less talking properly [TLS/G325]
[TLS/01] yeah yes [TLS/01]
[TLS/G325] that well properly I-mean as I'm talking you-see [TLS/G325]
[TLS/01] yeah yes are you ehm .. do you think that ehm .. *1360 you know the way the newsreaders talk? [ii] on on the radio like or the television do you think that's a kind-of ideal way to talk you-know? do you think everybody should talk [ii] like that? [TLS/01]
[TLS/G325] yes yes yes I think so there's no eh eh there's no accent or {xx} english-language I think it's best to talk like that mind I like to hear other people talking *1380 eh if I go away on a train or anything I like to hear people with their accents I think it's nice [TLS/G325]
[TLS/01] yes I think [ii] so [TLS/01]
[TLS/G325] and yet I can-t stand my own [TLS/G325]
[TLS/01] yes it's funny that way [ii] yeah [TLS/01]
[TLS/G325] I can-t stand it I don-t know why [TLS/G325]
[TLS/G325a] I've lived in {xx listened} [TLS/G325]
[TLS/G325] but no I can-t it must eh maybes it's just because I haven-t been away long enough from it I might want to hear *1400 it if I was away a long time [TLS/G325]
[TLS/01] aye when you say you can-t stand your own do you mean do you mean that you even disapprove of the way you speak? [TLS/01]
[TLS/G325] probably yeah .. probably yes uhhuh sometimes I wish I had been eh .. eh you-know sort-of eh .. don-t forget yourself you-know and talk *1420 properly all the time [TLS/G325]
[TLS/01] yeah do you ehm do you know very many people who talk you-know well like the newsreaders talk? personally do you know any? [TLS/01]
[TLS/G325] no well th- there's two-or-three eh I do know people eh supervisors at work you-know I-mean that's {xx} people speak like that [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] but eh [TLS/G325]
[TLS/01] and do you like to hear them talk or do you *1440 do you ever do you never [TLS/01]
[TLS/G325] eh sometimes I've no I think it's not really the way they talk it's eh the per- people themselves I like [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] it's the personality of the people [TLS/G325]
[TLS/01] yes do you never feel that if somebody sort-of talks like that they're putting it on or showing off or being {xx} [TLS/01]
[TLS/G325] well there is ehm .. there's one person who she's a supervisor and ehm everybody talks about her she'll sort-of there's an accent *1460 to her when she talks you-know you like that sort of talking well I don-t like that [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] it's a sort-of a put-on accent that [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] it's not real now you-see her husband talks {x} is geordie [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] and this lady always talks like that and she's always she does it though I-mean I don-t suppose she's putting it on and she talks like that real posh you-know think she had a plum in her mouth sort-of *1480 type of person she's a very nice person but I just can-t stand that talk [TLS/G325]
[TLS/01] aye yeah [TLS/01]
[TLS/G325] not to me but ehm personally I just like a person that's just themselves I d- wouldn-t like you to put an accent on because you were .. you wanted to be eh because somebody's listening to you I-mean I've just like people talking to you I wouldn-t like anybody *1500 to put an accent on for the sake of putting it on [TLS/G325]
[TLS/01] yeah yes .. ehm ... this eh .. might strike you as a bit of a vague sort of question but ehm what sort of things do you think you can tell about somebody from the way he talks you-know? just by listening to his pronunciation and-that [TLS/01]
[TLS/G325] eh wha- what he is like or? [TLS/G325]
[TLS/01] *1520 yes do you think you would [ii] sort-of [TLS/01]
[TLS/G325] I think so [TLS/G325]
[TLS/01] have guess about his job [ii] for-instance? [TLS/01]
[TLS/G325] I think so yes [TLS/G325]
[TLS/01] the kind of job he [ii] does [TLS/01]
[TLS/G325] yes I think so yes [TLS/G325]
[TLS/01] do you think you'd be able to tell like-you-know the difference between somebody who worked in a factory and somebody who worked in an office? [TLS/01]
[TLS/G325] well not always no I wouldn-t say that because eh [ii] [TLS/G325]
[TLS/01] n- no not not always [TLS/01]

[TLS/G325] no not always [TLS/G325]
[TLS/01] but do you think do you think you-know do you think you would have a guess like? [TLS/01]
[TLS/G325] *1540 you sometimes gue- eh when you're working with a variety of people you ha- well I think I could give a good guess myself but I know lots of girls works in factories they're very nice talkers there's girls who you would expect to talk nice that don-t so .. therefore [TLS/G325]
[TLS/01] yes [ii] certainly that's about it [TLS/01]
[TLS/G325] you-know a surprising thing really [TLS/G325]
[TLS/01] yes what *1560 ehm what would you say about my accent from listening to us now? [TLS/01]
[TLS/G325] well I should think you're local .. aren-t you? [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] yes you've been fetched up very nice by somebody respectable .. parents .. I can tell that [TLS/G325]
[TLS/01] I'll tell them [TLS/01]
[TLS/G325] have you? well you have you can tell you're the way you talk it's eh I think it's just the something in the way you're fetched up and *1580 gentle-voiced people and they talk like that yeah [TLS/G325]
[TLS/01] do you think I talk like you I-mean [TLS/01]
[TLS/G325] you talk a little bit like me but you talk even eh a little bit smoother than I talk I'm a bit rough on the edge compared with you I should think [TLS/G325]
[TLS/01] eh ... ((4 second pause)) *1600 mm do you think you could eh .. just read that list of words for us please? [TLS/01]
[TLS/G325] find mind fly bill well men head back home farm wall daughter down *1620 take straight cold alone poor fire four tower path after {xx} field been new moon school revolution but none seven one *1640 long holiday room book school maker wafer happy harry mary yes better something fall which apple television absent realise newcastle seahouses method concert descend *1660 chocolate explain industry condemn tissue with film [TLS/G325]
[TLS/01] ta now eh I'm going to read out a list of words that are all sort-of fairly local tyneside words you-know and I would just like to know ehm firstly if you're familiar with it you-know *1680 and secondly if you actually use it yourself [TLS/01]
[TLS/G325a] {xx} [TLS/G325a]
[TLS/01] a-side for beside? [TLS/01]
[TLS/G325] pardon? [TLS/G325]
[TLS/01] a-side for beside? you-know would you say it's just a-side the fire? [TLS/01]
[TLS/G325] {xx} ((background noise)) [TLS/G325]
[TLS/01] bairn .. yes *1700 bait? yes ehm bonny? [TLS/01]
[TLS/G325] body? [TLS/G325]
[TLS/01] bonny [TLS/01]
[TLS/G325] bonny oh yes [TLS/G325]
[TLS/01] aye ehm bray? .. to bray somebody [TLS/01]
[TLS/G325] oh bray yes [TLS/G325]
[TLS/01] aye yes do you use it? [TLS/01]
[TLS/G325] *1720 well I might I've said it I should think yes I've said it uhhuh [TLS/G325]
[TLS/01] eh bullets? [TLS/01]
[TLS/G325] yes well not m- no I {xx cannot} saying that [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] not normally I I hear it though yes [TLS/G325]
[TLS/01] eh clamming? [TLS/01]
[TLS/G325] clamming? [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] it's funny I used that the other night @ [TLS/G325]
[TLS/01] *1740 boody? [TLS/01]
[TLS/G325] well no but I familiar they're familiar words [TLS/G325]
[TLS/01] ehm cree? [TLS/01]
[TLS/G325] cree? [TLS/G325]
[TLS/01] mmhm [TLS/01]
[TLS/G325] no that's a word I've never used [TLS/G325]
[TLS/01] but you know what it means though? [TLS/01]
[TLS/G325] I know what it means yes pigeon cree uhhuh [TLS/G325]
[TLS/01] yeah eh lowe? [TLS/01]
[TLS/G325] *1760 no I've never [TLS/G325]
[TLS/01] no do you know what it means? [TLS/01]
[TLS/G325] lowe? [TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] no I cannot [ii] say [TLS/G325]

[TLS/01] a light or a flame or something a bit old-fashioned [TLS/01]
[TLS/G325a] @ what he means is "give us a lowe" [TLS/G325a]
[TLS/01] give us a lowe that's right [TLS/01]
[TLS/G325] no I've never used that thing I've never heard that before [TLS/G325]
[TLS/G325a] although I've never used it myself [TLS/G325a]
[TLS/01] you have heard it? [TLS/01]
[TLS/G325a] oh yes I think eh [TLS/G325a]
[TLS/G325] yes well there's *1780 he has got a different accent belongs to south-shields [TLS/G325]
[TLS/G325a] eh you eh .. you don-t hear it now you used to hear it more often in the old days you-know [TLS/G325a]
[TLS/01] yes I think that's [ii] [TLS/01]
[TLS/G325a] the street corners give us a lowe but you don-t hear it now [TLS/G325a]
[TLS/G325] {xx} [TLS/G325]
[TLS/01] there's a game evidently called jack-shine-your-lowe as well [TLS/01]
[TLS/G325a] aye [TLS/G325a]
[TLS/G325] oh yeah uhhuh [TLS/G325]
[TLS/01] eh [TLS/01]
[TLS/G325a] @ that's a funny thing though I've never heard that *1800 word for years a lowe [TLS/G325a]
[TLS/01] @ eh mense be more to your mense to get some work done? [TLS/01]
[TLS/G325] no I've never used that word [TLS/G325]
[TLS/01] no? [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/G325a] {xx} @ [TLS/G325a]
[TLS/01] eh parky? [TLS/01]
[TLS/G325] yes parky yes I've used that [TLS/G325]
[TLS/01] uhhuh eh varnigh? [TLS/01]
[TLS/G325] no *1820 not {xx though} not that one [TLS/G325]
[TLS/01] you've heard it though? [TLS/01]
[TLS/G325] oh I've heard it yes I've heard it uhhuh [TLS/G325]
[TLS/01] eh knooled to be knooled? [TLS/01]
[TLS/G325] what did you say? [TLS/G325]
[TLS/01] knooled [TLS/01]
[TLS/G325] well very rare I know what it means ehm .. I sh- I would say kept down you-see that's the difference I would say yes [TLS/G325]
[TLS/01] *1840 eh .. now eh more-or-less on the same lines like I'm going to read out eh this list of sentences and for each one I would just like to know eh if it sounds like a normal sentence to you you-know if it sounds okay ehm if it sounds like the sort of thing that you might say if the circumstances arose do you know what I-mean? [TLS/01]
[TLS/G325] mmhm [TLS/G325]
[TLS/01] *1860 just if it sounds okay "were you wakened last night when I came in?" [TLS/01]
[TLS/G325] eh that sounds all right yes [TLS/G325]
[TLS/01] yes I-mean would you? [TLS/01]
[TLS/G325] m-mm [TLS/G325]
[TLS/01] eh "I was still a-bed when you called this morning?" [TLS/01]
[TLS/G325] oh yes I suppose I would uhhuh [TLS/G325]
[TLS/01] ehm "he never *1880 gave us any?" [TLS/01]
[TLS/G325] never give us it huh? [TLS/G325]
[TLS/01] yes? [TLS/01]
[TLS/G325] mm [TLS/G325]
[TLS/01] eh "do you not go there very often?" [TLS/01]
[TLS/G325] I would say that yes [TLS/G325]
[TLS/01] eh "they're useless them?" [TLS/01]
[TLS/G325] I would say that yes [TLS/G325]
[TLS/01] "me and john went to the races on saturday?" [TLS/01]
[TLS/G325] eh I probably would *1900 I would say john and me I [ii] [TLS/G325]
[TLS/01] mm [TLS/01]
[TLS/G325] one thing I was always particular about someones name before my own uhhuh [TLS/G325]
[TLS/01] @ aye "I might could manage it? [TLS/01]
[TLS/G325] I could say that yes[TLS/G325]
[TLS/01] aye [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] eh "he wouldn-t could have worked even if you had asked him?" [TLS/01]
[TLS/G325] I would say that I think uhhuh [TLS/G325]

[TLS/01] ehm "it's ower big to *1920 get through there?" [TLS/01]
[TLS/G325] it's ower big @ oh I don-t think I would ower big no I would say too big uhhuh [TLS/G325]
[TLS/01] eh "you know my cousin that her husband died?" [TLS/01]
[TLS/G325] well I could have said that uhhuh uhhuh [TLS/G325]
[TLS/01] ehm .. "with the wife being ill I had to stay in and look after her?" [TLS/01]
[TLS/G325] with the what? [TLS/G325]
[TLS/01] "with the wife being ill I *1940 had to stay in and look after her" [TLS/01]
[TLS/G325] with the wife being what? [TLS/G325]
[TLS/G325a] ill [TLS/G325a]
[TLS/01] "being ill I had to stay in and look after her" [TLS/01]
[TLS/G325] well I might have yes I might have said that uhhuh yes [TLS/G325]
[TLS/01] ehm "I'm going to stay with the son for the holidays?" [TLS/01]
[TLS/G325] I could say that uhhuh [TLS/G325]
[TLS/01] "they go to the pictures of a sunday?" [TLS/01]
[TLS/G325] yes uhhuh [TLS/G325]
[TLS/01] *1960 "I was coming home on the train and if I didn-t leave my coat lying on the seat?" [TLS/01]
[TLS/G325] well I could say that uhhuh uhhuh [TLS/G325]
[TLS/01] mm "these ones are pretty big to them others?" [TLS/01]
[TLS/G325] uhhuh yes [TLS/G325]
[TLS/01] eh "here she had left her pram standing outside the shop?" [TLS/01]
[TLS/G325] yes I would say that [TLS/G325]
[TLS/01] ehm .. "I think we're going to be soon for the *1980 picture?" [TLS/01]
[TLS/G325] yes I would say that [TLS/G325]
[TLS/01] yeah? mm [TLS/01]
[TLS/G325] or film I would say it depends uhhuh [TLS/G325]
[TLS/01] eh "would you mind stop talking?" [TLS/01]
[TLS/G325] oh yes yes I've said that [TLS/G325]
[TLS/01] eh "do you want a cup of tea making?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] mm? ehm "you know him that used to work on the railway?" [TLS/01]
[TLS/G325] uhhuh yes [TLS/G325]
[TLS/01] *2000 eh "he happened a nasty accident?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] "I'll put the kettle on for to make some tea?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] "I wanted for to talk to you about it?" [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] eh "when did it happen you?" [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] yeah? eh .. "I've got money belonging him" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] *2020 yeah? eh "could you mind your head so as I can see out the back?" [TLS/01]
[TLS/G325] oh yes I'd probably say that like [TLS/G325]
[TLS/01] yes? eh "I'm going to get some wool for our pamela a jumper?" [TLS/01]
[TLS/G325] mmhm [TLS/G325]
[TLS/01] yeah? eh "it's all right for you you're used with it?" [TLS/01]
[TLS/G325] yes @ [TLS/G325]
[TLS/01] yes? eh "we've been waiting of a bus?" [TLS/01]
[TLS/G325] *2040 yes I would say that [TLS/G325]
[TLS/01] eh .. "I think they're going to give him the job permanent?" [TLS/01]
[TLS/G325] yes I could say that [TLS/G325]
[TLS/01] I don-t bother much about the television and-that? [TLS/01]
[TLS/G325] well I might say that yes sounds all right [TLS/G325]
[TLS/01] mm yeah "there was all these bottles of beer what we had *2060 brought?" [TLS/01]
[TLS/G325] well very rare {xx} but I you could say that yes uhhuh uhhuh [TLS/G325]
[TLS/01] yes I-mean yes eh "many people were there there?" [TLS/01]
[TLS/G325] no I don-t think I would say that [TLS/G325]
[TLS/01] no would you say "how many people"? [TLS/01]
[TLS/G325] not many people there [TLS/G325]
[TLS/01] ah yeah I see eh "where did you get it at?" [TLS/01]
[TLS/G325] *2080 I've said I would say that uhhuh [TLS/G325]
[TLS/01] yes eh "never mind I'll manage but?" [TLS/01]
[TLS/G325] yes [TLS/G325]

[TLS/01] eh "no the wonder I couldn-t get it to work it's not plugged in?" no the wonder? [TLS/01]
[TLS/G325] the window? [TLS/G325]
[TLS/01] no the wonder [TLS/01]
[TLS/G325a] ah you've got to be deaf "no the wonder" [TLS/G325a]
[TLS/01] no the wonder [TLS/01]
[TLS/G325] oh no the wonder no no I never say [TLS/G325]
[TLS/01] uhhuh would you say "no wonder" do you? [TLS/01]
[TLS/G325] eh *2100 no I wouldn-t say I wouldn-t say that no I would say "no wonder" I think probably that's what I would say "no wonder" I couldn-t get it to work mmhm [TLS/G325]
[TLS/01] ehm .. "me and george is going to the town today?" [TLS/01]
[TLS/G325] uhhuh that's what I would say or george and I I might say george and I yeah uhhuh [TLS/G325]
[TLS/01] yes eh *2120 "jack didn-t think much to the race?" [TLS/01]
[TLS/G325] jack didn-t think much of the race [TLS/G325]
[TLS/01] of the race uhhuh eh .. "all the caravan sites are good and I've stayed on" them nearly all? [TLS/01]
[TLS/G325] well I might say that yes [TLS/G325]
[TLS/01] mmhm yeah "they'd not seen it?" [TLS/01]
[TLS/G325] not seen it uhhuh [TLS/G325]
[TLS/01] eh "it's far too long this?" [TLS/01]
[TLS/G325] *2140 I could say that aye [TLS/G325]
[TLS/01] yes eh "how's your wife and family then?" [TLS/01]
[TLS/G325] mmhm [TLS/G325]
[TLS/01] eh .. "joe cannot come tomorrow being as he's working late?" [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] yeah? [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] "what is it he does for a living?" [TLS/01]
[TLS/G325] what is what? [TLS/G325]
[TLS/01] "what is it he does for a living?" [TLS/01]
[TLS/G325] my husband? [TLS/G325]
[TLS/01] no [TLS/01]
[TLS/G325] oh y- it's just a saying oh that's uhhuh *2160 yes I could say that uhhuh [TLS/G325]
[TLS/01] just light the fire on will you? [TLS/01]
[TLS/G325] uhhuh I've said that [TLS/G325]
[TLS/01] yes? ehm .. "I'll clout yous both in a minute?" [TLS/01]
[TLS/G325] no [TLS/G325]
[TLS/01] no? [TLS/01]
[TLS/G325] no [TLS/G325]
[TLS/01] eh [TLS/01]
[TLS/G325] I'll smack you [TLS/G325]
[TLS/01] yes [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] eh "how much have they offered we? how much have they offered we?" [TLS/01] [TLS/01]
[TLS/G325] *2180 I could say that yeah [TLS/G325]
[TLS/01] aye? eh "pass us one of them spanners?" [TLS/01]
[TLS/G325] yes mmhm [TLS/G325]
[TLS/01] yes? eh "I've broke a plate?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] yes? mm .. "I come this morning but you weren-t in?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] yes? eh .. "he done it all right?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] mmhm eh "I had forgetten to buy *2200 the onions?" [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] yeah? ehm "he give us a pound for doing it?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] mmhm? "we had went to the coast for the day?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] yeah? ehm .. "I seen albert on tuesday?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] mm eh "I'm not going to stand being tret like that?" [TLS/01]
[TLS/G325] *2220 yes I would say that mmhm [TLS/G325]
[TLS/01] yeah eh "that's what happens when you be naughty?" [TLS/01]
[TLS/G325] yes [TLS/G325]

[TLS/01] yeah? ehm .. "I'll probably see him a-saturday?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] uhhuh eh "I doubt he'll have to stay in hospital for a long time?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] mm eh "you've letten him get away?" [TLS/01]
[TLS/G325] uhhuh [TLS/G325]
[TLS/01] yeah? *2240 ehm "my mother's keep coming in to see us?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] yeah? eh "we'll sharp get this done?" [TLS/01]
[TLS/G325] yes [TLS/G325]
[TLS/01] yes? eh .. "he's as tyneside as what I am?" [TLS/01]
[TLS/G325] @ yes @ [TLS/G325]
[TLS/01] eh "you used to sweep the floor and us used to wash the dishes?" [TLS/01]
[TLS/G325] yes uhhuh [TLS/G325]
[TLS/01] *2260 and eh getting just a little bit more complicated eh could you eh give me the opposite of "I'll be going there this week"? [TLS/01]
[TLS/G325] the opposite? [TLS/G325]
[TLS/01] the opposite mmhm[TLS/01]
[TLS/G325] "I'll be going there this week"? ... {xx} *2280 ... see you at the weekend or something like that? [TLS/G325]
[TLS/01] no I was thinking more of like ehm I'll not be going there this week [ii] or I won-t go there [TLS/01]
[TLS/G325a] I will go there this week something like that [TLS/G325a]
[TLS/G325] oh eh well we will be going there this week [TLS/G325]
[TLS/01] no well *2300 I was interested really in whether you would say like "I'll not be going there this week" or "I won-t be going there this week" you-know I-mean something something something like that you-know like [TLS/01]
[TLS/G325] I'll not be going there this week [TLS/G325]
[TLS/01] mm yes eh eh again the opposite of "he's got some"? [TLS/01]
[TLS/G325] he's got to eh well he has to [TLS/G325]
[TLS/01] yes *2320 eh the opposite of "he's seen that picture"? [TLS/01]
[TLS/G325] eh ... what would I say to that? he's seen it once I would say probably [TLS/G325]
[TLS/01] yes eh the opposite of " you're working late tonight"? [TLS/01]
[TLS/G325] you're not working tonight [TLS/G325]
[TLS/01] yes ta *2340 ehm again the opposite of "I gave him one"? [TLS/01]
[TLS/G325] I didn-t give him one [TLS/G325]
[TLS/01] yes ta ehm suppose that you went up to somebody in the street to ask for a match what would you say? [TLS/01]
[TLS/G325] can you give us a I would say give us a light please? [TLS/G325]
[TLS/01] yes ta ehm .. and could you just finish off this sentence? ehm .. *2360 I couldn-t get it done yesterday but I'll do it [TLS/01]
[TLS/G325] today [TLS/G325]

Appendix 6: Socio-economic Scores for the TLS Informants[1]

Speaker	Occupation	Father's Occupation	Husband's Occupation	Education	Housing	Average Social Score
G011	3	3		2	3	2.75
G012	2	2	3	1	3	2.20
G016	2	1	?	1	3	1.75
G021	2	2	?	2	3	2.25
G022	1	2	2	1	3	1.80
G023	2	2	2	1	3	2.00
G024	1	1	1	1	2	1.20
G026	2	2	?	1	3	2.00
G027	2	?	2	2	3	2.25
G029	2	2	?	1	3	2.00
G033	2	2		1	2	1.75
G034	1	3		1	?	1.67
G035	1	2		1	3	1.75
G036	2	2		1	2	1.75
G041	1	1		1	1	1.00
G042	1	2	?	1	1	1.25
G044	2	1		1	1	1.25
G045	2	2		1	1	1.50
G047	2	?		1	1	1.33
G051	2	2	?	1	1	1.50
G052	1	2	?	1	1	1.25
G053	2	2	2	1	1	1.60

[1] Question marks indicate that the social variable was not elicited; blank cells (Husband's Occupation only) indicate that the informant is male or unmarried.

G054	2	2		1	1	1.50
G055	2	2	1	1	1	1.40
G056	1	2	?	1	1	1.25
G057	1	1	2	2	1	1.40
G058	2	2	1	1	1	1.40
G210	2	1	?	1	1	1.25
G212	2	2	2	1	3	2.00
G213	2	1	?	1	3	1.75
G214	2	2	?	2	3	2.25
G215	2	?		2	3	2.33
G216	2	2	?	3	3	2.50
G221	2	2		3	2	2.25
G223	2	?		2	3	2.33
G224	3	2		2	3	2.50
G226	2	2	3	2	3	2.40
G227	2	2		2	3	2.25
G228	3	2		2	2	2.25
G230	?	3		3	3	3.00
G238	2	3		2	3	2.50
G312	2	2	2	2	3	2.20
G316	2	2	?	2	?	2.00
G317	1	2		1	2	1.50
G318	1	?		1	2	1.33
G320	2	1		2	2	1.75
G321	1	2	?	1	?	1.33
G322	1	2	?	1	2	1.50
G323	2	1	?	1	3	1.75
G324	3	1		3	2	2.25
G325	1	1	?	1	3	1.50
G326	2	2		1	?	1.67
G327	2	1		1	2	1.50

G328	2	2		2	2	2.00
G329	2	2		1	3	2.00
G331	1	1	1	1	2	1.20
G332	2	2		1	2	1.75
G511	2	2	?	1	1	1.50
G515	2	2	2	1	?	1.75
G517	1	1		1	1	1.00
G518	1	1	?	1	1	1.00
G519	2	2		1	?	1.67
G520	2	2	?	1	?	1.67
G521	2	1	?	1	1	1.25
G522	2	3		1	2	2.00
G525	2	2		2	?	2.00
G526	2	2		1	?	1.67
G527	3	2		3	2	2.50
G528	?	?		2	?	2.00
G529	2	2		1	1	1.50

Appendix 7: TLS Speaker Social Profiles

Speaker	Gender	Age 1	Age 2	S-E Score	S-E Group
G011	F	17-30	17-20	2.75	3
G012	F	51-80	51-60	2.20	2
G016	F	31-50	31-40	1.75	2
G021	F	31-50	31-40	2.25	2
G022	F	31-50	31-40	1.80	2
G023	F	51-80	51-60	2.00	2
G024	F	51-80	51-60	1.20	1
G026	F	51-80	51-60	2.00	2
G027	F	17-30	21-30	2.25	2
G029	F	31-50	41-50	2.00	2
G033	M	17-30	21-30	1.75	2
G034	F	17-30	17-20	1.67	2
G035	M	31-50	31-40	1.75	2
G036	M	31-50	41-50	1.75	2
G041	M	51-80	51-60	1.00	1
G042	F	17-30	21-30	1.25	1
G044	M	31-50	31-40	1.25	1
G045	M	31-50	31-40	1.50	1
G047	M	17-30	21-30	1.33	1
G051	F	31-50	31-40	1.50	1
G052	F	31-50	41-50	1.25	1
G053	F	31-50	31-40	1.60	1
G054	M	31-50	41-50	1.50	1
G055	F	31-50	41-50	1.40	1
G056	F	31-50	41-50	1.25	1
G057	F	17-30	21-30	1.40	1
G058	F	31-50	41-50	1.40	1
G210	F	51-80	71-80	1.25	1
G212	F	31-50	31-40	2.00	2
G213	F	31-50	41-50	1.75	2
G214	F	31-50	31-40	2.25	2
G215	F	17-30	21-30	2.33	2
G216	F	31-50	41-50	2.50	3
G221	F	17-30	17-20	2.25	2
G223	M	31-50	31-40	2.33	2
G224	M	31-50	41-50	2.50	3
G226	F	31-50	41-50	2.40	3

G227	M	31-50	41-50	2.25	2
G228	M	17-30	21-30	2.25	2
G230	M	17-30	21-30	3.00	3
G238	M	51-80	61-70	2.50	3
G312	F	31-50	41-50	2.20	2
G316	F	31-50	41-50	2.00	2
G317	M	31-50	31-40	1.50	1
G318	M	51-80	51-60	1.33	1
G320	M	31-50	31-40	1.75	2
G321	F	51-80	71-80	1.33	1
G322	F	51-80	51-60	1.50	1
G323	F	51-80	51-60	1.75	2
G324	M	17-30	21-30	2.25	2
G325	F	31-50	41-50	1.50	1
G326	M	31-50	41-50	1.67	2
G327	M	51-80	61-70	1.50	1
G328	M	17-30	21-30	2.00	2
G329	M	31-50	41-50	2.00	2
G331	F	17-30	21-30	1.20	1
G332	M	51-80	61-70	1.75	2
G511	F	31-50	31-40	1.50	1
G515	F	51-80	71-80	1.75	2
G517	F	17-30	17-20	1.00	1
G518	F	31-50	41-50	1.00	1
G519	M	51-80	61-70	1.67	2
G520	F	51-80	51-60	1.67	2
G521	F	31-50	31-40	1.25	1
G522	M	51-80	61-70	2.00	2
G525	F	31-50	31-40	2.00	2
G526	M	51-80	61-70	1.67	2
G527	M	17-30	21-30	2.50	3
G528	M	17-30	17-20	2.00	2
G529	M	31-50	31-40	1.50	1

Appendix 8: Example Auditory Analyses (G035, G044, G052, G519)

G035 – NURSE

	Word	Analysis 1	Analysis 2	Analysis 3
1	thirty	ɜ·	cB	cB
2	thirty	ɞ·	cB	cB
3	working	ɔ:	B	B
4	first	ɔ·	B	B
5	firm (n.)	ɔ:	B	B
6	firm (n.)	ɔ̟·	B	B
7	firm (n.)	ɔ·	B	B
8	working	ɔ̟·	B	cB
9	worked	ɔ̟·	cB	cB
10	furniture	ɔ̟·	B	cB
11	working	ɔ̟·	B	B
12	firm (n.)	ɔ̟·	B	cB
13	heard	ɜ·	cB	cB
14	heard	?	?	?
15	heard	ɜ·	cB	cB

G035 – NORTH

	Word	Analysis 1	Analysis 2	Analysis 3
1	born	ɜ· / ɔ̟·	cB	cB
2	born	ɔ̟:	B	cB
3	born	ɔ̟:	B	B
4	born	ɔ:	B	B
5	born	ɔ:	B	B
6	born	ɔ:	B	B
7	born	ɔ̟:	B	cB
8	born	ɜ·	cB	B
9	born	ɔ̟:	B	B
10	born	ɜ·	cB	cB

11	board	ɔ̈ː	cB	cB
12	award	ɔ̈ː	cB	cB
13	order	ɔ̣ː	B	B
14	fourteen	ɔ̈ː / ɔ̣ː	B	B
15	fourteen	ɔ̈ˑ	B	B
16	afford	ɔ̈ˑ	cB	cB
17	sport	ɔ̈ˑ	cB	cB
18	Scunthorpe	ɔ̣ː	B	B
19	Geordies	ɔ̣ː	B	B

G044 – NURSE

	Word	Analysis 1	Analysis 2	Analysis 3
1	thirty	ɔ̣ˑ	cB	cB
2	worth	ɔ̈ˑ	cB	cB
3	first	ɔ̣ˑ	B	cB
4	further	ɔ̣ˑ	cB	B
5	further > farther	ä:	-	-
6	worked	ɔˑ	B	B
7	worked	?	?	?
8	worked	ɔ̣ˑ	cB	cB
9	first	ɔ̣ˑ	B	B
10	served	ɑː	A-type	A-type
11	learn	ɔ̈ː	cB	cB
12	worked	ɔˑ	B	B
13	turned	ɔ̈ˑ / ɔ̣ˑ	cB	cB
14	work (v.)	ɔː	B	B
15	work (v.)	ɔː	B	B
16	learn	ɑ̣ˑ	A-type	A-type
17	worked	ɔː	B	B
18	work (n.)	ɔː	B	B
19	first	ɔˑ	B	B
20	work (n.)	ɔ̣ː	B	B
21	work (n.)	?	?	?

22	work (n.)	ɔ̈ː	B	B
23	work (n.)	ɔ̈˙	B	B
24	work (n.)	ö˙	cB	cB
25	thirsty	öː	cB	cB
26	dirtiest	ɔː	B	B
27	dirty	ɔ̈˙	B	B
28	dirtiest	ɔ̈ː	B	B
29	working	ɔː	B	B
30	worst	ɔ̈ː	B	B
31	worked	ɔ̈˙	B	B
32	learn	ɑ̈˙	A-type	A-type
33	worked	ɔ˙	B	B
34	works (n.)	ɔ̈˙	B	B
35	firm (n.)	ɔ̈˙ / ö˙	cB	B
36	works (n.)	ɔ̈˙	cB	B
37	works (n.)	? ö˙	?cB	?
38	firm (n.)	ɔ̈˙	cB	B
39	learnt	ö˙	cB	cB
40	worked	ɔ̈˙	B	B
41	served	ɔ̈˙	cB	cB
42	first	ɔ̈ː	B	B
43	first	ö˙	cB	cB
44	dirty	ö˙	cB	cB
45	work (v.)	ɔ̈˙	B	B
46	work (v.)	ɔ̈ː	B	B
47	working	ɔ̈ː	B	B
48	work (v.)	ɔ̈˙	B	B
49	?worse	?	?	?
50	first	ɔː(ˈ)	B	B
51	first	ö: / ɔ̈ː	cB	cB
52	world	ö˙	cB	B
53	world	ö˙	cB	cB
54	turn	ö˙	cB	cB

55	Birtley	ɜ˙	cB	cB
56	thirty	ɜ˙	cB	cB
57	learnt	ɑ˙	A-type	A-type
58	learnt	?	?	?
59	work (n.)	ɜ˙	cB	cB
60	worst	ɜ˙	cB	cB
61	hurt	ɔ˙	B	B
62	hurt	ɔ˙	B (?cB)	B
63	work (n.)	? ɜ˙	?cB	?
64	first	ɜ˙ / ɔ˙	cB	cB
65	work (n.)	ɔ˙	B	B
66	further	ɜ˙ / ɔ˙	cB	B
67	learn	ɜ	cB	cB
68	learn	ɑ:	A-type	A-type
69	learn	ɑ:	A-type	A-type

G044 – NORTH

	Word	Analysis 1	Analysis 2	Analysis 3
1	born	ɜ˙	cB	cB
2	Wardley	ɔ˙	B (?cB)	B
3	born	ɔ˙	B (?cB)	B
4	born	ɜ˙ / ɔ˙	cB	cB
5	born	ɜ˙ / ɔ˙	cB	B
6	born	ɔ˙	B	B
7	born	ɔ:	B	B
8	quarter	ä˙	A-type	A-type
9	born	ɜ˙	cB	cB
10	born	ɜ˙	cB	cB
11	?born	? ɜ˙	?cB	?
12	ordinance	ɔ:	B	B
13	born	ɔ:	B	B
14	born	ɜ˙	cB	cB

G052 – NURSE

	Word	Analysis 1	Analysis 2	Analysis 3
1	first	ɞː	cB	B
2	work-	?	?	?
3	working	ɔˑ	B	B
4	work(er)	ɵˑ	cB	cB
5	work (n.)	ɔːŭ	B	B
6	learnt	ɵː	cB	cB
7	work (n.)	ɞ̈	cB	B
8	work (v.)	ɜ̱ˑ	C	C
9	work (v.)	ɜˑ	C	C
10	worked	ɔː	B	B
11	bursted	ɵː	cB	cB
12	shirts	ɵː	cB	cB
13	furnace	ɞˑ	B	B
14	worked	ɞˑ	B	cB
15	work (v.)	ɞ̱ˑː	B	B
16	working	ɞ̱ː	C	C
17	nerves	ɑː	A-type	A-type
18	worked	ɞˑ	B	B
19	works (n.)	ɞː	B	B
20	works (n.)	ɞː	B	B
21	work (n.)	ɵ / ɞ̱ː	cB	C
22	work (n.)	ɞˑ	cB	B
23	worked	ɞˑ	B	B
24	working	ɔː	B	B
25	work (n.)	ɞː	B	B
26	person	ɵː	cB	cB
27	work (n.)	ɞː	cB	B
28	work (n.)	ɞˑ	cB	B
29	work (n.)	ɵː	cB	cB
30	work (n.)	ɞː	B	B
31	birth	ɞː	B	B

32	church	ɝ·	cB	B
33	turned	ɵ·	cB	cB
34	burn	ɔː	B	B
35	first	ɞ·	cB	cB
36	Bernadette	ɞ	cB	cB
37	burning	ɚ·	B (?cB)	B
38	person	ɚ·	B (?cB)	B
39	person	ɵ·	cB	cB
40	turn	ɚ·	cB (?B)	cB
41	heard	ɵ·	?	cB

G052 – NORTH

	Word	Analysis 1	Analysis 2	Analysis 3
1	born	ɵ·	cB	cB
2	Cornwall	ɒː	B	B
3	born	ɒ·	B (?cB)	B
4	born	ɵ·	cB	cB
5	forty	ɵ	cB	cB
6	course	ɵ·	cB / B	cB
7	born	ɔː	B	B
8	fourteen	ɒ·	?	B
9	morning	ɒː	B	B
10	fourteen	ɔ·ə̆	B	B
11	fourteen	ɵ·	cB	cB
12	born	ɒ·	B	cB
13	roars	ɒː	B	B
14	ordinary	? ɐ·	?C	C
15	corner	ɵ·	cB	cB
16	corner	ɒ·	B	B
17	corner	ɒ·	B	cB

G519 – NURSE

	Word	Analysis 1	Analysis 2	Analysis 3
1	thirty	ɛ̱	F	F
2	thirty	ɛ	F	F
3	thirty	ɛ	F	F
4	workers	ɔ̈·	cB	cB
5	worker	ɔ̈·	cB	cB
6	working	?	?	?
7	?world	?	?	?
8	served	ɋ·	A-type	A-type
9	thirty	ɛ	F	F
10	worked	ɔ̣·	B	B
11	firms (n.)	ɔ̈·	B	cB
12	worked	ɔ̈·	B	cB
13	worked	ɔ̈·	B	cB
14	worked	ɔ̈·	B (?cB)	cB
15	worked	ɔ̣·	B	cB
16	girders	ɔ·	B	B
17	worked	?	?	?
18	worst	ɞ·	cB	cB
19	firm	ɔ̈	cB	cB
20	worked	ɔ̣·	B	B (?cB)
21	working	ɔ̈	cB	cB
22	worked	ɔ̈·	B	cB
23	firm's (n.)	ɔ̈	cB	cB
24	firm (n.)	ɔ̈	cB	cB
25	thirty	ɔ̈·	cB	cB
26	first	ɔ̈·	cB	cB
27	circumstances	ɔ̈·	cB	cB
28	thirty	ɛ̣	F	F
29	thirty	ɛ̱	F	F
30	working	ɔ̣·	cB	cB
31	works (v.)	ɔ̈·	cB	cB

32	worked	ɔ̣·	cB	cB
33	firm (n.)	ɵ	cB	cB
34	work (v.)	ɔ·	B	B
35	birch	ɵː	cB	cB
36	thirteen	ʒ̣·	cF	cF
37	thirteen	ʒ̣·	cF	cF
38	person	ɞ·	cB	cB
39	Conservative	ɔ̣·	B	B
40	working	?	?	cB
41	Conservative	?	?	?
42	work (v.)	ɔ̣ː	B	B
43	work (v.)	ɔ̣·	B	B
44	thirty	ɛ̣	F	F
45	thirty	ɛ̣	F	F
46	work (v.)	ɞ·	cB	cB
47	work (v.)	ɵ·	cB	cB
48	?work (v.)	?	?	?
49	working	? ɵ	?cB	?
50	working	?	?	?
51	worked	ɔ̣·	B	B
52	girders	ɞ·	cB (?C)	cB
53	worked	ɵ	cB	cB
54	thirty	ɛ̣	F	F
55	heard	ɔ̣·	cB	B
56	person	ɵ·	cB	cB
57	firstly	ɵː	cB	cB
58	heard	?	?	?
59	heard	?	?	?

G519 – NORTH

	Word	Analysis 1	Analysis 2	Analysis 3
1	born	ɵ	cB	cB
2	born	ɵ·	cB	cB

3	born	ɔ̰·	cB	cB
4	forty	ɔ·	B	B
5	?forty	?	?	?
6	?forty	?	?	?
7	fourteen	ɔ·	B	B
8	important	ɔ̈·	cB	cB
9	morning	ɔ̰·	B	B
10	towards	ɑ·	A-type	A-type
11	normal	ɔ·	B	B
12	sort	? ɔ̈	?cB	cB
13	normal	? ɔ̈	?cB	?
14	morning	ɔ̰·	B	B

Appendix 9: Details of the Auditory Analysis of the TLS

		Raw Figures						Percentages				
Speaker	LexSet	F	cF	C	cB	B	Total	F	cF	C	cB	B
G011	NURSE	0	14	4	0	0	18	0.00	77.78	22.22	0.00	0.00
G011	NORTH	0	0	0	3	8	11	0.00	0.00	0.00	27.27	72.73
G012	NURSE	7	18	2	0	0	27	25.93	66.67	7.41	0.00	0.00
G012	NORTH	0	0	0	0	6	6	0.00	0.00	0.00	0.00	100.00
G016	NURSE	6	20	2	0	0	28	21.43	71.43	7.14	0.00	0.00
G016	NORTH	0	0	0	3	7	10	0.00	0.00	0.00	30.00	70.00
G021	NURSE	19	24	1	0	0	44	43.18	54.55	2.27	0.00	0.00
G021	NORTH	0	0	0	13	14	27	0.00	0.00	0.00	48.15	51.85
G022	NURSE	3	5	4	0	0	12	25.00	41.67	33.33	0.00	0.00
G022	NORTH	0	0	0	6	8	14	0.00	0.00	0.00	42.86	57.14
G023	NURSE	4	31	7	0	0	42	9.52	73.81	16.67	0.00	0.00
G023	NORTH	0	0	0	7	12	19	0.00	0.00	0.00	36.84	63.16
G024	NURSE	0	6	30	1	0	37	0.00	16.22	81.08	2.70	0.00
G024	NORTH	0	0	0	2	10	12	0.00	0.00	0.00	16.67	83.33
G026	NURSE	0	51	38	0	0	89	0.00	57.30	42.70	0.00	0.00
G026	NORTH	0	0	0	10	24	34	0.00	0.00	0.00	29.41	70.59
G027	NURSE	0	40	17	0	0	57	0.00	70.18	29.82	0.00	0.00
G027	NORTH	0	0	0	1	8	9	0.00	0.00	0.00	11.11	88.89
G029	NURSE	6	23	5	0	0	34	17.65	67.65	14.71	0.00	0.00
G029	NORTH	0	0	0	4	18	22	0.00	0.00	0.00	18.18	81.82
G033	NURSE	0	2	17	2	1	22	0.00	9.09	77.27	9.09	4.55
G033	NORTH	0	0	0	3	11	14	0.00	0.00	0.00	21.43	78.57
G034	NURSE	3	15	0	0	0	18	16.67	83.33	0.00	0.00	0.00
G034	NORTH	0	0	0	6	5	11	0.00	0.00	0.00	54.55	45.45
G035	NURSE	0	0	0	8	6	14	0.00	0.00	0.00	57.14	42.86
G035	NORTH	0	0	0	8	11	19	0.00	0.00	0.00	42.11	57.89
G036	NURSE	0	0	6	6	8	20	0.00	0.00	30.00	30.00	40.00
G036	NORTH	0	0	1	5	15	21	0.00	0.00	4.76	23.81	71.43
G041	NURSE	1	1	8	9	1	20	5.00	5.00	40.00	45.00	5.00
G041	NORTH	0	0	2	3	5	10	0.00	0.00	20.00	30.00	50.00
G042	NURSE	1	10	0	0	0	11	9.09	90.91	0.00	0.00	0.00
G042	NORTH	0	0	0	2	2	4	0.00	0.00	0.00	50.00	50.00
G044	NURSE	0	0	0	21	35	56	0.00	0.00	0.00	37.50	62.50
G044	NORTH	0	0	0	5	7	12	0.00	0.00	0.00	41.67	58.33
G045	NURSE	0	0	2	19	7	28	0.00	0.00	7.14	67.86	25.00

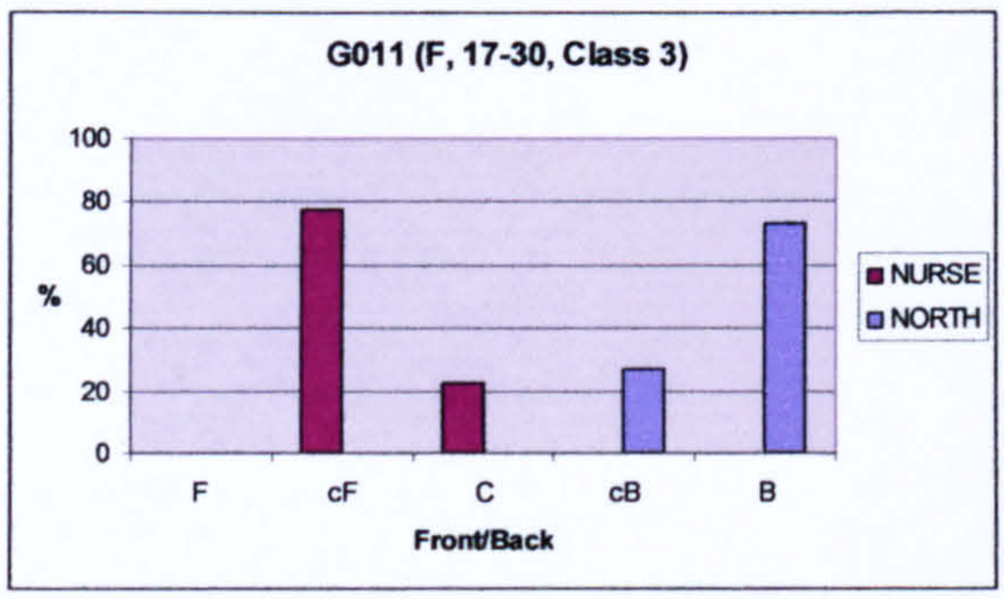
G045	NORTH	0	0	0	1	15	16	0.00	0.00	0.00	6.25	93.75
G047	NURSE	0	12	28	18	8	66	0.00	18.18	42.42	27.27	12.12
G047	NORTH	0	0	0	3	29	32	0.00	0.00	0.00	9.38	90.63
G051	NURSE	0	7	2	0	0	9	0.00	77.78	22.22	0.00	0.00
G051	NORTH	0	0	0	2	5	7	0.00	0.00	0.00	28.57	71.43
G052	NURSE	0	0	4	13	22	39	0.00	0.00	10.26	33.33	56.41
G052	NORTH	0	0	1	8	8	17	0.00	0.00	5.88	47.06	47.06
G053	NURSE	0	5	9	0	0	14	0.00	35.71	64.29	0.00	0.00
G053	NORTH	0	0	0	2	2	4	0.00	0.00	0.00	50.00	50.00
G054	NURSE	0	1	18	38	19	76	0.00	1.32	23.68	50.00	25.00
G054	NORTH	0	0	1	20	33	54	0.00	0.00	1.85	37.04	61.11
G055	NURSE	2	23	0	0	0	25	8.00	92.00	0.00	0.00	0.00
G055	NORTH	0	0	0	1	13	14	0.00	0.00	0.00	7.14	92.86
G056	NURSE	0	18	29	2	0	49	0.00	36.73	59.18	4.08	0.00
G056	NORTH	0	0	0	5	13	18	0.00	0.00	0.00	27.78	72.22
G057	NURSE	0	2	25	12	0	39	0.00	5.13	64.10	30.77	0.00
G057	NORTH	0	0	0	9	15	24	0.00	0.00	0.00	37.50	62.50
G058	NURSE	1	16	5	0	0	22	4.55	72.73	22.73	0.00	0.00
G058	NORTH	0	0	0	3	7	10	0.00	0.00	0.00	30.00	70.00
G210	NURSE	4	24	10	0	0	38	10.53	63.16	26.32	0.00	0.00
G210	NORTH	0	0	0	1	15	16	0.00	0.00	0.00	6.25	93.75
G212	NURSE	0	20	4	0	0	24	0.00	83.33	16.67	0.00	0.00
G212	NORTH	0	0	0	4	14	18	0.00	0.00	0.00	22.22	77.78
G213	NURSE	3	30	8	0	0	41	7.32	73.17	19.51	0.00	0.00
G213	NORTH	0	0	0	8	13	21	0.00	0.00	0.00	38.10	61.90
G214	NURSE	9	23	6	0	0	38	23.68	60.53	15.79	0.00	0.00
G214	NORTH	0	0	0	6	8	14	0.00	0.00	0.00	42.86	57.14
G215	NURSE	10	28	0	0	0	38	26.32	73.68	0.00	0.00	0.00
G215	NORTH	0	0	0	4	5	9	0.00	0.00	0.00	44.44	55.56
G216	NURSE	18	15	0	0	0	33	54.55	45.45	0.00	0.00	0.00
G216	NORTH	0	0	0	7	18	25	0.00	0.00	0.00	28.00	72.00
G221	NURSE	0	46	15	0	0	61	0.00	75.41	24.59	0.00	0.00
G221	NORTH	0	0	0	17	20	37	0.00	0.00	0.00	45.95	54.05
G223	NURSE	0	5	33	0	0	38	0.00	13.16	86.84	0.00	0.00
G223	NORTH	0	0	1	7	23	31	0.00	0.00	3.23	22.58	74.19
G224	NURSE	0	11	11	0	0	22	0.00	50.00	50.00	0.00	0.00
G224	NORTH	0	0	0	5	32	37	0.00	0.00	0.00	13.51	86.49
G226	NURSE	4	14	6	0	0	24	16.67	58.33	25.00	0.00	0.00
G226	NORTH	0	0	0	1	11	12	0.00	0.00	0.00	8.33	91.67

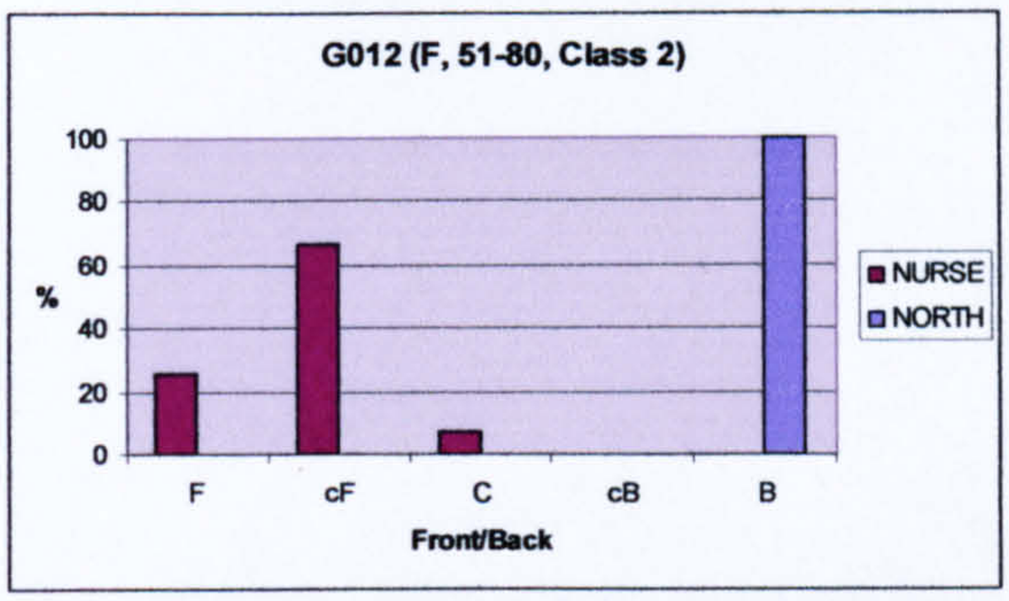
G227	NURSE	0	4	14	0	0	18	0.00	22.22	77.78	0.00	0.00
G227	NORTH	0	0	0	2	12	14	0.00	0.00	0.00	14.29	85.71
G228	NURSE	0	0	36	1	0	37	0.00	0.00	97.30	2.70	0.00
G228	NORTH	0	0	0	7	9	16	0.00	0.00	0.00	43.75	56.25
G230	NURSE	1	22	0	0	0	23	4.35	95.65	0.00	0.00	0.00
G230	NORTH	0	0	0	3	16	19	0.00	0.00	0.00	15.79	84.21
G238	NURSE	0	8	11	0	0	19	0.00	42.11	57.89	0.00	0.00
G238	NORTH	0	0	0	5	14	19	0.00	0.00	0.00	26.32	73.68
G312	NURSE	0	31	16	0	0	47	0.00	65.96	34.04	0.00	0.00
G312	NORTH	0	0	0	2	33	35	0.00	0.00	0.00	5.71	94.29
G316	NURSE	0	13	9	0	0	22	0.00	59.09	40.91	0.00	0.00
G316	NORTH	0	0	0	1	11	12	0.00	0.00	0.00	8.33	91.67
G317	NURSE	0	0	24	1	0	25	0.00	0.00	96.00	4.00	0.00
G317	NORTH	0	0	0	5	16	21	0.00	0.00	0.00	23.81	76.19
G318	NURSE	2	12	18	2	0	34	5.88	35.29	52.94	5.88	0.00
G318	NORTH	0	0	0	7	14	21	0.00	0.00	0.00	33.33	66.67
G320	NURSE	1	5	25	0	0	31	3.23	16.13	80.65	0.00	0.00
G320	NORTH	0	0	0	0	11	11	0.00	0.00	0.00	0.00	100.00
G321	NURSE	1	2	11	0	0	14	7.14	14.29	78.57	0.00	0.00
G321	NORTH	0	0	0	1	3	4	0.00	0.00	0.00	25.00	75.00
G322	NURSE	1	15	30	0	0	46	2.17	32.61	65.22	0.00	0.00
G322	NORTH	0	0	3	10	9	22	0.00	0.00	13.64	45.45	40.91
G323	NURSE	7	31	0	0	0	38	18.42	81.58	0.00	0.00	0.00
G323	NORTH	0	0	1	6	7	14	0.00	0.00	7.14	42.86	50.00
G324	NURSE	0	13	8	0	0	21	0.00	61.90	38.10	0.00	0.00
G324	NORTH	0	0	0	3	9	12	0.00	0.00	0.00	25.00	75.00
G325	NURSE	2	10	23	2	0	37	5.41	27.03	62.16	5.41	0.00
G325	NORTH	0	0	0	1	20	21	0.00	0.00	0.00	4.76	95.24
G326	NURSE	0	0	16	6	0	22	0.00	0.00	72.73	27.27	0.00
G326	NORTH	0	0	0	2	8	10	0.00	0.00	0.00	20.00	80.00
G327	NURSE	0	3	24	19	12	58	0.00	5.17	41.38	32.76	20.69
G327	NORTH	0	0	0	9	14	23	0.00	0.00	0.00	39.13	60.87
G328	NURSE	0	1	0	4	3	8	0.00	12.50	0.00	50.00	37.50
G328	NORTH	0	0	0	1	0	1	0.00	0.00	0.00	100.00	0.00
G329	NURSE	0	0	1	7	3	11	0.00	0.00	9.09	63.64	27.27
G329	NORTH	0	0	0	1	4	5	0.00	0.00	0.00	20.00	80.00
G331	NURSE	6	29	5	0	0	40	15.00	72.50	12.50	0.00	0.00
G331	NORTH	0	0	0	5	9	14	0.00	0.00	0.00	35.71	64.29
G332	NURSE	4	4	19	1	1	29	13.79	13.79	65.52	3.45	3.45

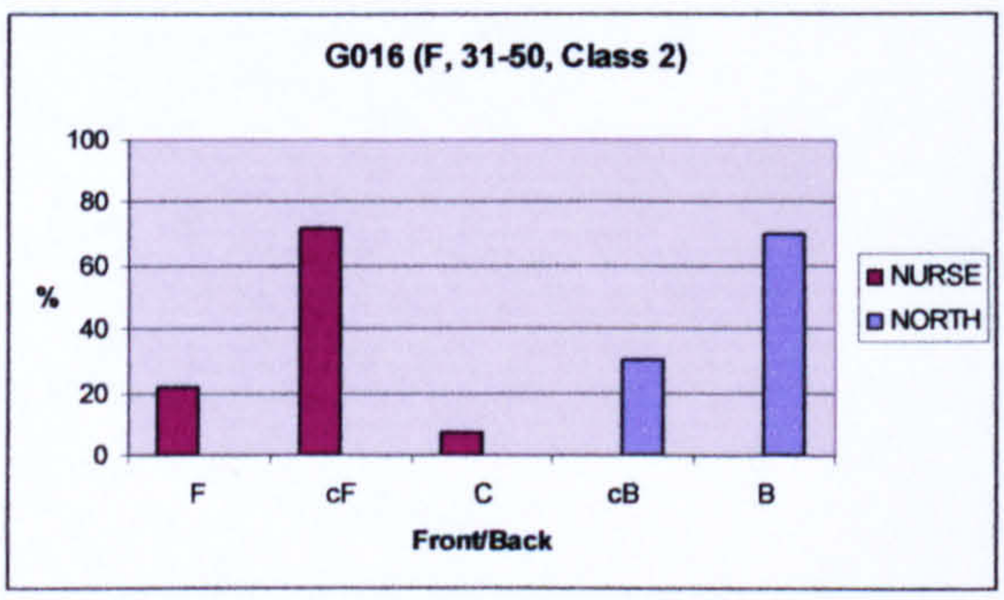
G332	NORTH	0	0	0	7	22	29	0.00	0.00	0.00	24.14	75.86
G511	NURSE	0	4	12	0	0	16	0.00	25.00	75.00	0.00	0.00
G511	NORTH	0	0	0	3	4	7	0.00	0.00	0.00	42.86	57.14
G515	NURSE	4	15	1	0	0	20	20.00	75.00	5.00	0.00	0.00
G515	NORTH	0	0	0	4	4	8	0.00	0.00	0.00	50.00	50.00
G517	NURSE	0	9	7	0	0	16	0.00	56.25	43.75	0.00	0.00
G517	NORTH	0	0	0	3	4	7	0.00	0.00	0.00	42.86	57.14
G518	NURSE	3	39	5	0	0	47	6.38	82.98	10.64	0.00	0.00
G518	NORTH	0	0	0	3	13	16	0.00	0.00	0.00	18.75	81.25
G519	NURSE	9	2	0	29	9	49	18.37	4.08	0.00	59.18	18.37
G519	NORTH	0	0	0	6	5	11	0.00	0.00	0.00	54.55	45.45
G520	NURSE	0	9	39	0	0	48	0.00	18.75	81.25	0.00	0.00
G520	NORTH	0	0	0	1	20	21	0.00	0.00	0.00	4.76	95.24
G521	NURSE	9	15	0	0	0	24	37.50	62.50	0.00	0.00	0.00
G521	NORTH	0	0	0	2	22	24	0.00	0.00	0.00	8.33	91.67
G522	NURSE	3	1	18	38	27	87	3.45	1.15	20.69	43.68	31.03
G522	NORTH	0	0	0	4	18	22	0.00	0.00	0.00	18.18	81.82
G525	NURSE	1	26	5	0	0	32	3.13	81.25	15.63	0.00	0.00
G525	NORTH	0	0	0	3	14	17	0.00	0.00	0.00	17.65	82.35
G526	NURSE	0	0	2	8	7	17	0.00	0.00	11.76	47.06	41.18
G526	NORTH	0	0	0	0	6	6	0.00	0.00	0.00	0.00	100.00
G527	NURSE	0	43	8	0	0	51	0.00	84.31	15.69	0.00	0.00
G527	NORTH	0	0	0	11	33	44	0.00	0.00	0.00	25.00	75.00
G528	NURSE	1	13	6	0	0	20	5.00	65.00	30.00	0.00	0.00
G528	NORTH	0	0	0	1	6	7	0.00	0.00	0.00	14.29	85.71
G529	NURSE	0	7	14	10	5	36	0.00	19.44	38.89	27.78	13.89
G529	NORTH	0	0	0	4	6	10	0.00	0.00	0.00	40.00	60.00

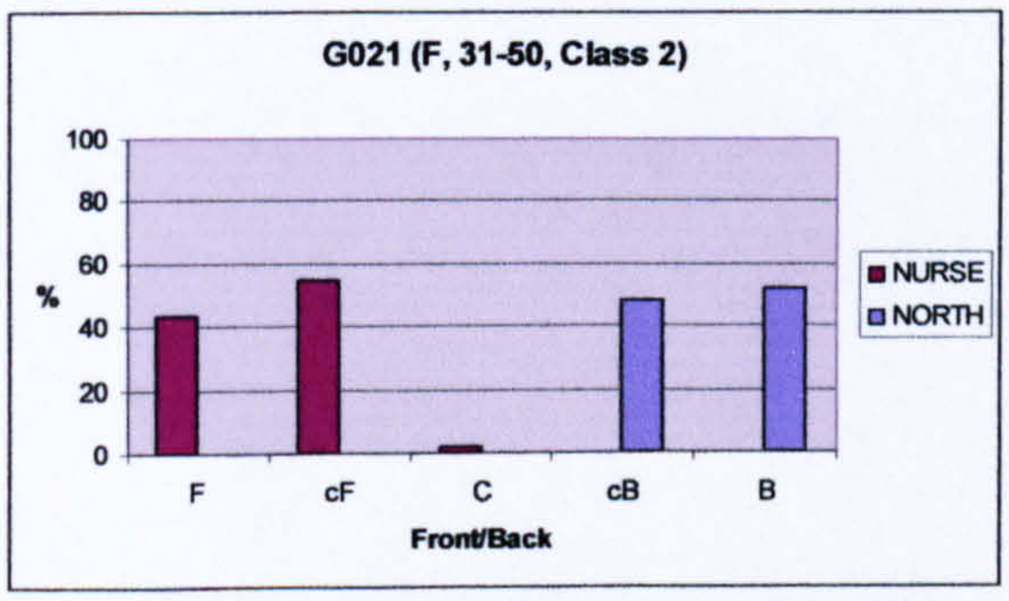
Appendix 10: Individual Speaker Phonetic Profiles in the Auditory Analysis of the TLS

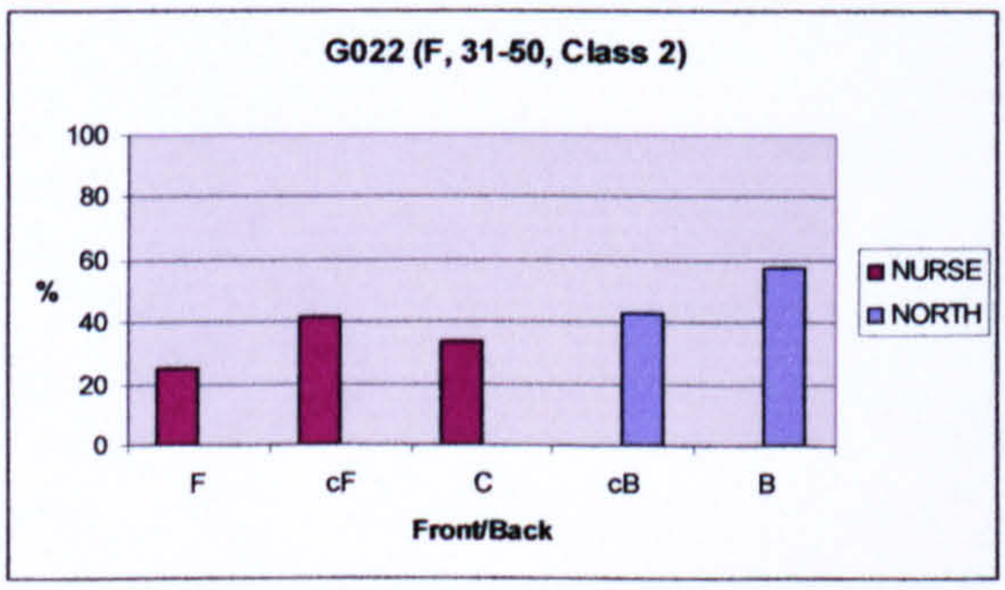
1. Speakers with completely distinct NURSE and NORTH

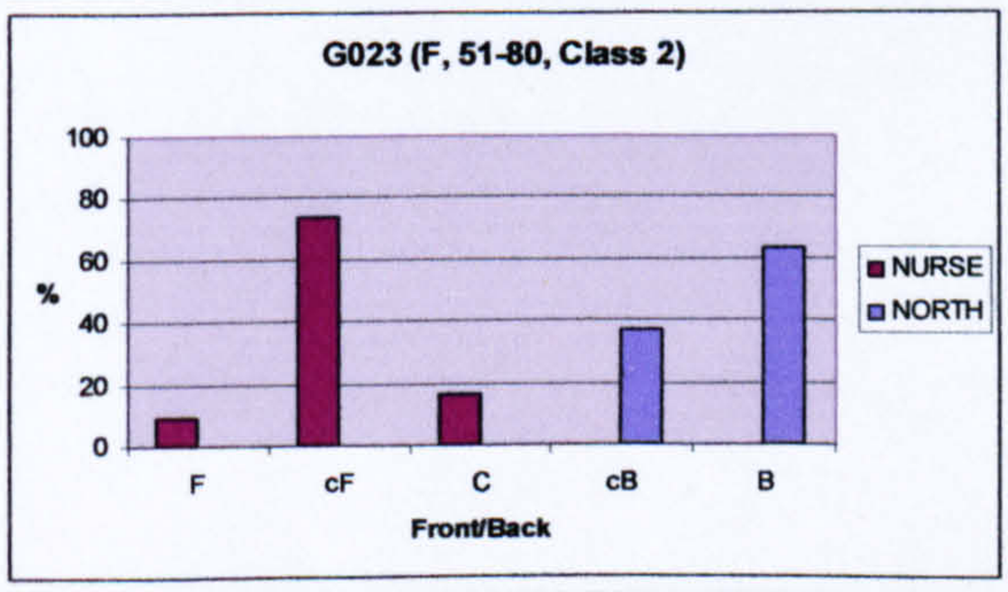


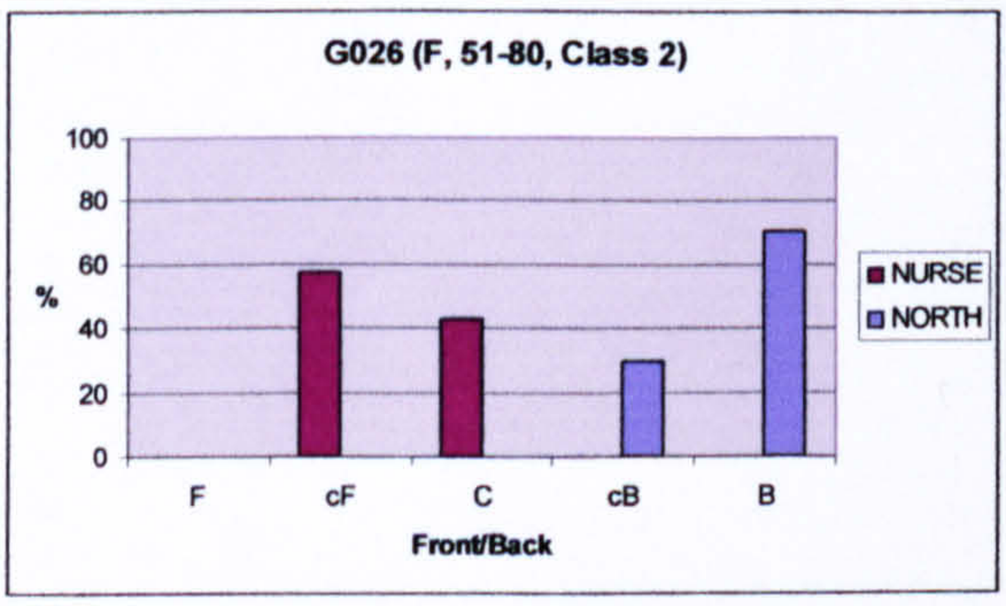


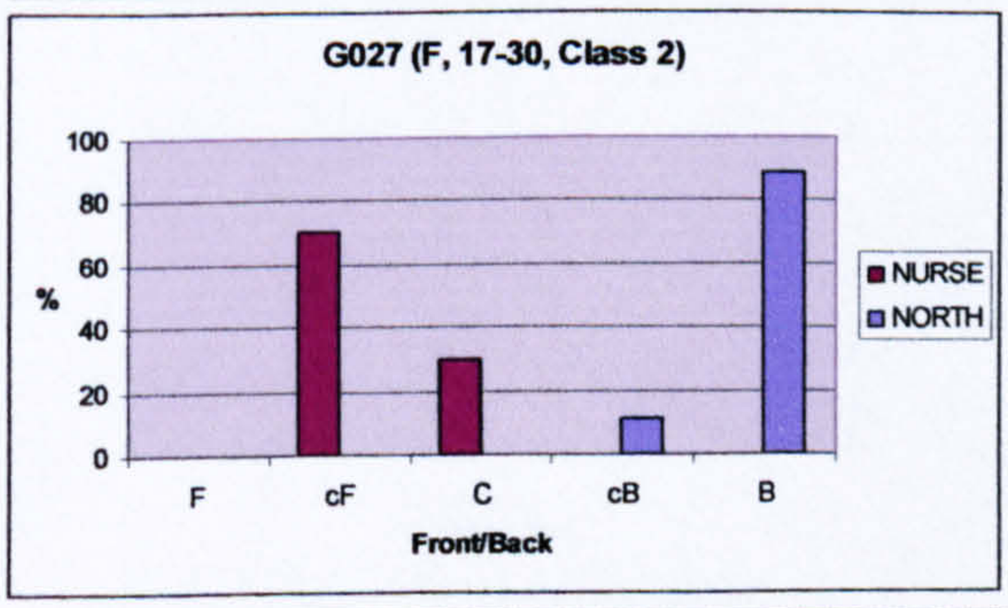


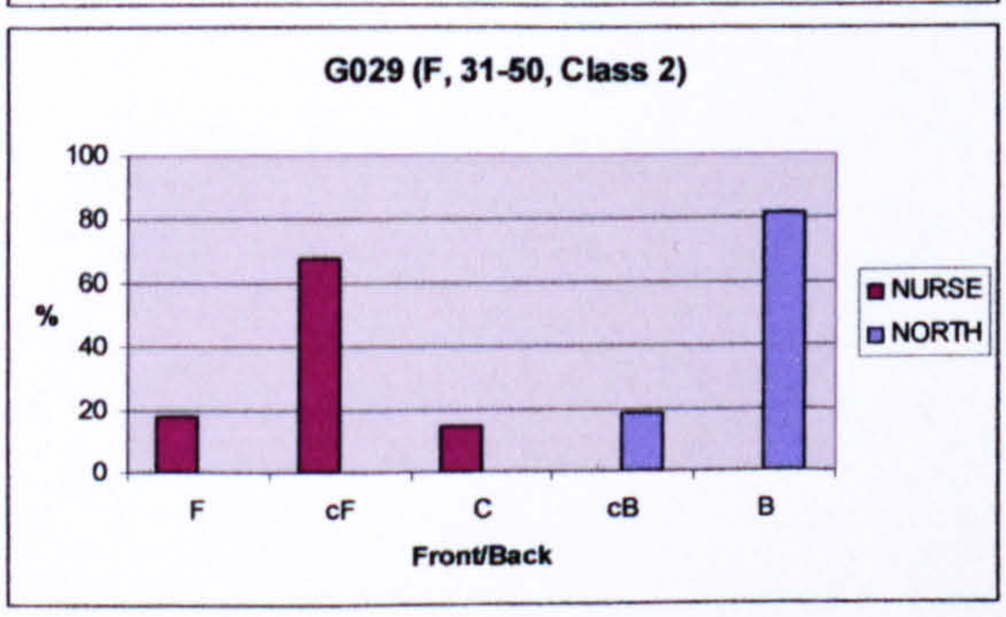


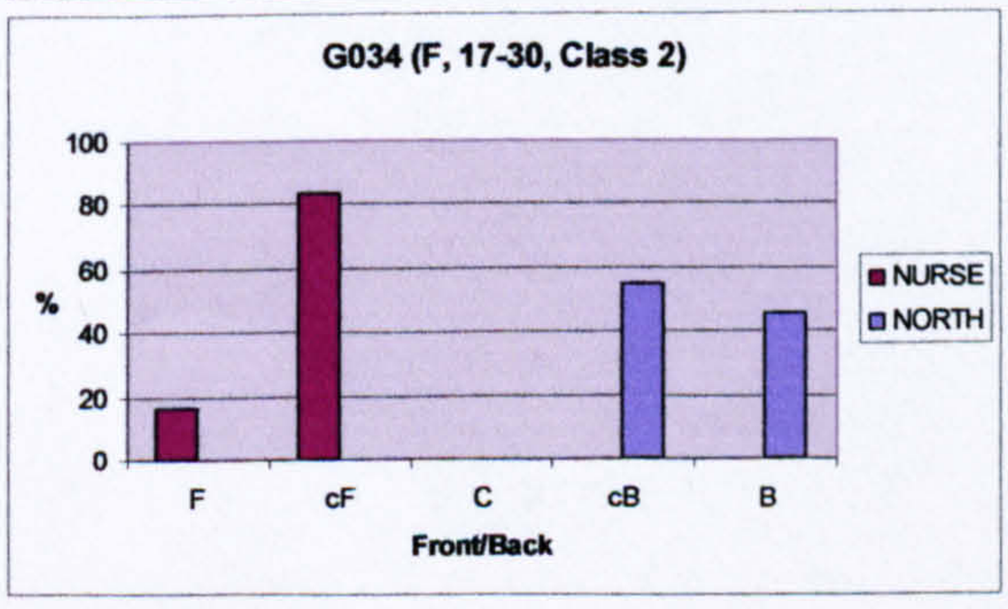


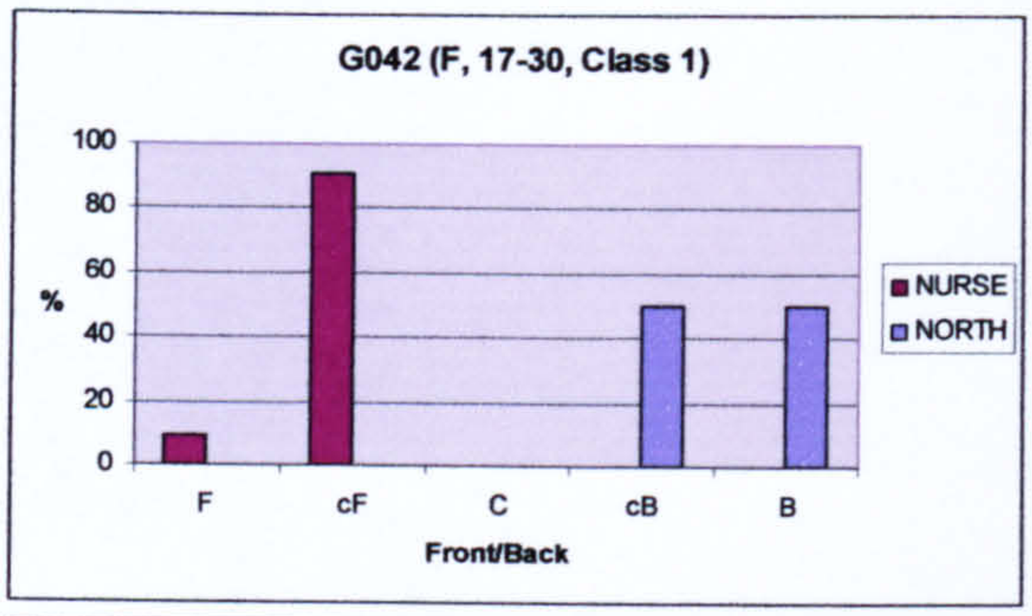


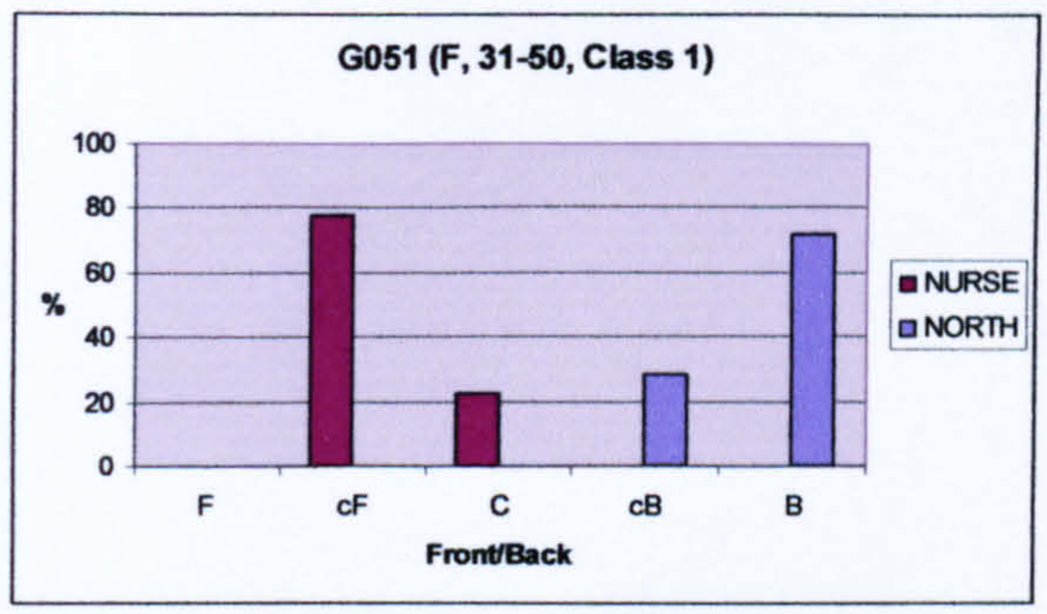


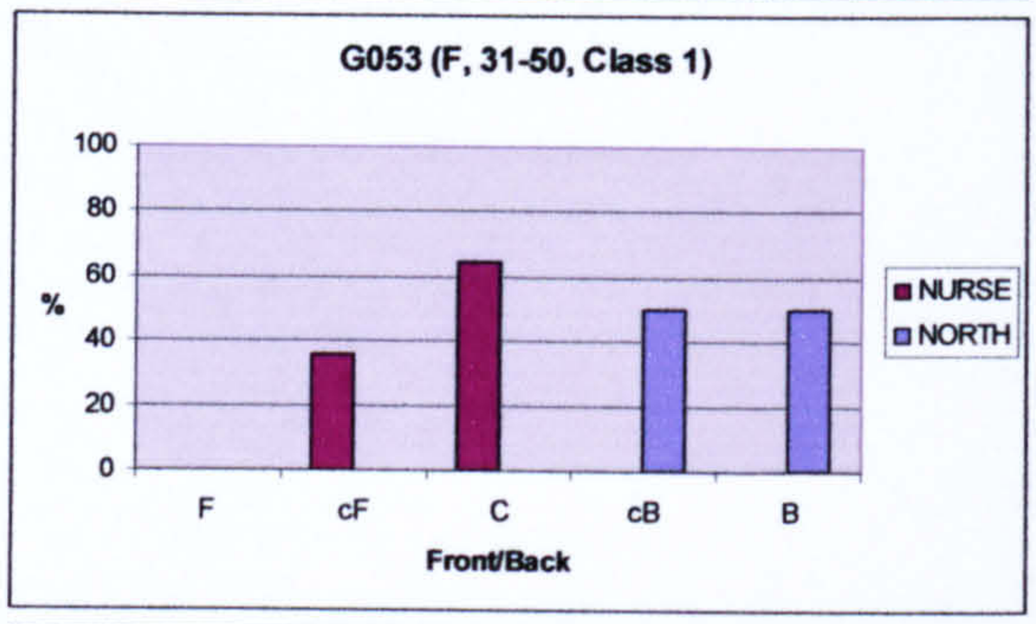


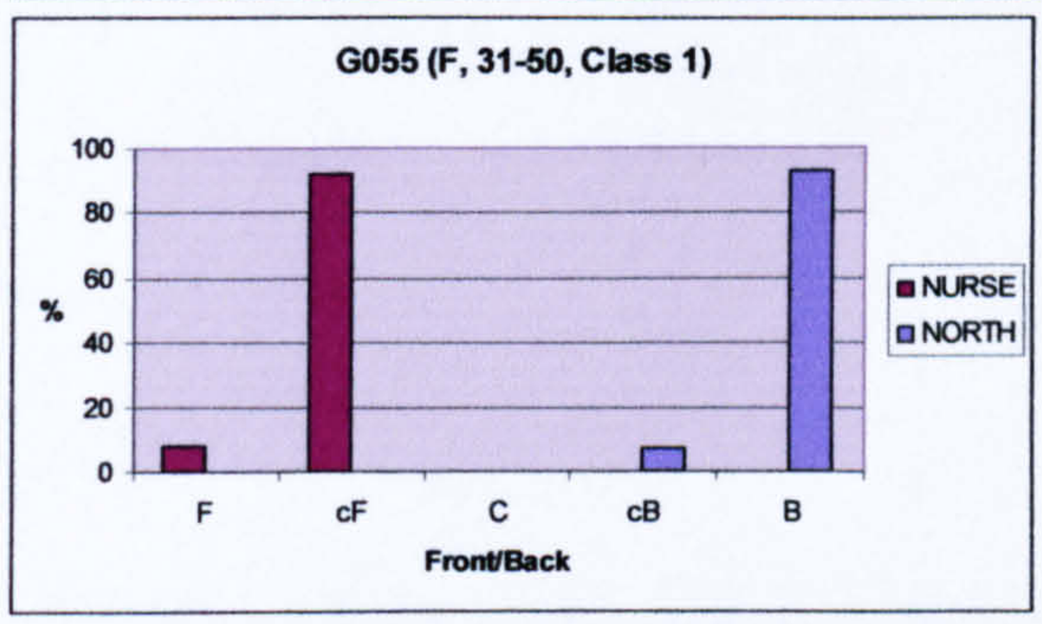


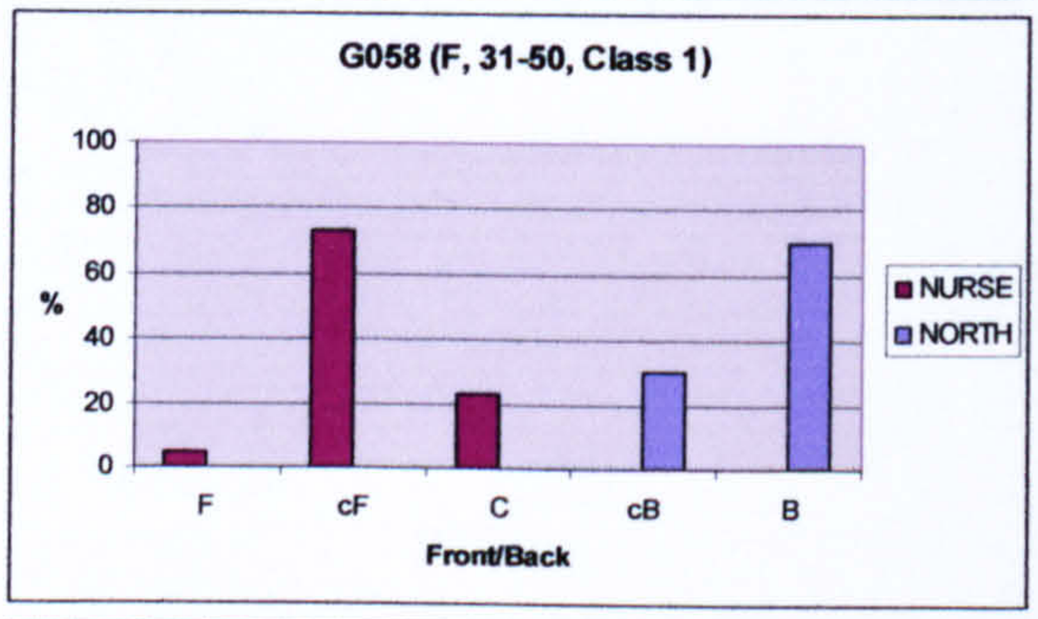


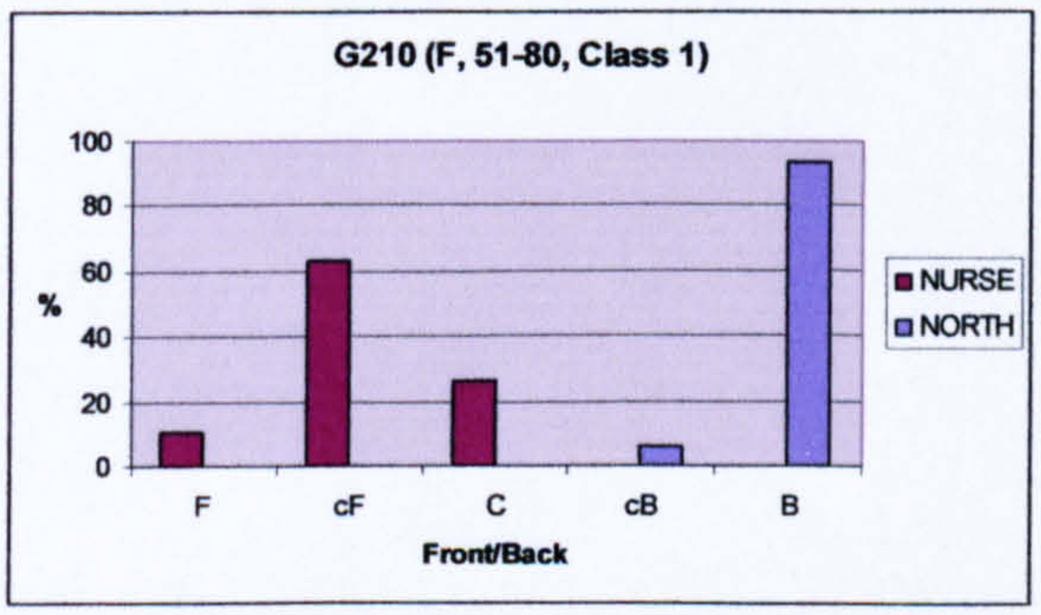

G042 (F, 17-30, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH

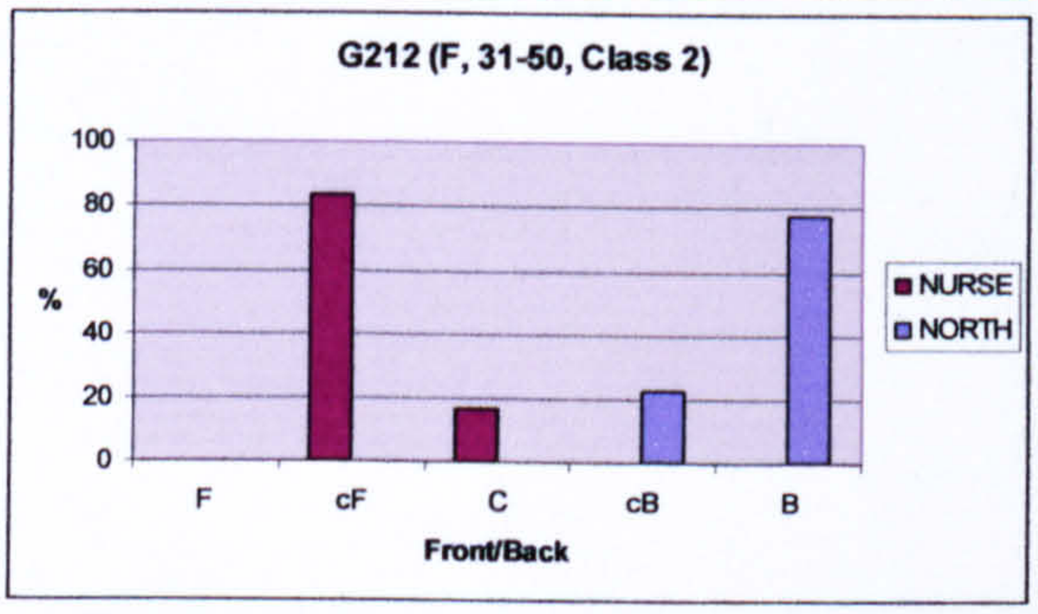

G051 (F, 31-50, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH

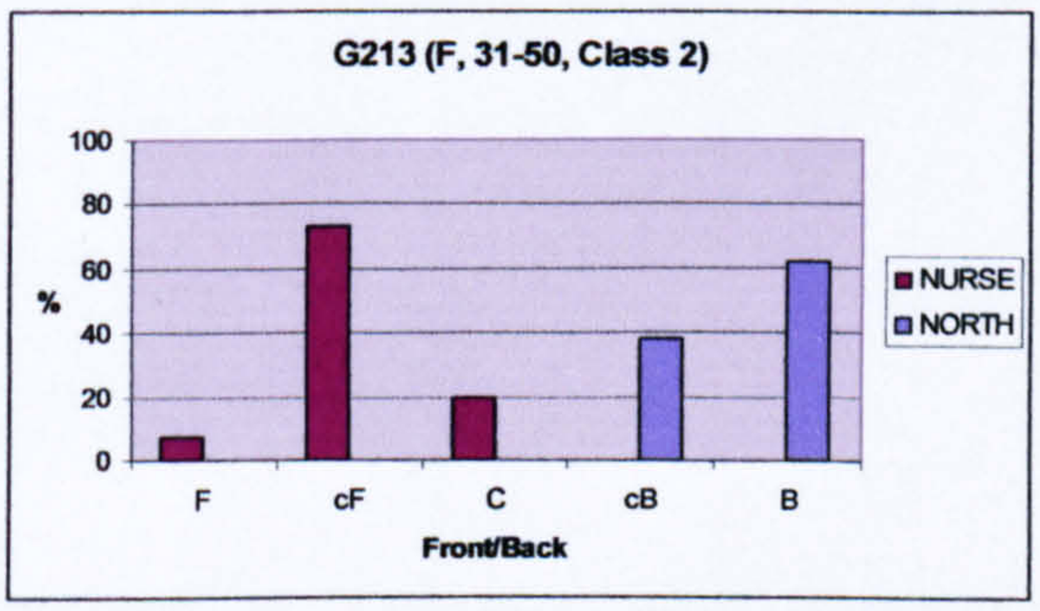

G053 (F, 31-50, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH

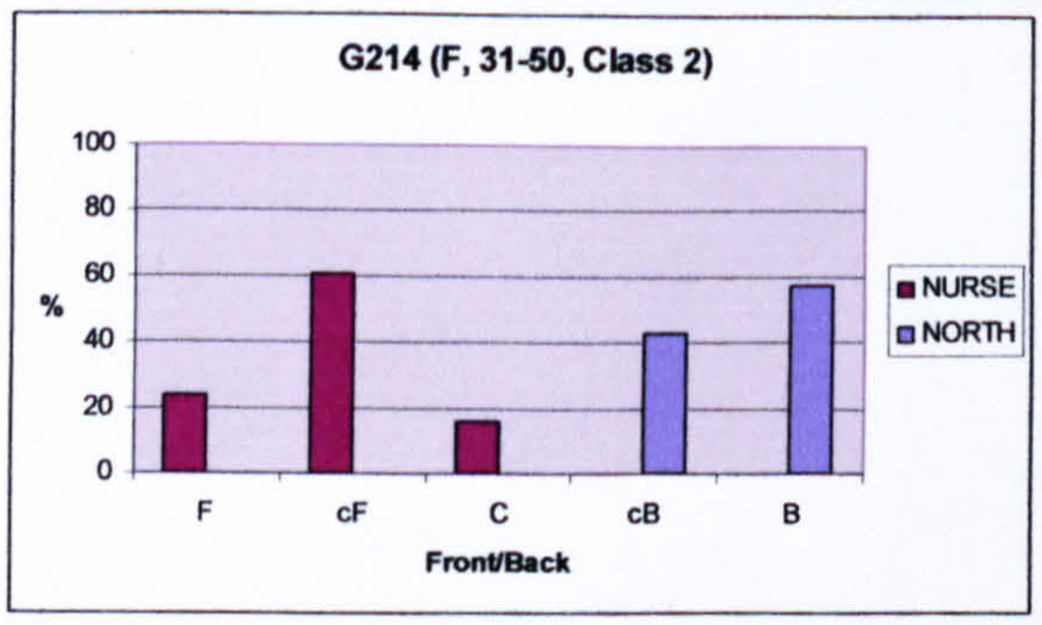

G055 (F, 31-50, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G058 (F, 31-50, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G210 (F, 51-80, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G212 (F, 31-50, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G213 (F, 31-50, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G214 (F, 31-50, Class 2)
100
80
60
40
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0
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F
cF
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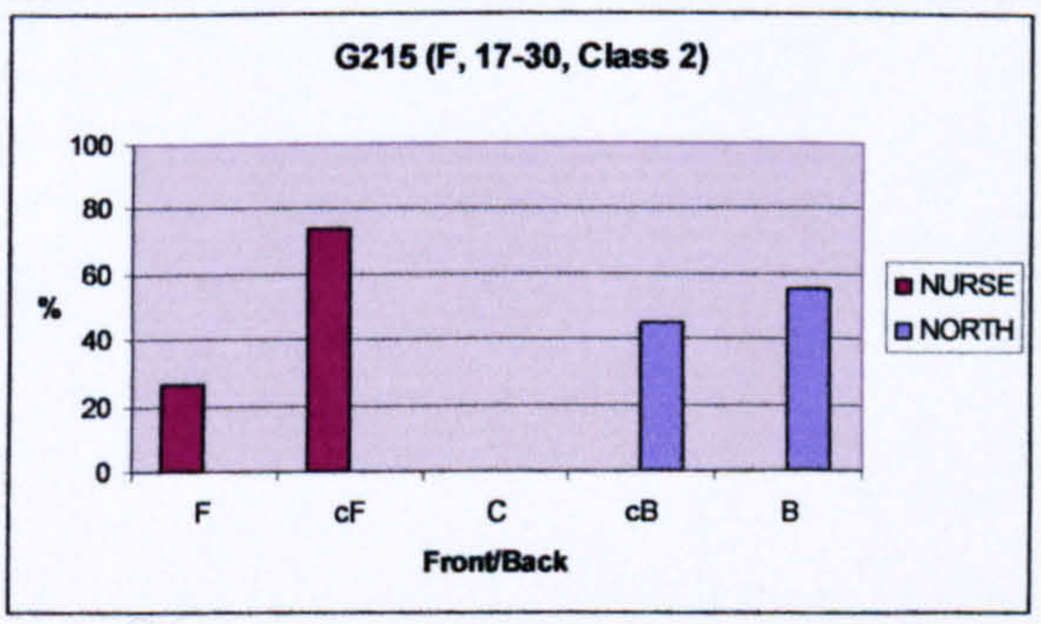
Front/Back
NURSE
NORTH


G215 (F, 17-30, Class 2)
100
80
60
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0
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F
cF
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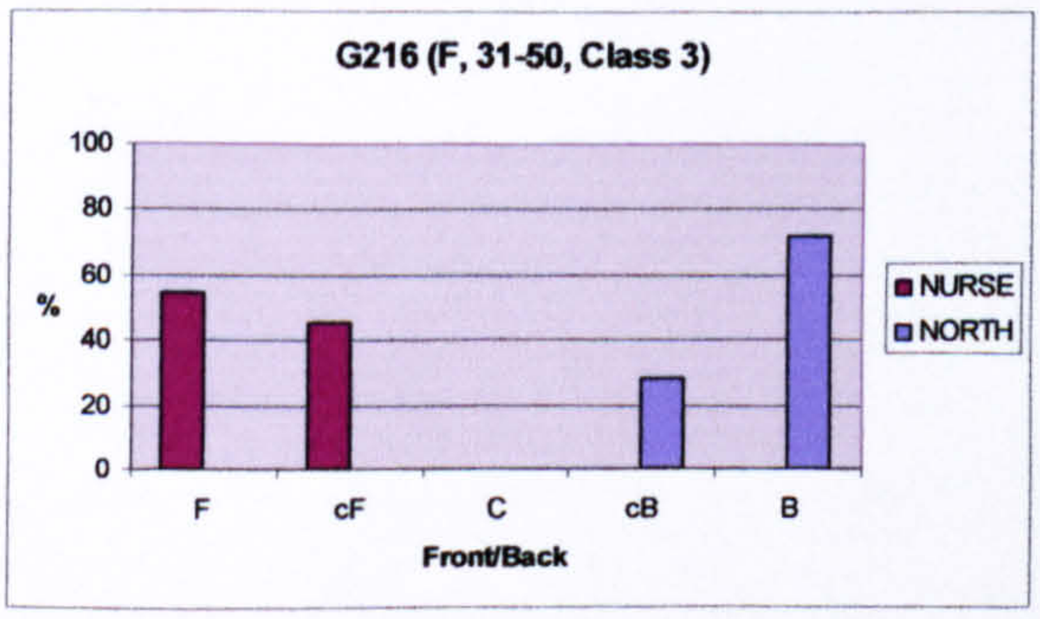
Front/Back
NURSE
NORTH


G216 (F, 31-50, Class 3)
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80
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0
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F
cF
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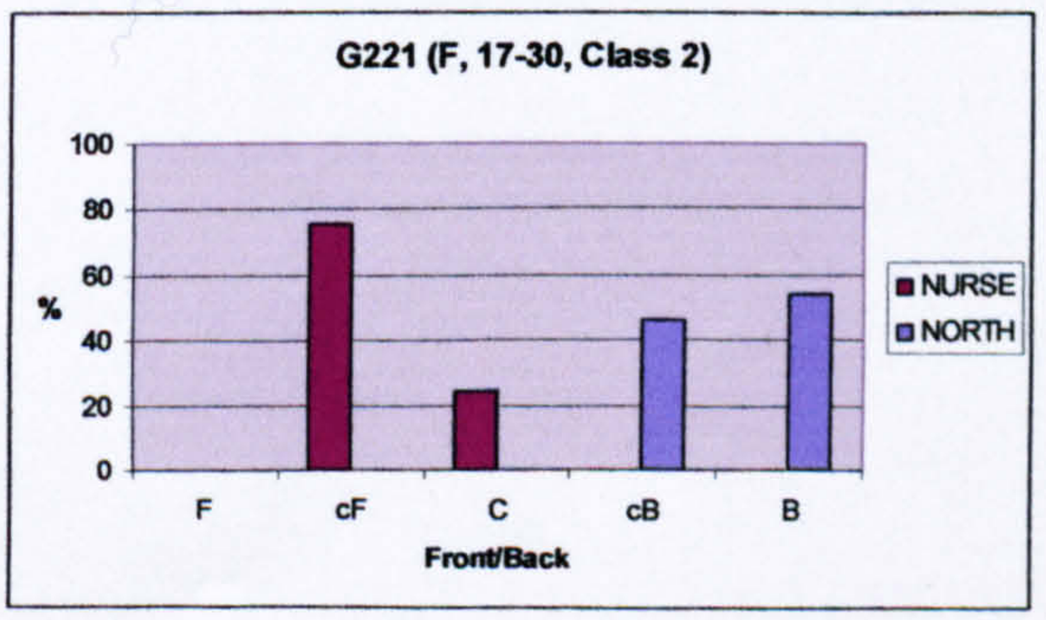
Front/Back
NURSE
NORTH


G221 (F, 17-30, Class 2)
100
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cF
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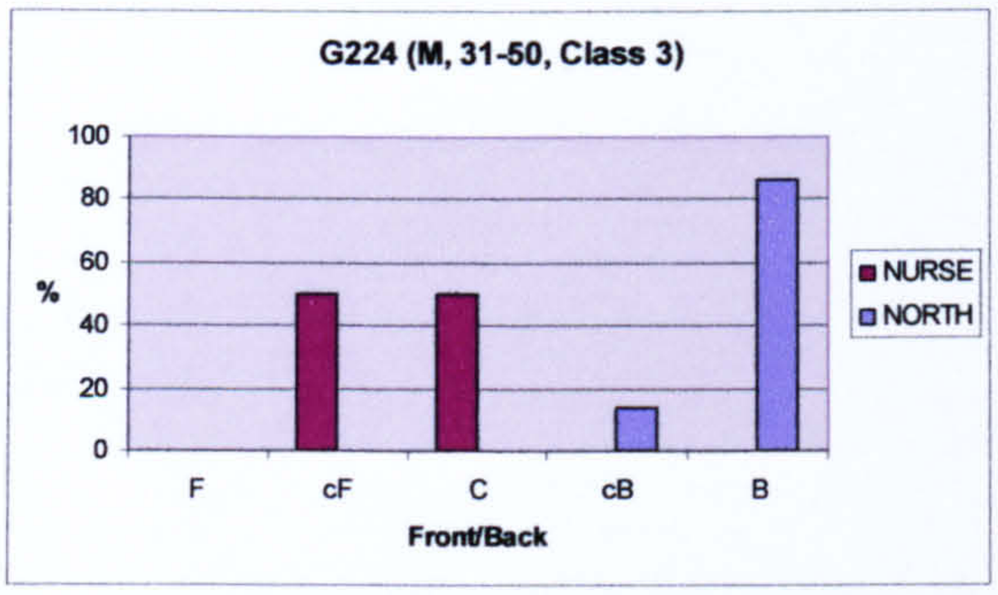
Front/Back
NURSE
NORTH


G224 (M, 31-50, Class 3)
100
80
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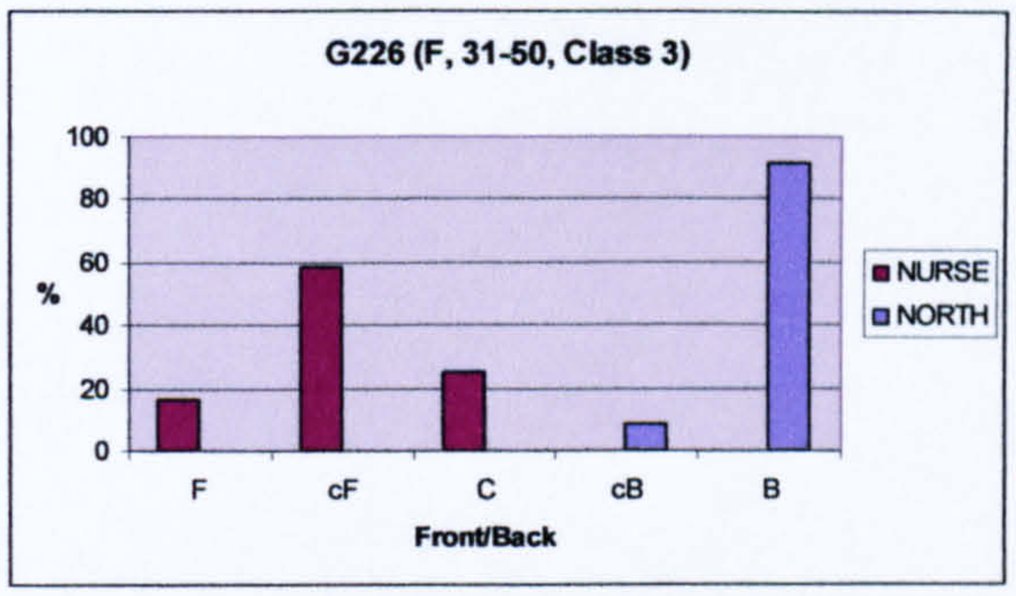
Front/Back
NURSE
NORTH


G226 (F, 31-50, Class 3)
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80
60
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0
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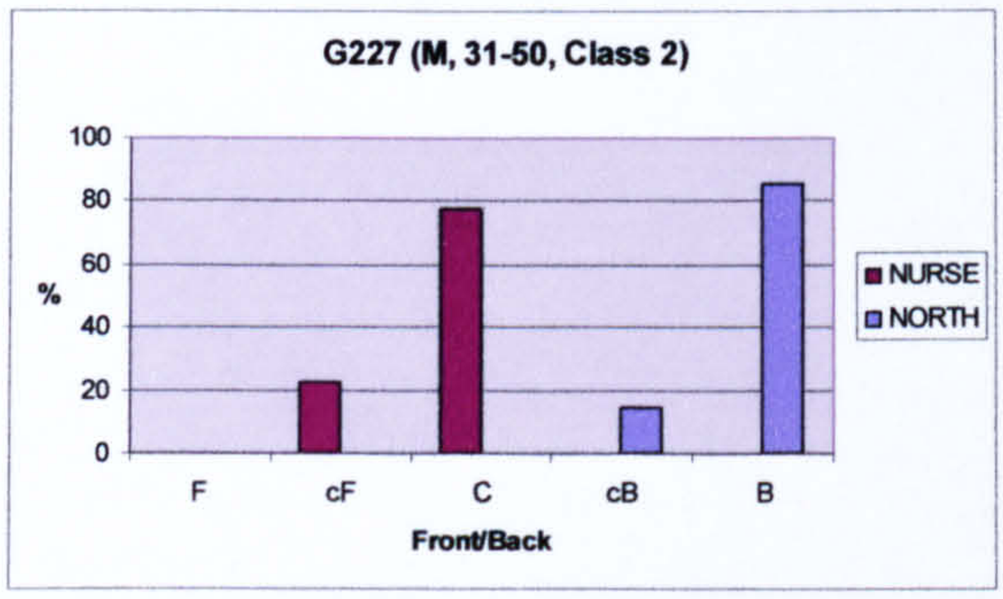
Front/Back
NURSE
NORTH


G227 (M, 31-50, Class 2)
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60
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0
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cF
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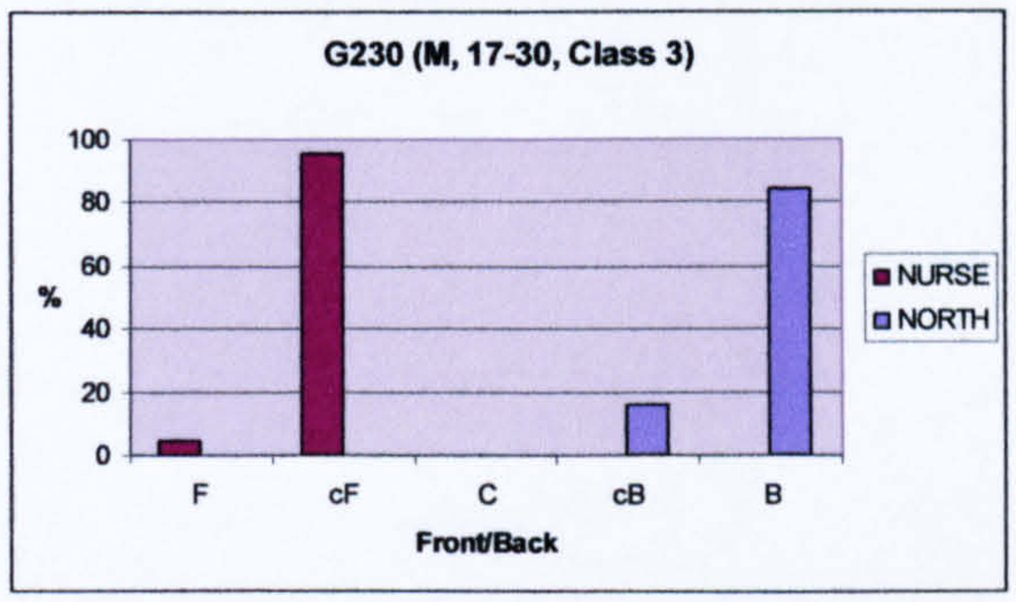
Front/Back
NURSE
NORTH


G230 (M, 17-30, Class 3)
100
80
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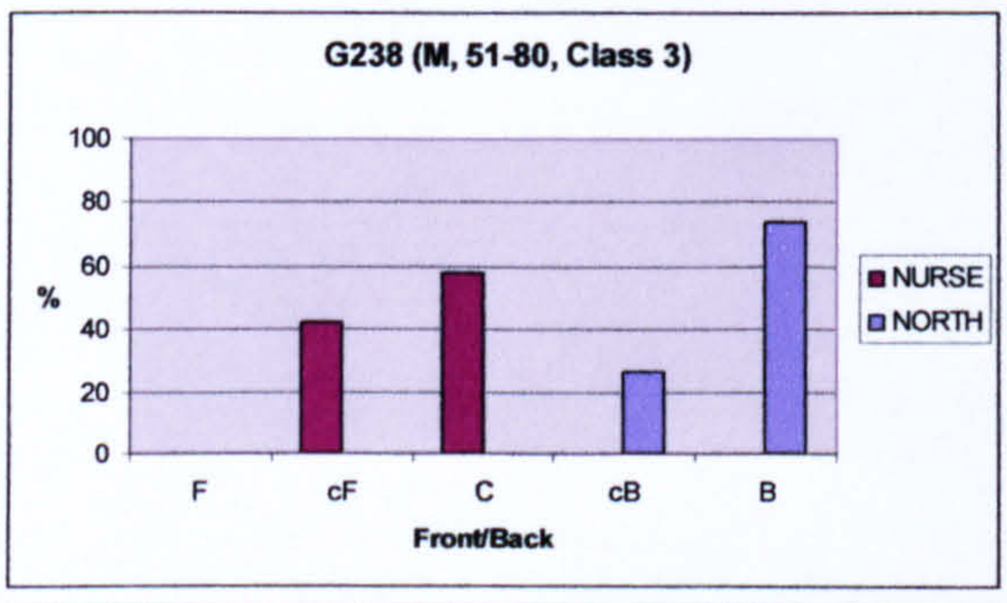
Front/Back
NURSE
NORTH


G238 (M, 51-80, Class 3)
100
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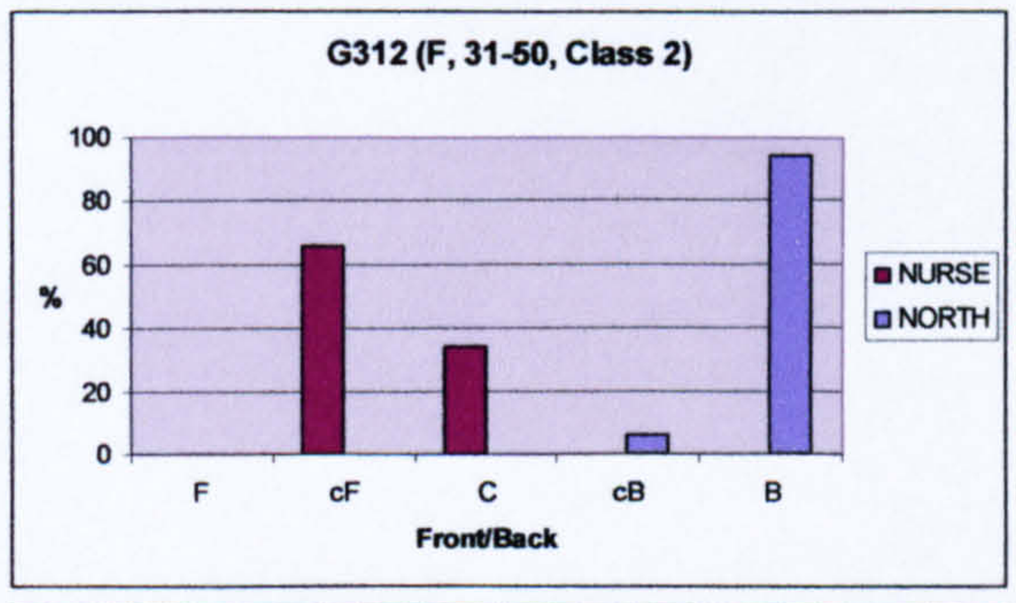
Front/Back
NURSE
NORTH


G312 (F, 31-50, Class 2)
100
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cB
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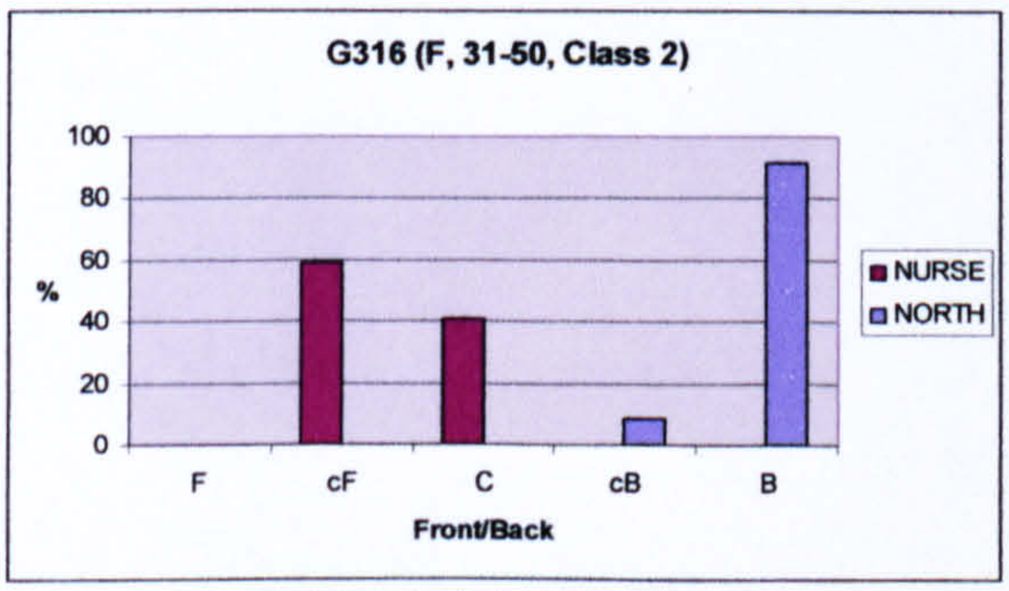
Front/Back
NURSE
NORTH


G316 (F, 31-50, Class 2)
100
80
60
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cF
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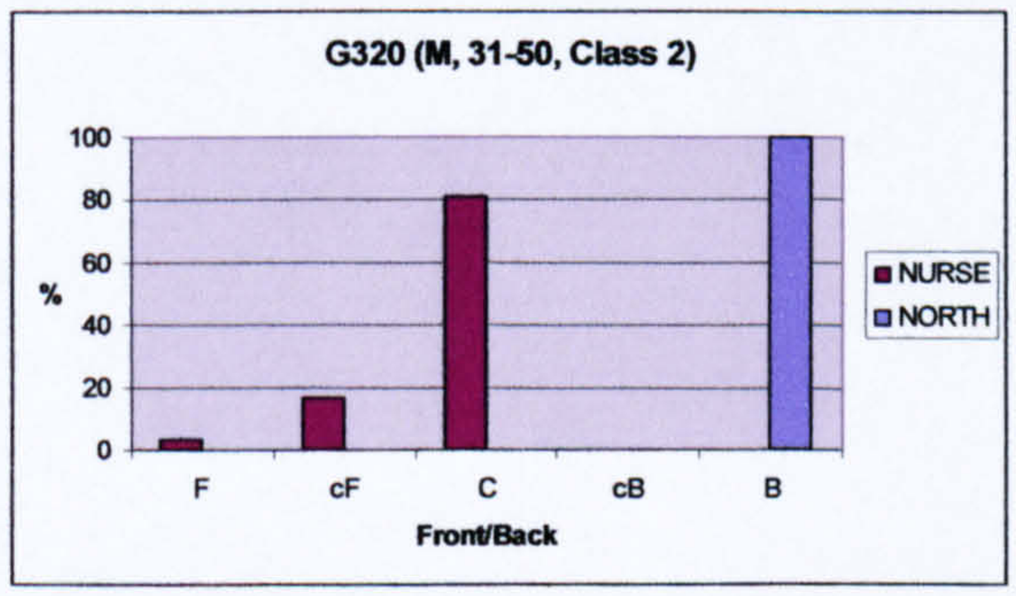
Front/Back
NURSE
NORTH


G320 (M, 31-50, Class 2)
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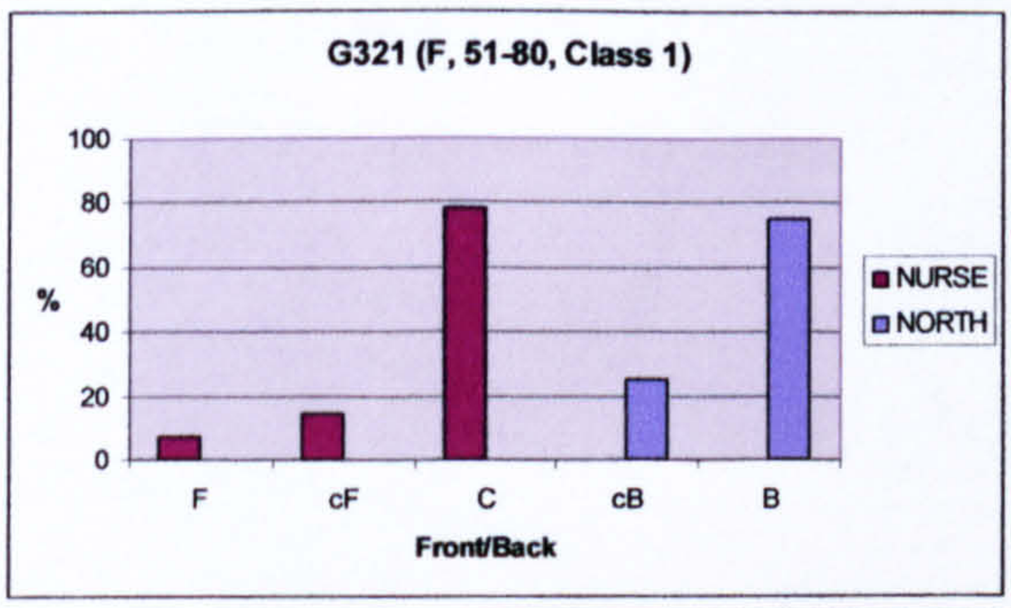
Front/Back
NURSE
NORTH


G321 (F, 51-80, Class 1)
100
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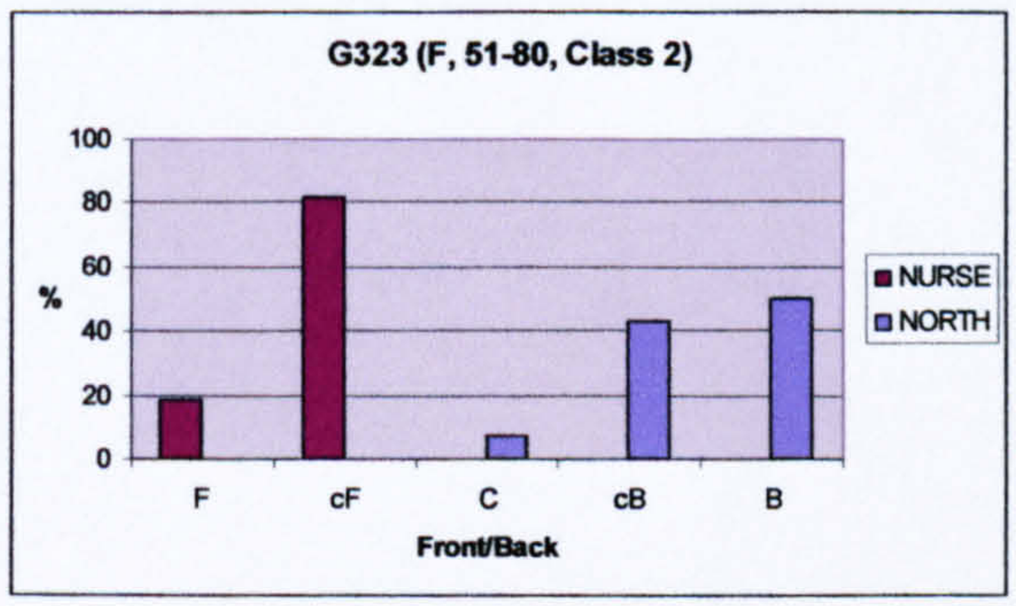
Front/Back
NURSE
NORTH


G323 (F, 51-80, Class 2)
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80
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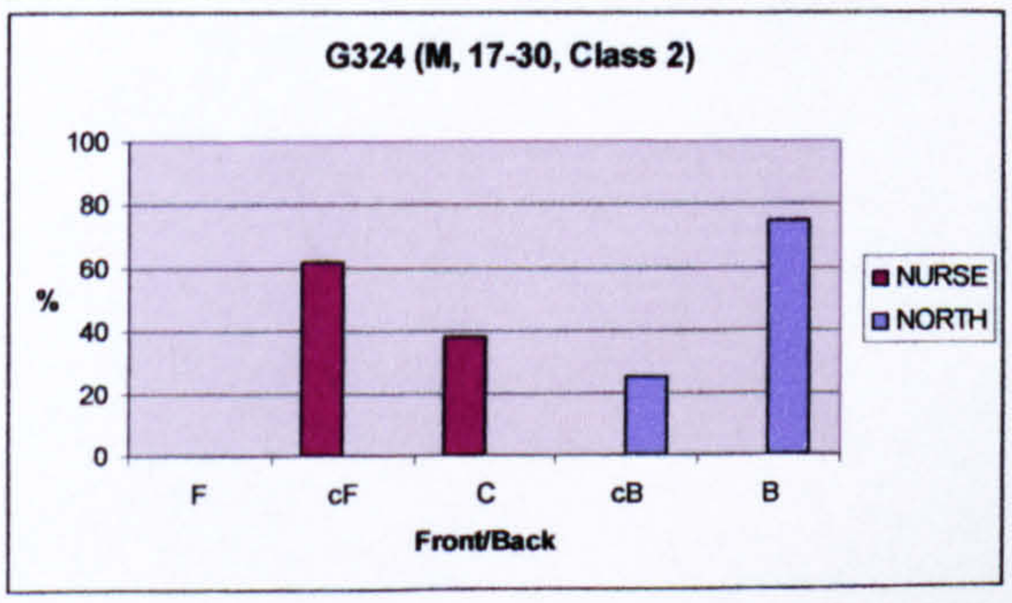
Front/Back
NURSE
NORTH


G324 (M, 17-30, Class 2)
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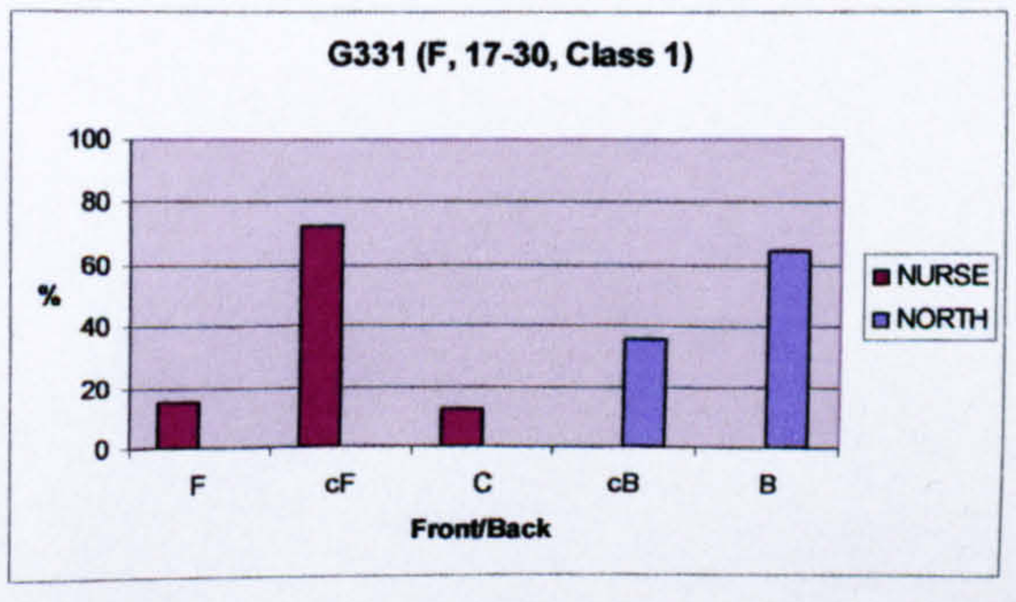
Front/Back
NURSE
NORTH


G331 (F, 17-30, Class 1)
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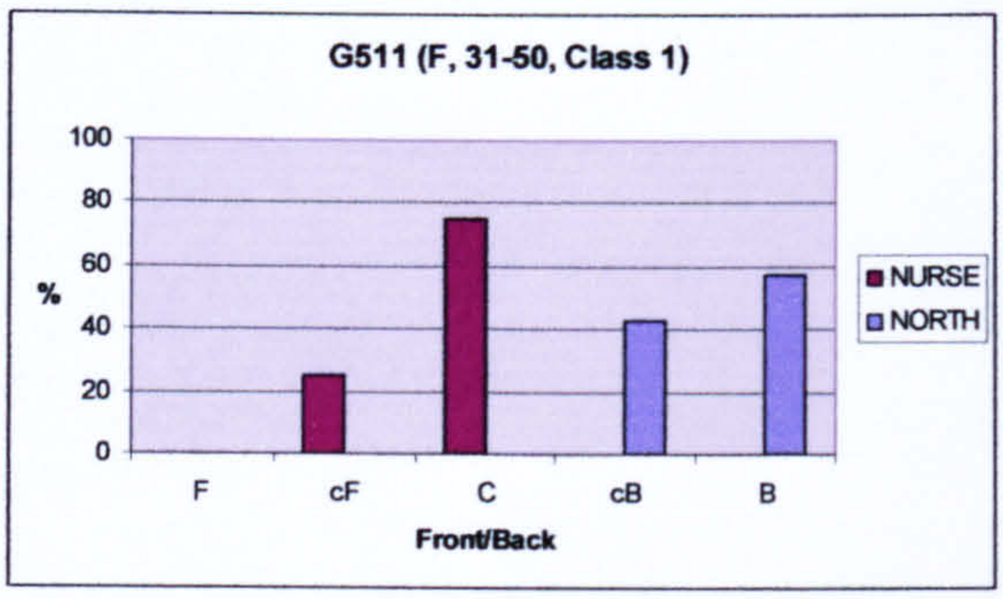
Front/Back
NURSE
NORTH


G511 (F, 31-50, Class 1)
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80
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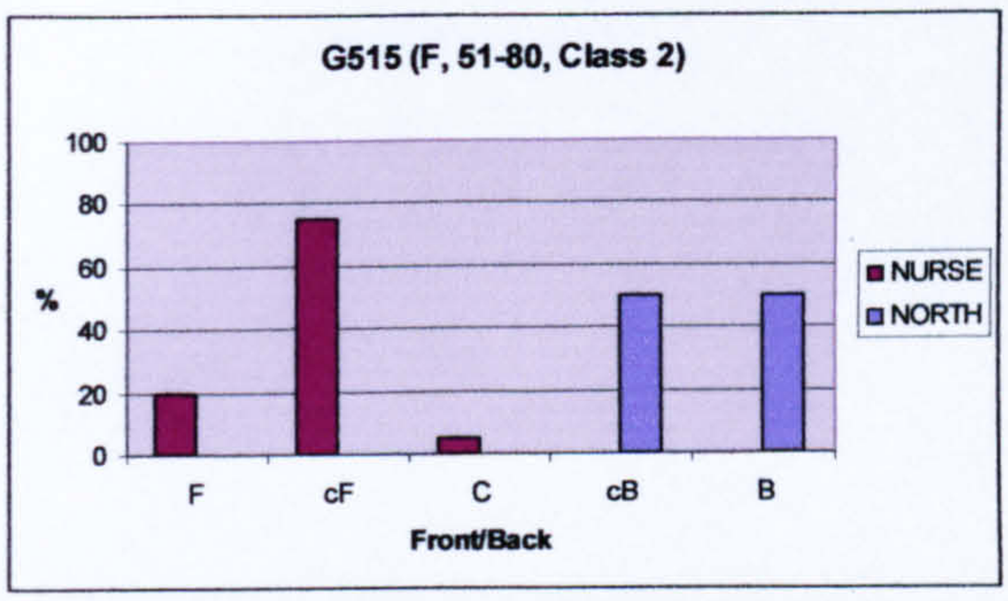
Front/Back
NURSE
NORTH


G515 (F, 51-80, Class 2)
100
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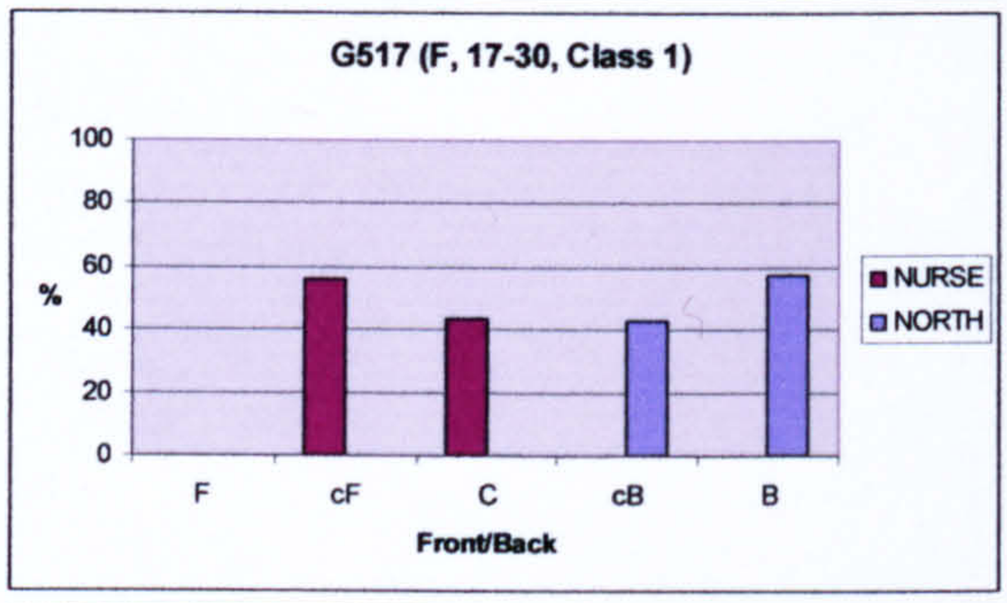
Front/Back
NURSE
NORTH


G517 (F, 17-30, Class 1)
100
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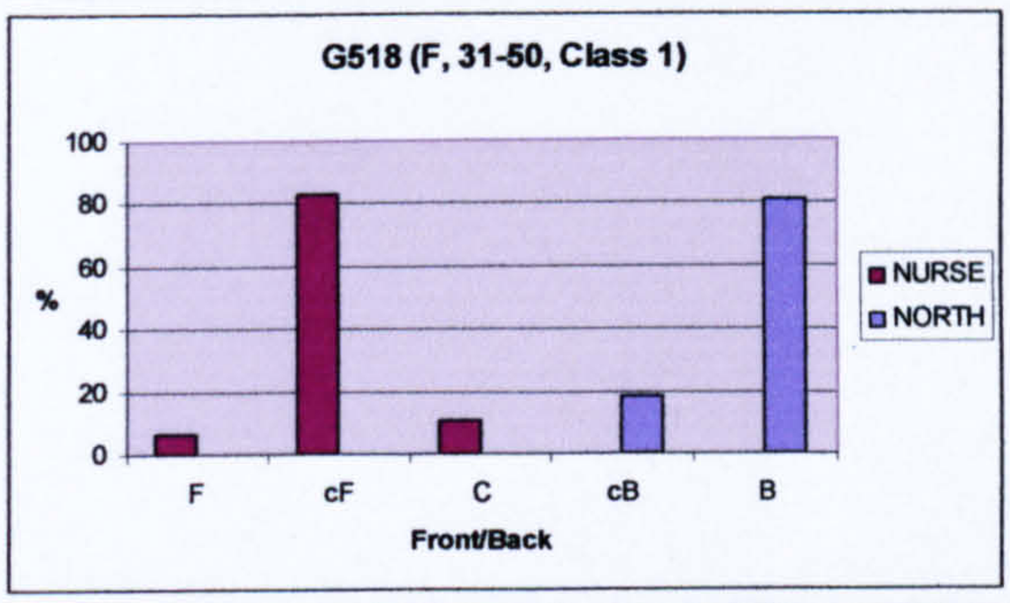
Front/Back
NURSE
NORTH


G518 (F, 31-50, Class 1)
100
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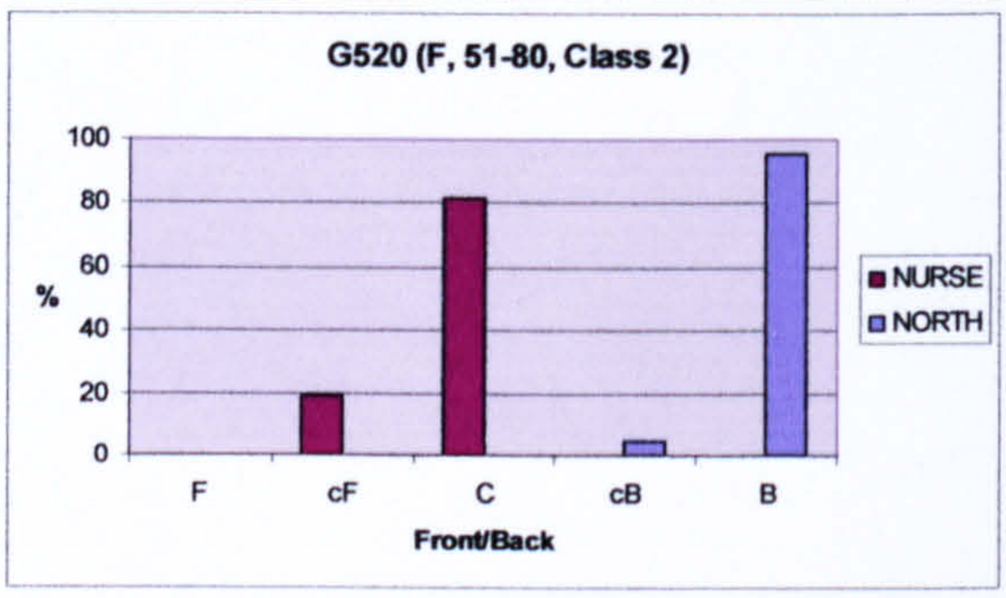
Front/Back
NURSE
NORTH


G520 (F, 51-80, Class 2)
100
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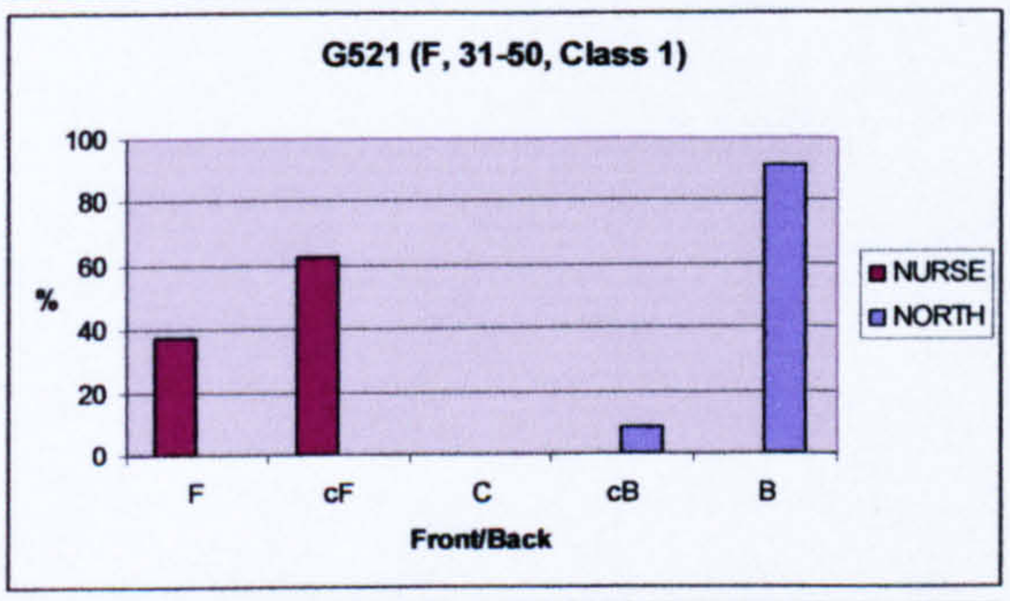
Front/Back
NURSE
NORTH


G521 (F, 31-50, Class 1)
100
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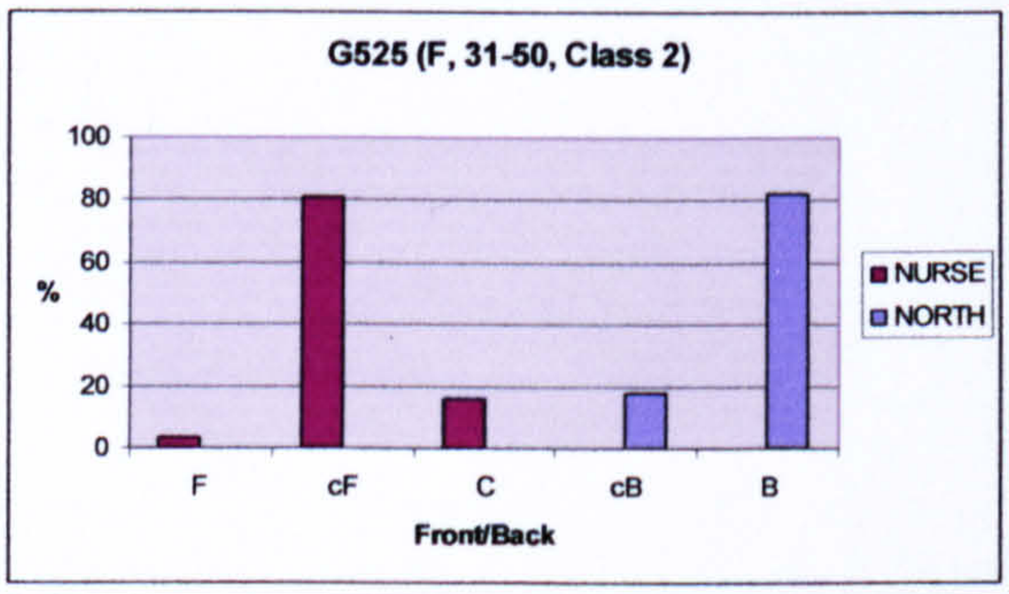
Front/Back
NURSE
NORTH


G525 (F, 31-50, Class 2)
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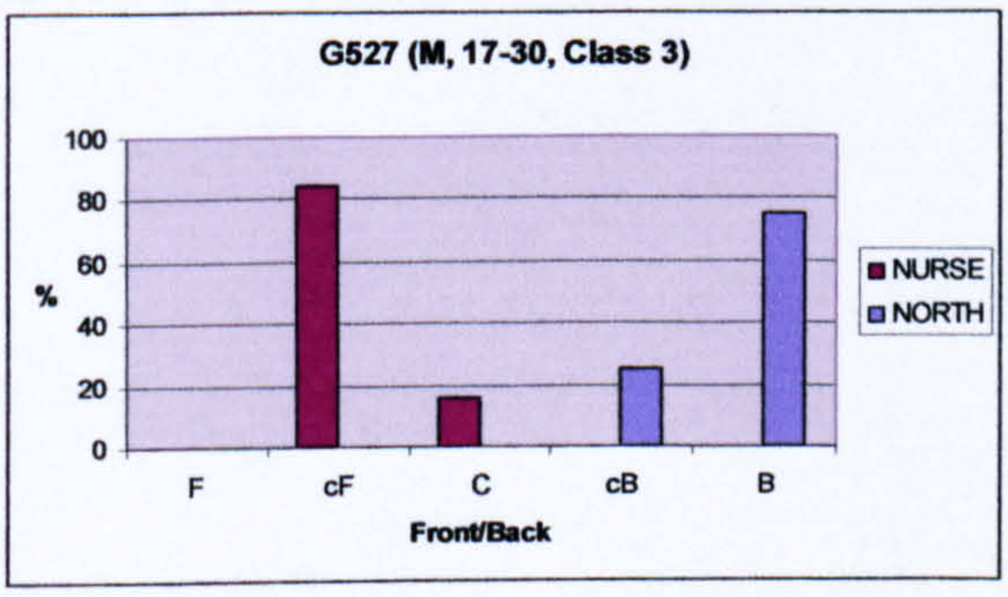
Front/Back
NURSE
NORTH


G527 (M, 17-30, Class 3)
100
80
60
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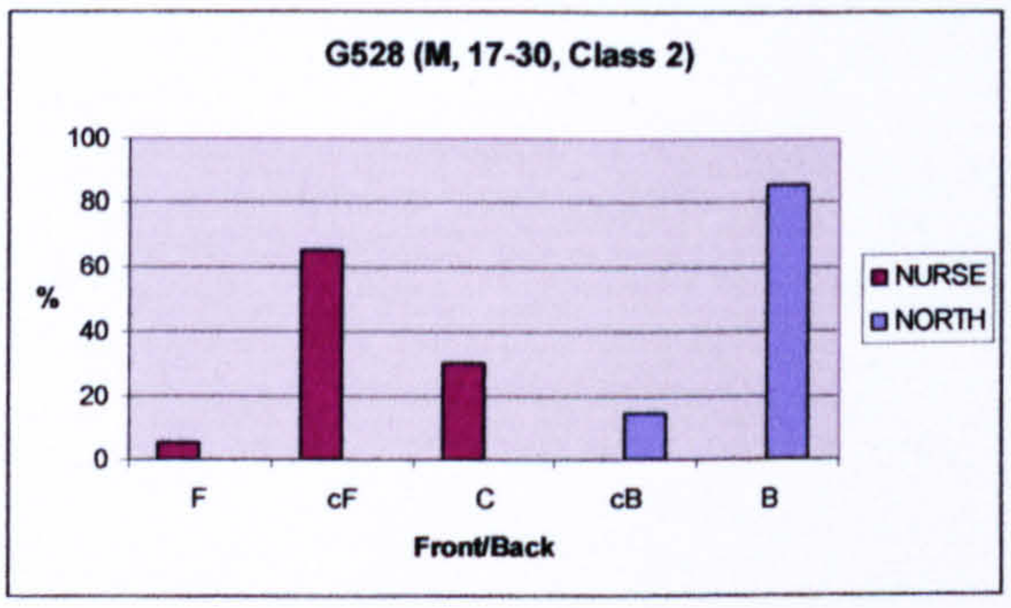
Front/Back
NURSE
NORTH


G528 (M, 17-30, Class 2)
100
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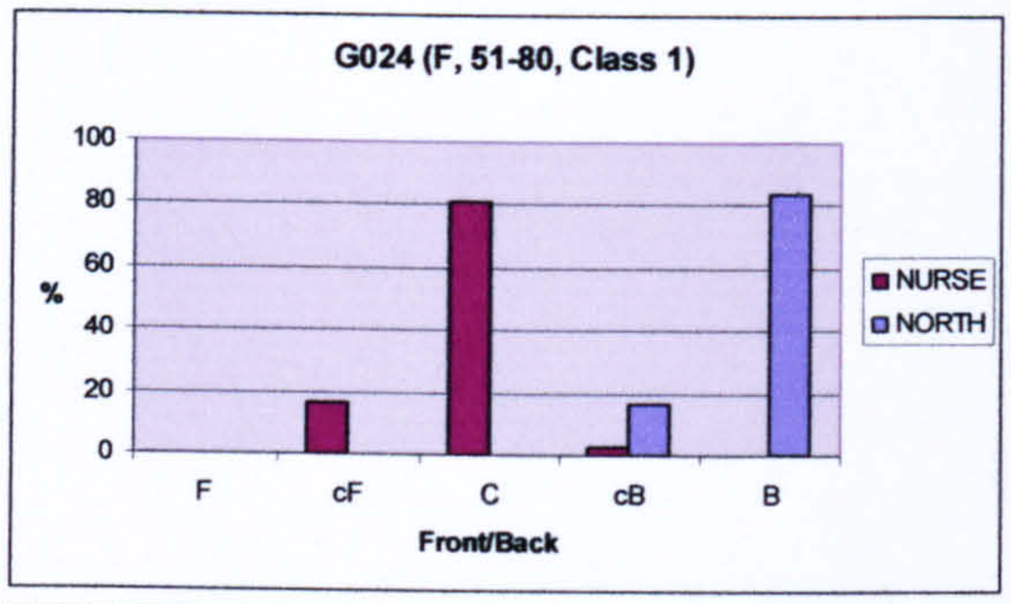
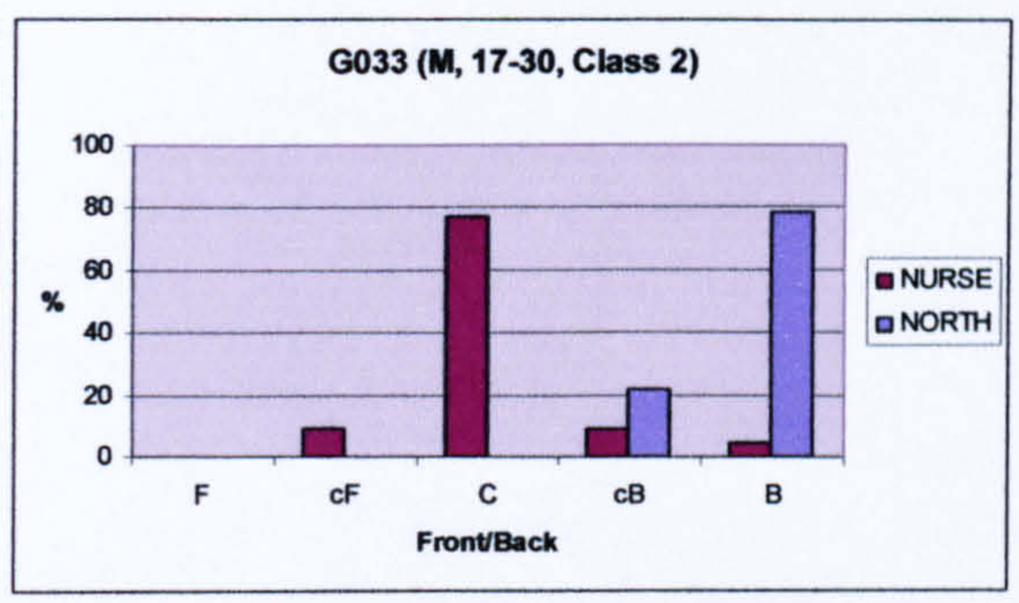
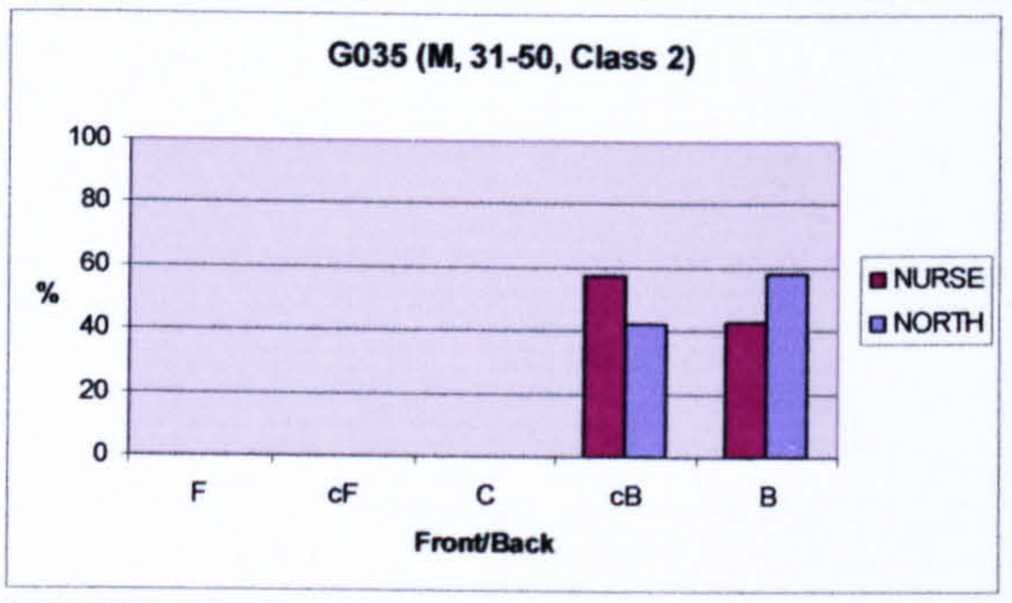
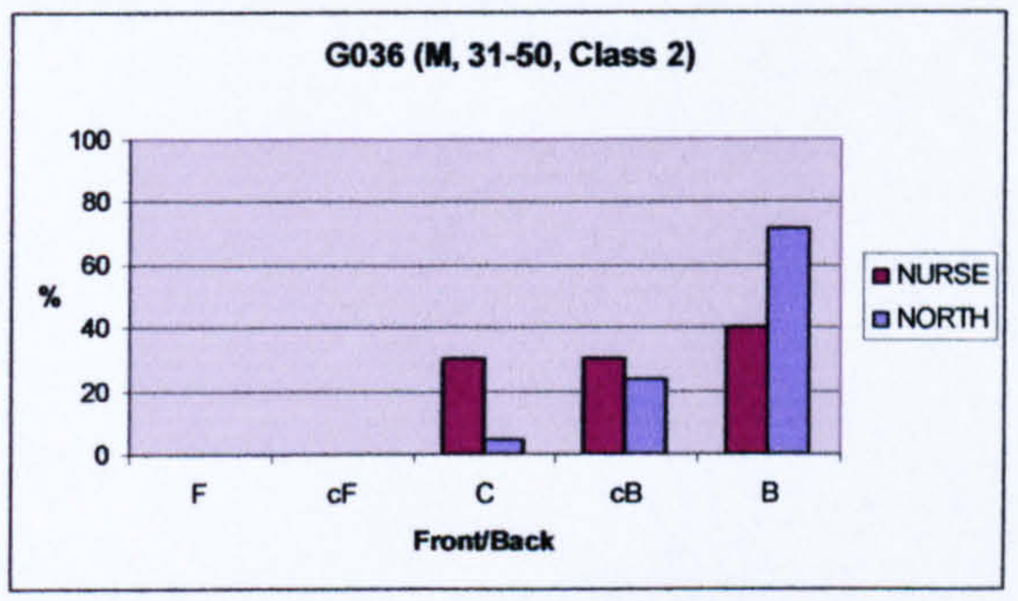
cF
C
cB
B
Front/Back
NURSE
NORTH

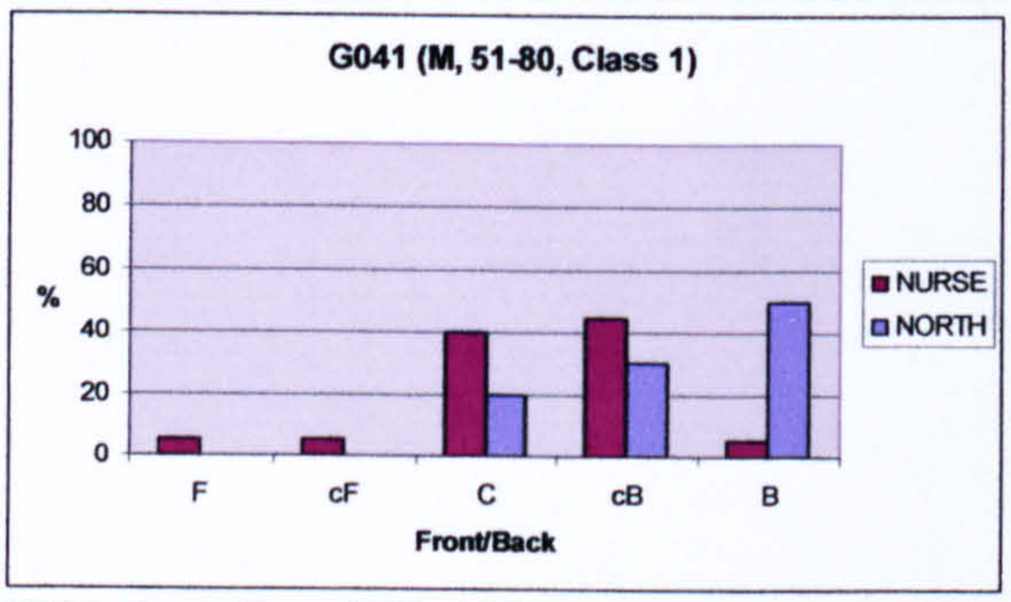
2. Speakers with some degree of overlap of NURSE and NORTH

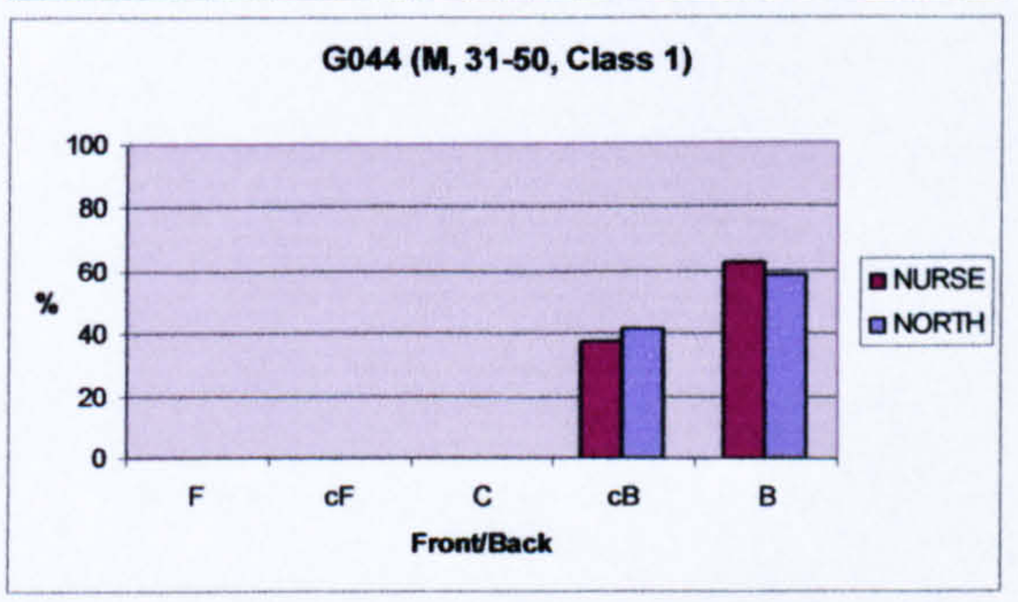


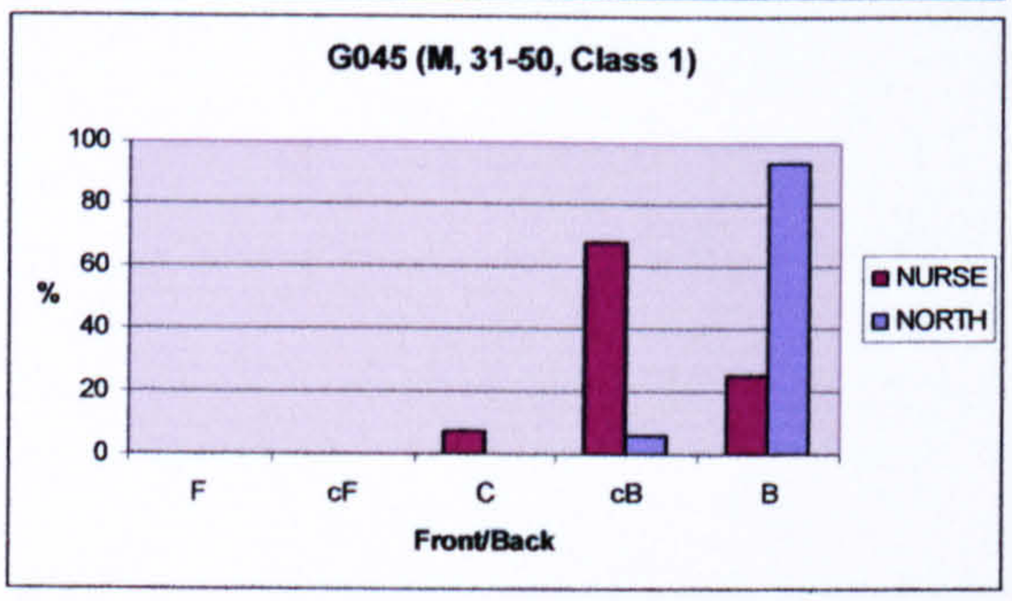


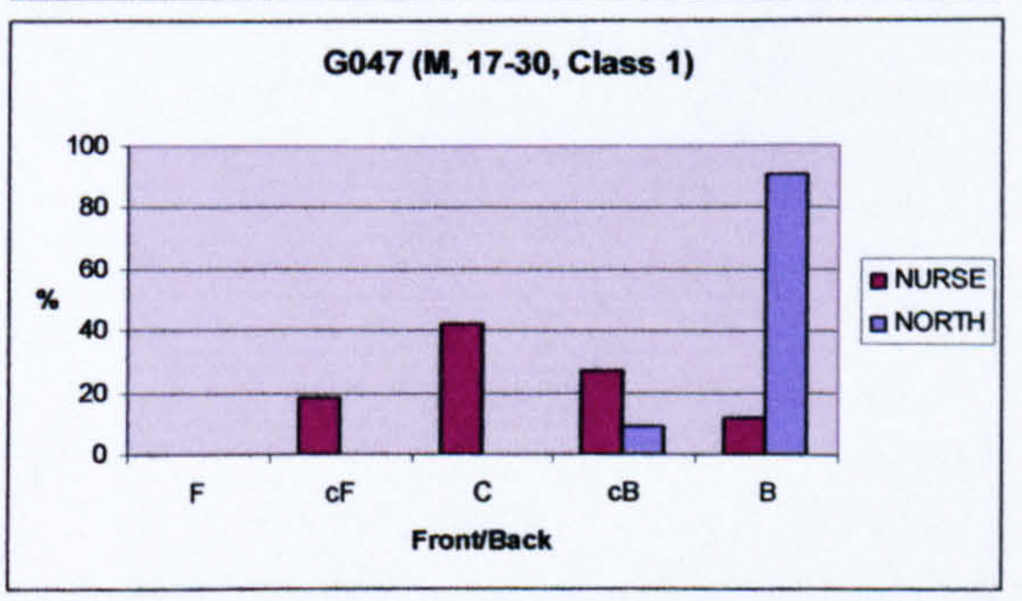


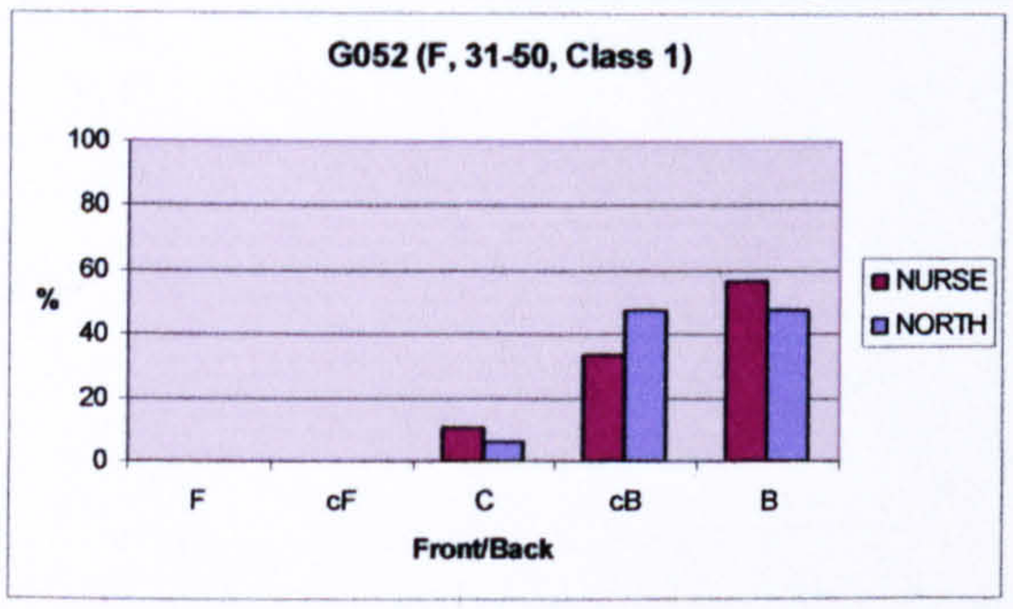


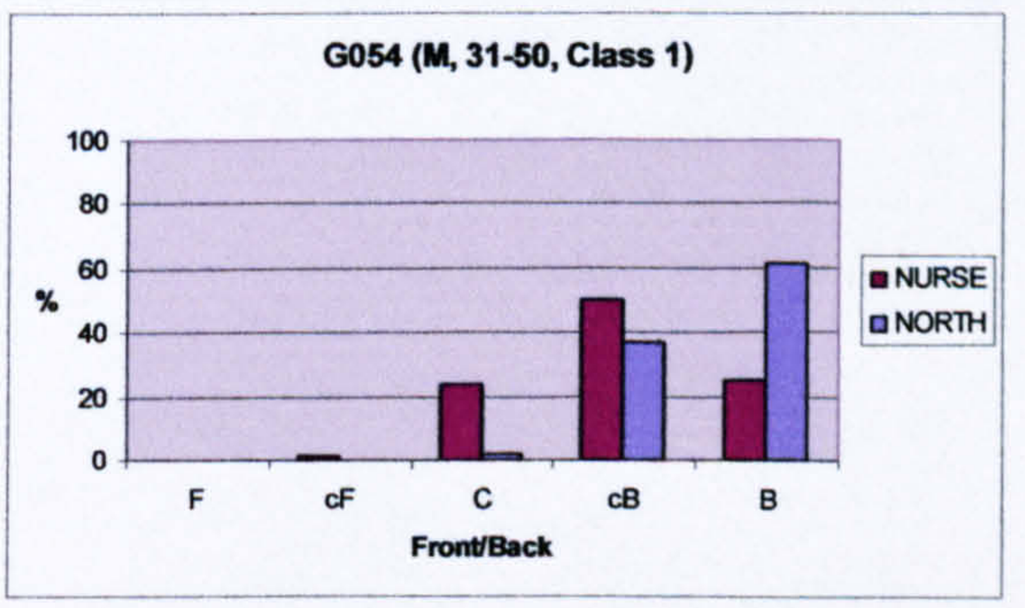


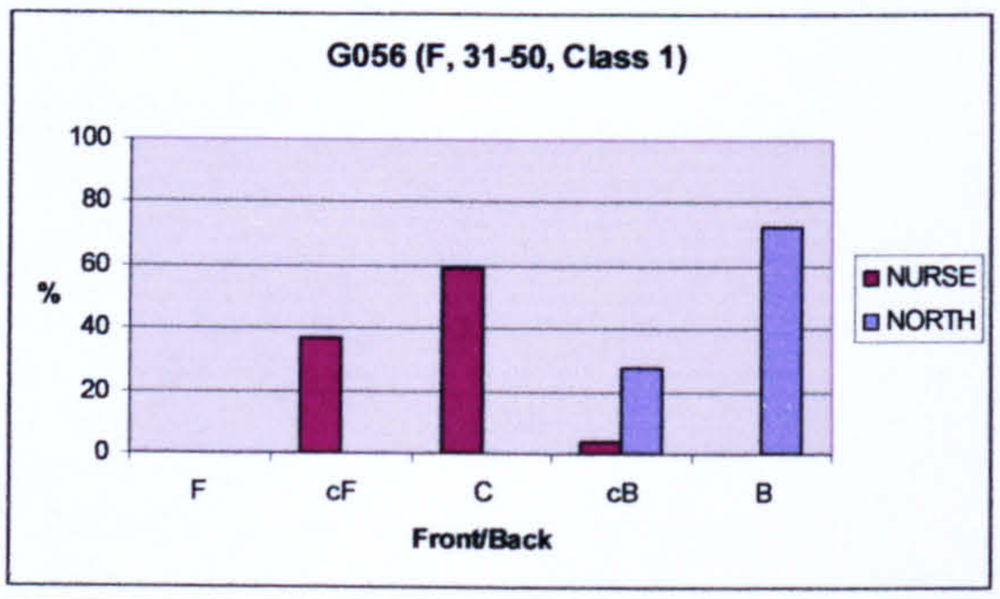











G056 (F, 31-50, Class 1)
100
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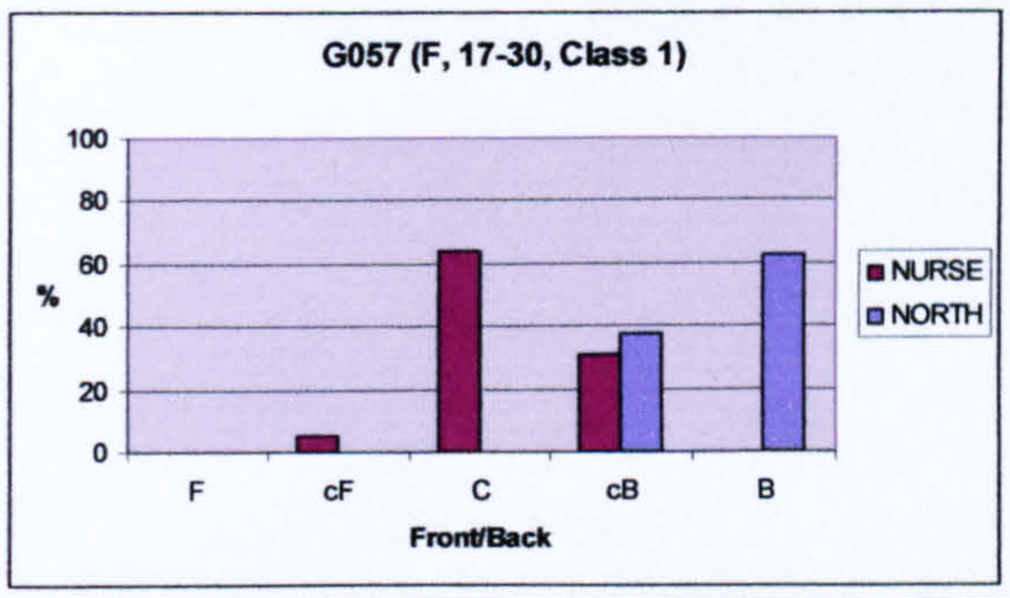
Front/Back
NURSE
NORTH


G057 (F, 17-30, Class 1)
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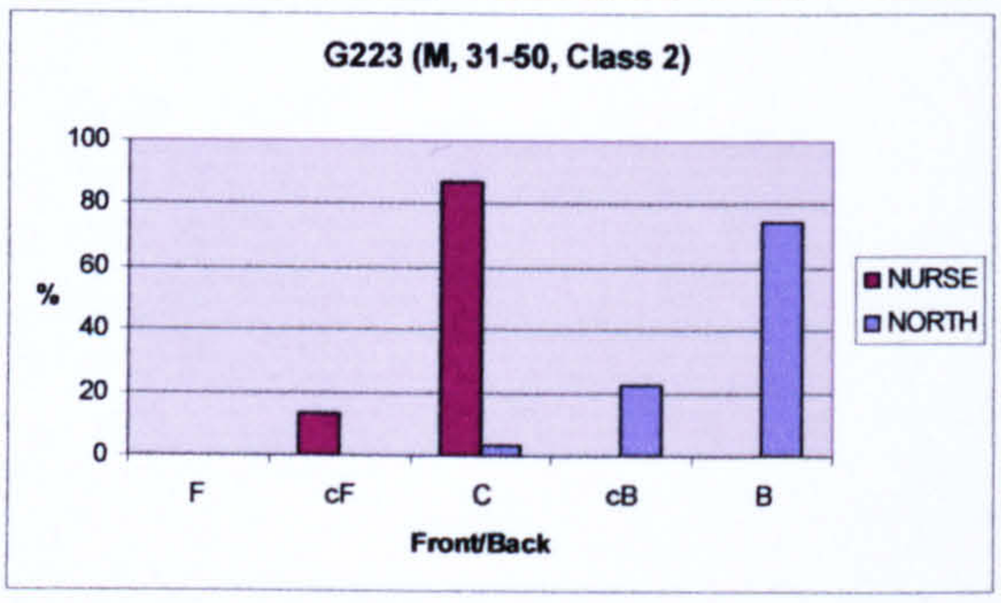
Front/Back
NURSE
NORTH


G223 (M, 31-50, Class 2)
100
80
60
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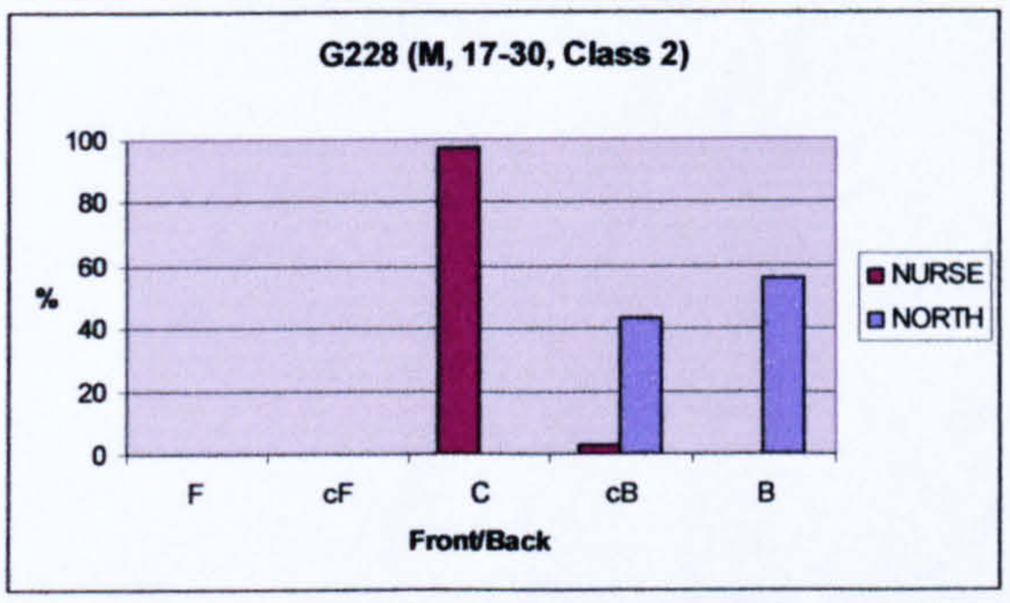
Front/Back
NURSE
NORTH


G228 (M, 17-30, Class 2)
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cB
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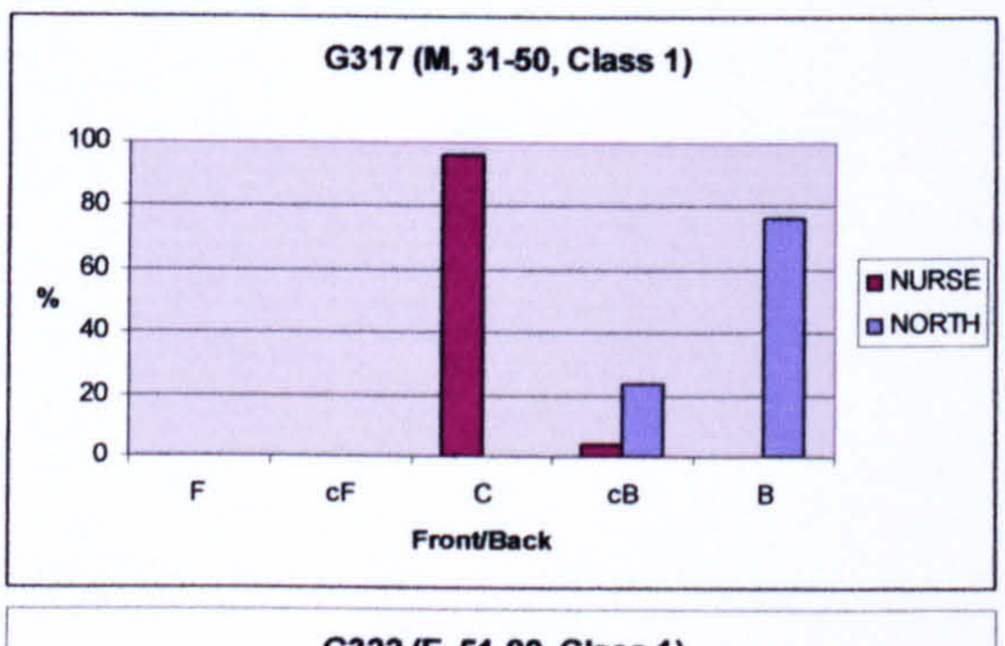
Front/Back
NURSE
NORTH


G317 (M, 31-50, Class 1)
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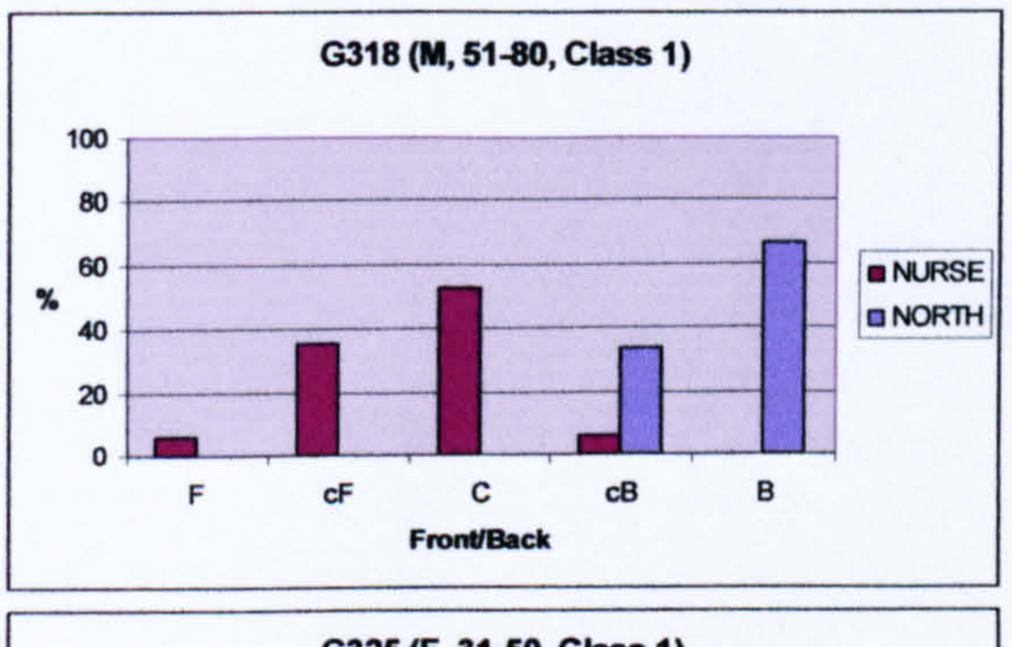
Front/Back
NURSE
NORTH


G318 (M, 51-80, Class 1)
100
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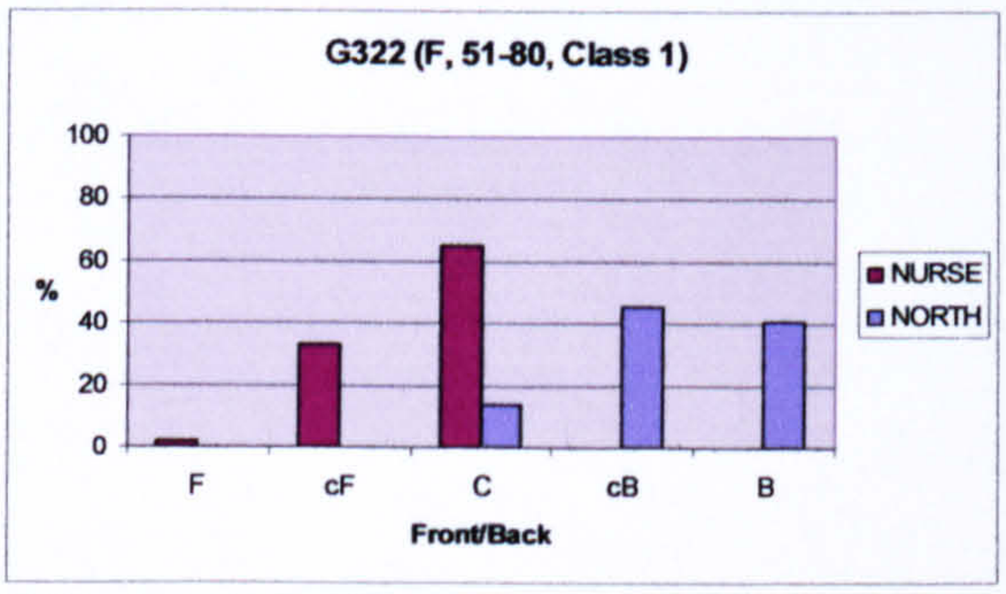
Front/Back
NURSE
NORTH


G322 (F, 51-80, Class 1)
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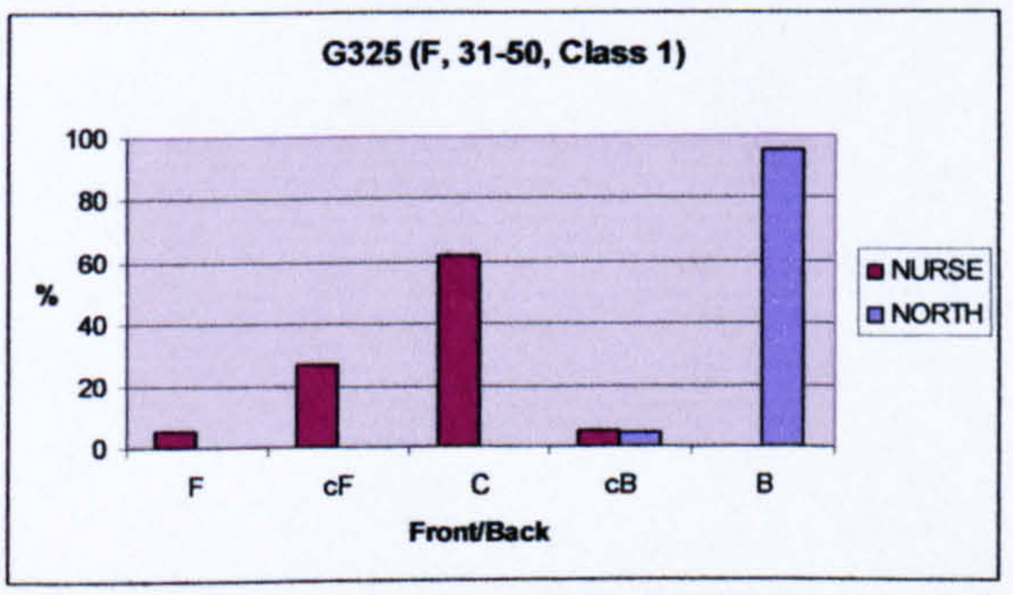
Front/Back
NURSE
NORTH


G325 (F, 31-50, Class 1)
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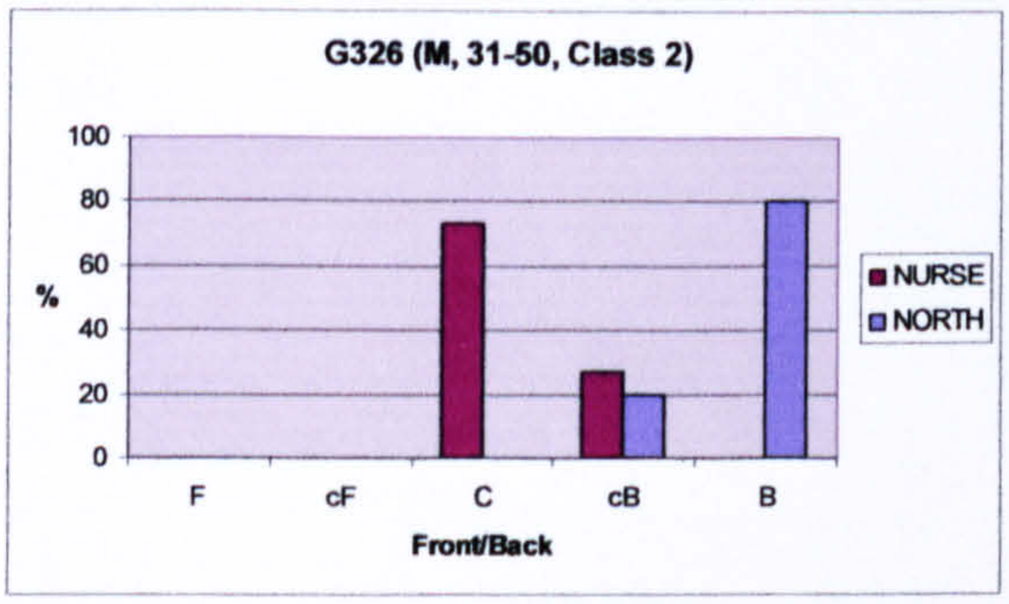
Front/Back
NURSE
NORTH


G326 (M, 31-50, Class 2)
100
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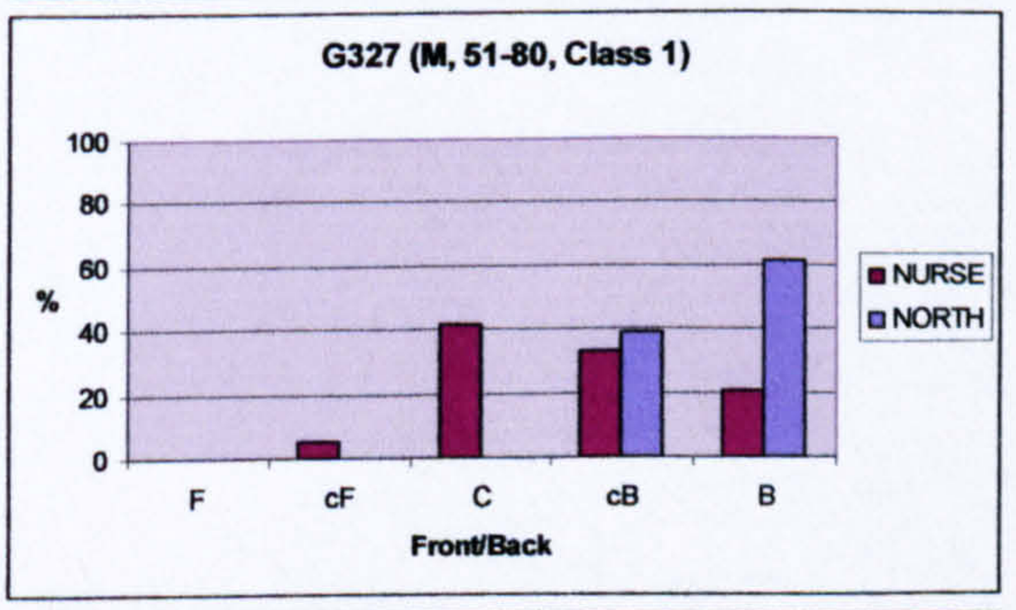
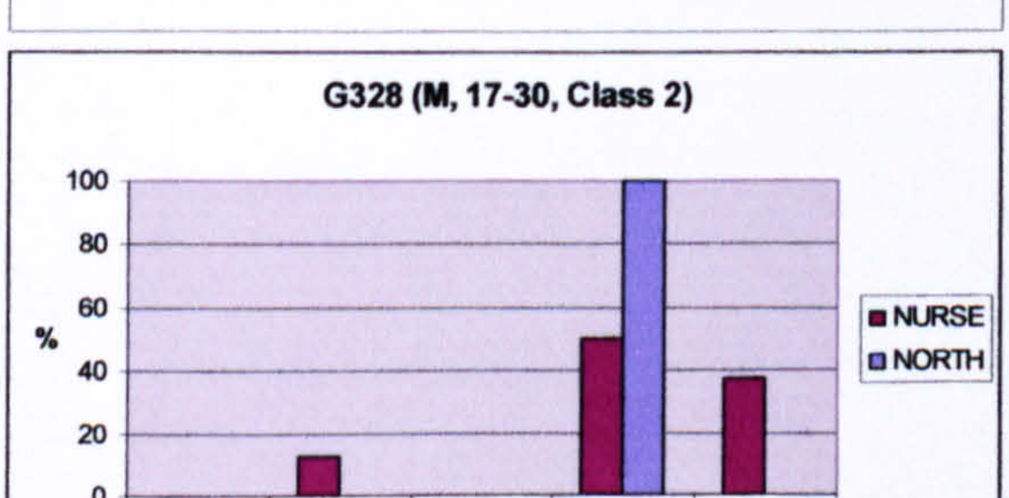
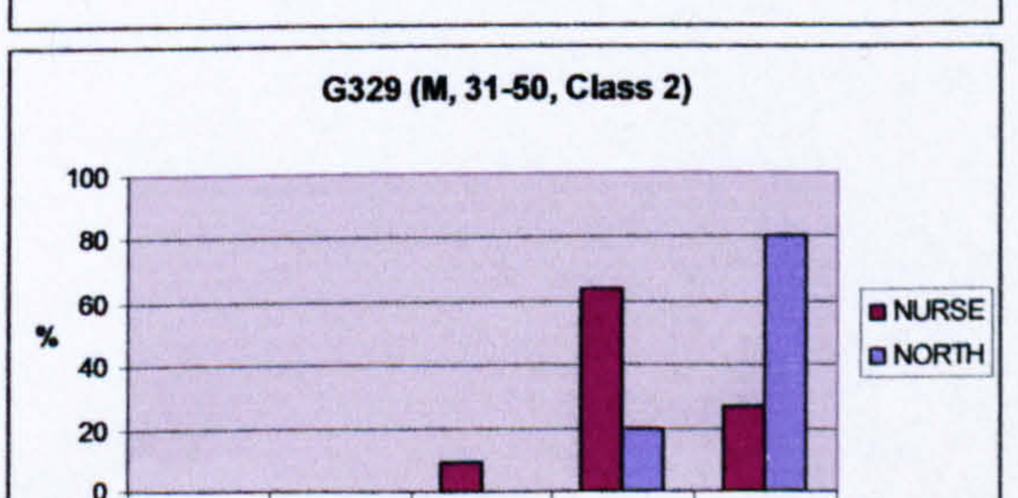
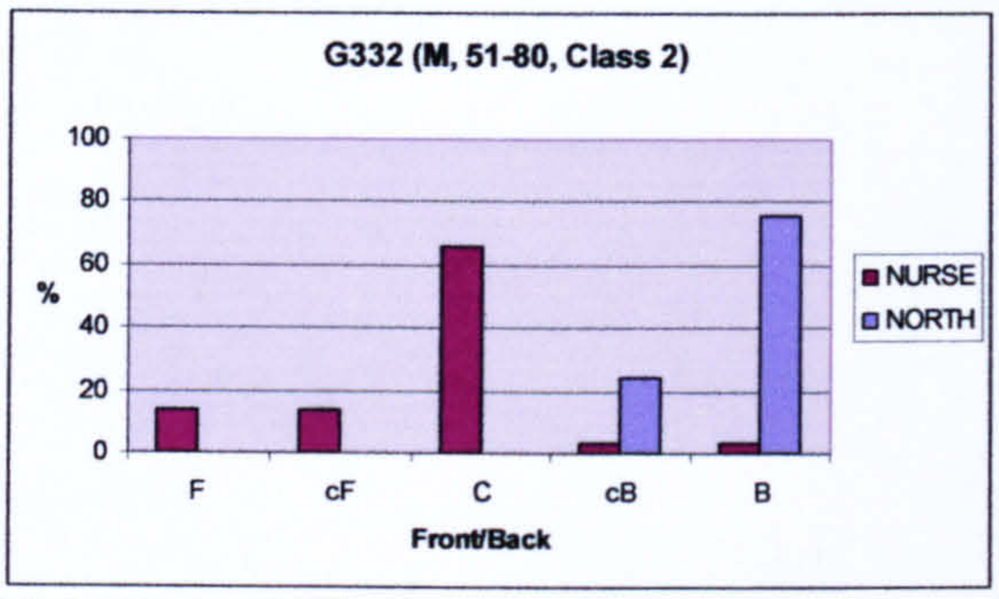
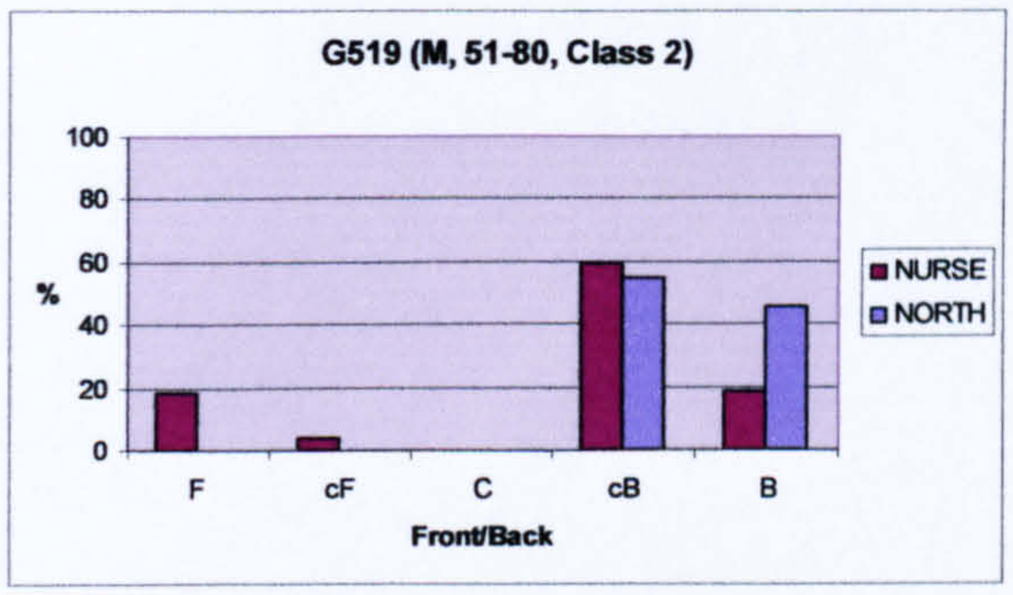
Front/Back
NURSE
NORTH

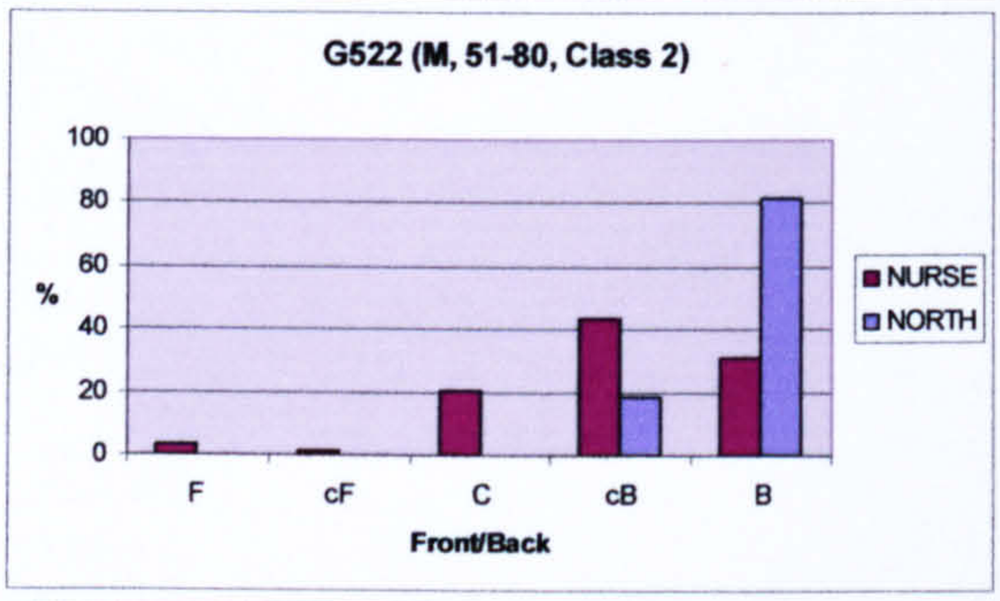

G327 (M, 51-80, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH

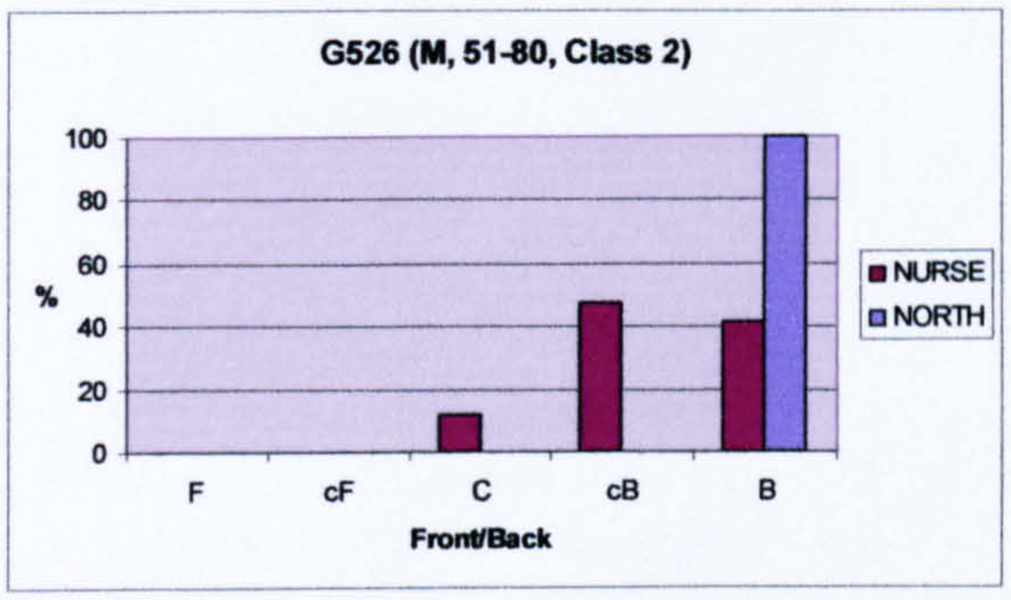

G328 (M, 17-30, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH

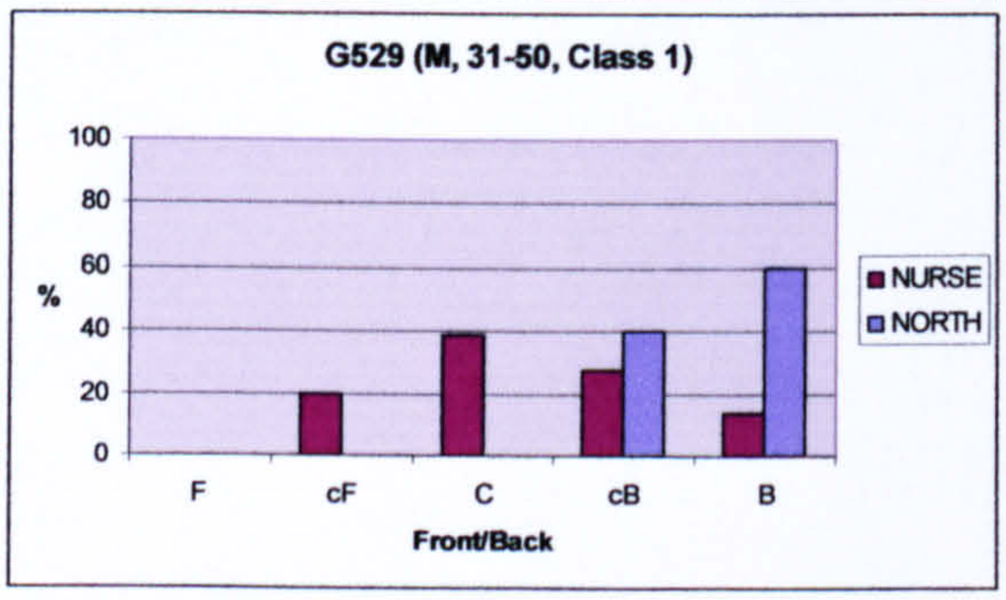

G329 (M, 31-50, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G332 (M, 51-80, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G519 (M, 51-80, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G522 (M, 51-80, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G526 (M, 51-80, Class 2)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH


G529 (M, 31-50, Class 1)
100
80
60
40
20
0
%
F
cF
C
cB
B
Front/Back
NURSE
NORTH

Appendix 11: Formant Measurements

G035

	Word	LexSet	F1	F2	AudCat
1	working	NURSE	453.3127	856.5557	b
2	first	NURSE	416.6088	828.5112	b
3	firm	NURSE	470.7937	909.9075	b
4	firm	NURSE	456.6623	953.3501	b
5	firm	NURSE	463.0741	918.8215	b
6	working	NURSE	506.2746	1000.9989	cb
7	worked	NURSE	474.3199	905.3322	cb
8	furniture	NURSE	568.7265	826.6076	cb
9	working	NURSE	553.2641	937.7217	b
10	firm	NURSE	502.3255	899.3476	cb
11	heard	NURSE	518.2478	959.9284	cb
12	heard	NURSE	547.1184	999.2414	cb
		Av. NURSE	**494.2274**	**916.3603**	
1	thirty	THIR-	441.3209	1166.2504	cb
2	thirty	THIR-	430.1736	1303.5886	cb
		Av. THIR-	**435.7472**	**1234.9195**	
1	born	NORTH	514.8352	998.0102	cb
2	born	NORTH	422.9221	951.6937	cb
3	born	NORTH	678.1241	885.7763	b
4	born	NORTH	463.7606	919.5558	b
5	born	NORTH	522.5243	905.8941	b
6	born	NORTH	531.8984	951.6277	b
7	born	NORTH	403.5164	823.3545	cb
8	born	NORTH	475.9533	847.2145	b
9	born	NORTH	608.6710	892.7624	b
10	born	NORTH	542.7849	844.9612	cb
11	board	NORTH	458.6439	852.6172	cb
12	award	NORTH	428.8514	911.3295	cb
13	order	NORTH	508.7971	989.2782	b
14	fourteen	NORTH	427.9103	821.1749	b
15	fourteen	NORTH	577.5930	867.9075	b
16	afford	NORTH	464.1673	992.3479	cb
17	sport	NORTH	450.3701	888.6711	cb
18	Scunthorpe	NORTH	514.1469	993.3265	b
19	Geordies	NORTH	474.0597	955.8297	b
		Av. NORTH	**498.3963**	**910.1754**	

G044

	Word	LexSet	F1	F2	AudCat
1	thirty	NURSE	525.8739	1027.695	cb
2	worth	NURSE	487.315	1041.981	cb
3	first	NURSE	535.1591	932.1967	cb
4	further	NURSE	553.2079	964.5808	b
5	worked	NURSE	430.1596	778.5849	b

6	worked	NURSE	419.8046	799.6911	cb
7	first	NURSE	452.6851	757.4717	b
8	served	NURSE	597.043	1313.711	b
9	learn	NURSE	553.1448	1124.663	cb
10	worked	NURSE	511.2034	995.7879	b
11	turned	NURSE	549.9524	1089.562	cb
12	work	NURSE	479.5362	962.4987	b
13	work	NURSE	540.4767	846.8961	b
14	learn	NURSE	617.8179	1244.059	cb
15	worked	NURSE	561.1776	985.672	b
16	work	NURSE	485.8936	884.8509	b
17	first	NURSE	484.7173	882.2745	b
18	work	NURSE	480.5665	915.0624	b
19	work	NURSE	399.0541	903.6334	b
20	work	NURSE	554.9432	969.1337	b
21	work	NURSE	451.2666	953.1089	cb
22	thirsty	NURSE	440.4118	861.7703	cb
23	dirtiest	NURSE	503.406	831.6871	b
24	dirty	NURSE	549.9449	1040.565	b
25	dirtiest	NURSE	497.4102	1166.903	b
26	working	NURSE	520.6255	1077.532	b
27	worst	NURSE	502.193	1032.595	b
28	worked	NURSE	475.0762	913.6673	b
29	learn	NURSE	535.9305	1102.328	cb
30	worked	NURSE	506.1094	991.0082	b
31	works	NURSE	449.8182	913.3982	b
32	firm	NURSE	560.5771	980.4474	b
33	works	NURSE	455.4227	921.1284	b
34	firm	NURSE	585.3648	1003.941	b
35	learnt	NURSE	611.95	1168.925	cb
36	worked	NURSE	551.257	927.8045	b
37	served	NURSE	531.1455	1164.352	cb
38	first	NURSE	587.7573	961.8523	b
39	first	NURSE	477.865	802.6689	cb
40	dirty	NURSE	620.4731	1236.729	cb
41	work	NURSE	557.5016	915.4441	b
42	working	NURSE	542.7391	1245.711	b
43	work	NURSE	544.5256	902.2949	b
44	first	NURSE	516.203	993.8651	b
45	world	NURSE	538.5036	1119.73	b
46	Birtley	NURSE	475.754	898.331	cb
47	thirty	NURSE	487.5234	1025.43	cb
48	learnt	NURSE	619.3417	1050.077	cb
49	work	NURSE	588.5715	935.0019	cb
50	worst	NURSE	495.2084	930.4233	cb
51	hurt	NURSE	549.5114	874.1667	b
52	hurt	NURSE	431.9837	797.0625	b
53	first	NURSE	427.787	858.0898	cb
54	work	NURSE	514.9282	931.3695	b
55	further	NURSE	557.8559	952.4788	b

56	learn	NURSE	590.4719	1098.428	cb
57	learn	NURSE	583.6145	986.3955	b
58	learn	NURSE	639.8634	1037.136	b
		Av. NURSE	**522.3384**	**983.1698**	
1	born	NORTH	559.9237	967.6208	cb
2	Wardley	NORTH	552.9579	1024.676	b
3	born	NORTH	538.0623	950.3863	b
4	born	NORTH	452.4817	899.9889	cb
5	born	NORTH	525.1907	776.0106	b
6	born	NORTH	480.8868	1325.065	b
7	born	NORTH	578.5302	1330.899	b
8	quarter	NORTH	435.7924	1161.532	cb
9	born	NORTH	595.2501	1097.601	cb
10	born	NORTH	537.7176	1041.637	cb
11	ordinance	NORTH	490.7889	939.4726	b
12	born	NORTH	475.4131	939.5501	b
13	born	NORTH	545.2631	1345.477	cb
		Av. NORTH	**520.6353**	**1061.532**	

G052

	Word	LexSet	F1	F2	AudCat
1	first	NURSE	631.8850	1057.6748	b
2	working	NURSE	509.4642	943.8868	b
3	worker	NURSE	600.2122	1095.9387	cb
4	work (n.)	NURSE	622.3053	1029.3361	b
5	learnt	NURSE	708.1454	1419.4946	cb
6	work (n.)	NURSE	603.1620	1000.0702	b
7	work (v.)	NURSE	562.2441	1159.3352	c
8	work (v.)	NURSE	560.4182	1319.3944	c
9	worked	NURSE	632.2679	1188.3390	b
10	bursted	NURSE	585.5352	1194.6205	cb
11	shirts	NURSE	550.8643	1347.8011	cb
12	furnace	NURSE	650.4454	1163.6442	b
13	worked	NURSE	535.1043	978.7282	cb
14	work (v.)	NURSE	627.2134	1134.9055	b
15	working	NURSE	526.8659	1310.7692	c
16	nerves	NURSE	647.7748	1503.4357	cb
17	worked	NURSE	594.7219	1053.4941	b
18	works (n.)	NURSE	542.3910	1107.8128	b
19	works (n.)	NURSE	532.7851	1060.6209	b
20	work (n.)	NURSE	507.9676	1131.4138	c
21	work (n.)	NURSE	491.5714	1098.9849	b
22	worked	NURSE	617.4203	1041.7733	b
23	working	NURSE	529.0342	1433.7369	b
24	work (n.)	NURSE	527.9529	1364.7387	b
25	person	NURSE	536.3921	1140.6786	cb
26	work (n.)	NURSE	545.4722	1146.2518	b
27	work (n.)	NURSE	614.4991	1037.3388	b
28	work (n.)	NURSE	623.6451	1486.9423	cb
29	work (n.)	NURSE	516.1831	1065.9794	b

30	birth	NURSE	618.8537	1068.0344	b
31	church	NURSE	524.9243	1191.9606	b
32	turned	NURSE	614.8236	1473.2083	cb
33	burn	NURSE	519.7253	939.6250	b
34	first	NURSE	760.0806	1589.6265	cb
35	Bernadette	NURSE	702.9902	1349.9017	cb
36	burning	NURSE	635.2319	1215.9650	b
37	person	NURSE	545.0627	1000.6735	b
38	person	NURSE	573.8844	1164.4078	cb
39	turn	NURSE	668.8487	1091.4428	cb
40	heard	NURSE	641.0667	1437.2193	cb
		Av. NURSE	**588.4859**	**1188.4801**	
1	born	NORTH	525.9809	1459.1952	cb
2	Cornwall	NORTH	590.0030	1116.0833	b
3	born	NORTH	619.4351	1290.0908	b
4	born	NORTH	591.0044	1070.0631	cb
5	forty	NORTH	545.6791	1066.1109	cb
6	born	NORTH	531.8942	954.0037	b
7	fourteen	NORTH	647.3221	1519.8707	b
8	morning	NORTH	528.5849	1027.0879	b
9	fourteen	NORTH	546.1512	977.2518	b
10	born	NORTH	522.3428	1071.3053	cb
11	roars	NORTH	683.9111	1180.2311	b
12	ordinary	NORTH	600.1266	1492.5334	c
13	corner	NORTH	619.4225	1212.4956	cb
14	corner	NORTH	609.7380	1067.4053	b
15	corner	NORTH	594.5670	1018.1841	cb
		Av. NORTH	**583.7442**	**1168.1275**	

G054

	Word	LexSet	F1	F2	AudCat
1	Herbert	NURSE	503.0967	1200.3691	c
2	turned	NURSE	518.2934	1197.3372	c
3	concerned	NURSE	506.0434	1254.9215	cb
4	work (v.)	NURSE	437.9969	894.4971	cb
5	concerned	NURSE	559.5261	1363.1367	c
6	church	NURSE	449.2143	1423.0532	c
7	heard	NURSE	473.6883	968.3925	cb
8	world	NURSE	443.5161	904.1492	b
9	working	NURSE	473.1459	986.8273	cb
10	worked	NURSE	459.7579	955.8960	cb
11	served	NURSE	447.9409	1172.0557	cb
12	working	NURSE	463.1887	867.9382	b
13	work (v.)	NURSE	498.0527	1035.9297	b
14	furniture	NURSE	472.0554	940.2261	b
15	worked	NURSE	474.1310	1039.6219	cb
16	worked	NURSE	458.2697	930.5334	cb
17	universal	NURSE	449.5135	1123.0804	cb
18	worked	NURSE	477.4703	905.1180	cb
19	worked	NURSE	490.4030	956.8622	cb

20	churches	NURSE	469.1319	1134.6671	b
21	worked	NURSE	474.1253	879.0571	cb
22	churches	NURSE	455.0165	1110.6301	b
23	worked	NURSE	459.9574	892.0341	b
24	work (v.)	NURSE	450.9291	992.4333	cb
25	searched	NURSE	465.5155	1086.2997	b
26	searched	NURSE	466.8076	1433.9965	c
27	search	NURSE	475.4410	1293.8809	cb
28	search	NURSE	466.1126	1458.2931	c
29	work (v.)	NURSE	426.4736	843.0145	b
30	learning	NURSE	508.7150	1045.4750	cb
31	worth	NURSE	431.2115	972.0308	cb
32	work (v.)	NURSE	441.5286	961.3416	b
33	work (n.)	NURSE	402.6701	845.2275	b
34	learnt	NURSE	495.1046	1173.1049	cb
35	learnt	NURSE	477.0282	1186.1045	cb
36	work (v.)	NURSE	462.9652	991.0354	b
37	work (v.)	NURSE	429.4754	850.8529	b
38	learnt	NURSE	501.2899	1187.2054	cb
39	learnt	NURSE	524.6884	1147.1888	cb
40	serving	NURSE	531.5389	1225.3324	c
41	turned	NURSE	520.6676	1117.7817	cb
42	first	NURSE	419.2645	936.8849	cb
43	Thursday	NURSE	508.8885	1435.3969	c
44	Thursday	NURSE	483.4992	1362.0019	c
45	worth	NURSE	457.2315	1072.3717	cb
46	stern	NURSE	528.3943	1121.0968	cb
47	hurting	NURSE	465.6844	961.5828	b
48	worked	NURSE	461.1102	836.1520	b
49	birch	NURSE	517.4499	1322.7097	c
50	circumstances	NURSE	531.7482	1134.2552	c
51	service	NURSE	524.1812	1468.0429	cf
52	Thursday	NURSE	517.2540	1224.2813	cb
53	heard	NURSE	520.6723	1077.5584	cb
54	worse	NURSE	479.3289	991.0407	cb
55	worst	NURSE	445.9187	1108.3858	c
56	worse	NURSE	452.6648	1073.3041	cb
57	first	NURSE	451.8517	1075.0047	cb
58	worse	NURSE	459.7523	1101.8160	c
59	personally	NURSE	454.9020	1120.7551	cb
60	worked	NURSE	508.8319	1154.0917	b
		Av. NURSE	476.3388	1092.0611	
1	thirteen	THIR-	465.6962	1502.2920	c
2	thirty	THIR-	535.6492	1450.1284	c
3	thirty	THIR-	468.9321	1211.4657	cb
		Av. THIR-	490.0925	1387.9620	
1	born	NORTH	516.7101	1149.9140	cb
2	George	NORTH	464.9871	1221.1859	b
3	George	NORTH	474.0183	1242.3899	cb
4	divorced	NORTH	433.4229	911.7619	b

5	divorce	NORTH	452.0112	878.5370	b
6	born	NORTH	493.4564	1026.8383	b
7	George	NORTH	511.3213	1149.1739	b
8	corner	NORTH	510.5216	886.3115	b
9	born	NORTH	453.9016	794.1201	b
10	born	NORTH	460.4266	943.6029	cb
11	forty	NORTH	453.9242	923.8935	b
12	horse	NORTH	446.8199	952.7285	cb
13	horses	NORTH	463.1293	878.1806	b
14	forty	NORTH	452.6811	903.4456	cb
15	forty	NORTH	486.2596	891.5131	b
16	forty	NORTH	476.7231	1006.2350	b
17	forty	NORTH	487.4049	926.1528	cb
18	warm	NORTH	527.9020	1072.8795	cb
19	court	NORTH	443.1879	867.1645	b
20	quarter	NORTH	520.0531	1089.9879	b
21	morning	NORTH	499.1884	814.2148	b
22	portals	NORTH	501.7996	880.5941	b
23	lord	NORTH	485.3481	1076.9465	cb
24	portal	NORTH	443.7098	886.0037	b
25	record	NORTH	468.0119	1021.9352	cb
26	morning	NORTH	486.8850	875.8661	b
27	forty	NORTH	490.3424	999.8340	cb
28	court	NORTH	506.8916	980.5697	b
29	Geordie	NORTH	448.6514	1180.8488	c
30	Geordie	NORTH	471.9477	1174.1927	cb
31	fourteen	NORTH	482.4978	992.0018	b
32	sport	NORTH	496.7296	1194.7950	b
33	horses	NORTH	479.2065	1073.3333	cb
34	sport	NORTH	488.4445	1194.1625	b
35	sport	NORTH	468.2193	970.2526	b
36	warnings	NORTH	483.6869	778.4265	b
37	warnings	NORTH	477.2684	843.4423	b
38	recorder	NORTH	514.0435	1149.6640	cb
39	Geordie	NORTH	468.0342	1146.1313	b
40	Geordie	NORTH	484.1650	1206.7607	cb
41	Geordie	NORTH	481.9341	1103.8592	b
42	Geordie	NORTH	489.6368	1163.4679	b
43	Geordies	NORTH	480.8145	1235.7017	b
44	recorder	NORTH	476.4245	1088.8633	cb
45	Geordie	NORTH	504.0123	1142.2496	b
46	Geordie	NORTH	471.8044	1154.2824	cb
47	morning	NORTH	442.4942	904.7838	b
48	Geordie	NORTH	454.8431	1176.9847	b
49	forces	NORTH	480.2234	930.9101	cb
50	north	NORTH	479.9245	1022.8253	cb
51	Geordie	NORTH	425.2529	1160.7238	cb
52	Geordie	NORTH	504.3482	1218.6640	cb
		Av. NORTH	478.1855	1028.0636	

G223

	Word	LexSet	F1	F2	AudCat
1	thirty	NURSE	506.3518	1460.612	c
2	first	NURSE	484.3551	1293.045	c
3	worked	NURSE	435.2816	1178.823	c
4	works	NURSE	457.3929	1365.962	c
5	service	NURSE	438.9513	1444.902	c
6	work	NURSE	473.4186	1335.661	c
7	burglaries	NURSE	459.4383	1269.387	c
8	certainly	NURSE	562.1308	1457.204	c
9	thirteen	NURSE	410.1772	1475.903	c
10	thirteen	NURSE	495.2378	1493.06	c
11	internal	NURSE	459.6915	1513.356	c
12	girls	NURSE	380.1169	1396.145	c
13	certainly	NURSE	435.3521	1469.68	c
14	work	NURSE	459.1303	1310.838	c
15	person	NURSE	449.2941	1387.127	c
16	words	NURSE	423.4623	1366.854	c
17	university	NURSE	472.037	1366.559	c
18	certainly	NURSE	479.5437	1564.243	cf
19	university	NURSE	390.7178	1442.838	c
20	worker	NURSE	423.2291	1302.635	c
21	university	NURSE	499.8161	1452.516	cf
22	heard	NURSE	544.0774	1541.776	c
23	words	NURSE	458.0367	1380.99	c
24	earth	NURSE	443.4944	1353.653	c
25	words	NURSE	476.855	1404.408	cf
26	heard	NURSE	484.3692	1405.604	c
27	heard	NURSE	520.2774	1371.156	c
28	heard	NURSE	480.6478	1401.965	c
29	heard	NURSE	549.5604	1510.183	c
30	working	NURSE	487.6863	1236.355	cf
31	working	NURSE	572.9493	1462.445	cf
		Av. NURSE	471.3897	1400.512	
1	forty	NORTH	539.6641	998.6904	b
2	force	NORTH	550.9566	1052.385	b
3	force	NORTH	567.0915	908.4375	b
4	force	NORTH	465.6204	971.9266	cb
5	uniform	NORTH	440.8895	858.7816	b
6	morning	NORTH	507.895	762.8196	b
7	rewards	NORTH	474.3452	801.8247	b
8	rewards	NORTH	463.0947	818.3664	b
9	force	NORTH	480.0277	1063.212	c
10	force	NORTH	459.1593	1006.589	b
11	important	NORTH	383.6429	931.8426	b
12	form	NORTH	603.0308	904.6689	cb
13	sport	NORTH	490.2489	976.4197	cb
14	sporting	NORTH	447.0579	888.8372	b
15	course	NORTH	468.566	1006.682	cb
16	course	NORTH	471.5374	1037.245	cb

17	towards	NORTH	460.5951	883.4789	b
18	north	NORTH	532.7894	873.4058	b
19	York	NORTH	575.7577	931.2149	b
20	Geordie	NORTH	416.9017	1018.489	b
21	courses	NORTH	491.6367	1185.297	b
22	courses	NORTH	581.976	909.2227	b
23	Yorkshire	NORTH	596.0777	1009.796	b
24	Geordie	NORTH	514.8711	965.2552	b
25	Geordie	NORTH	509.7448	1213.625	b
26	Geordie	NORTH	464.2739	996.0502	b
27	Geordie	NORTH	589.677	1044.414	b
28	normal	NORTH	509.312	937.873	b
29	course	NORTH	666.034	870.8819	cb
		Av. NORTH	507.6716	959.577	

G331

	Word	LexSet	F1	F2	AudCat
1	work (v.)	NURSE	624.2707	1928.433	cf
2	worked	NURSE	702.4923	1765.689	cf
3	girl	NURSE	622.4539	2000.077	f
4	girl	NURSE	603.8478	1965.062	f
5	girl	NURSE	503.5274	1826.811	cf
6	worked	NURSE	557.2441	1580.177	cf
7	working	NURSE	623.9583	1866.905	cf
8	certain	NURSE	543.4187	1894.096	c
9	thirty	NURSE	501.9798	1696.495	cf
10	work (v.)	NURSE	594.8887	2051.826	cf
11	works (v.)	NURSE	559.0249	1516.235	cf
12	worked	NURSE	597.0689	2035.053	cf
13	worked	NURSE	541.5616	1719.003	cf
14	works (v.)	NURSE	578.2636	1991.832	cf
15	working	NURSE	578.5788	1884.179	cf
16	birthday	NURSE	594.8488	1893.539	cf
17	journey	NURSE	460.3408	1841.408	cf
18	working	NURSE	532.6226	1710.276	cf
19	words	NURSE	513.0814	1736.667	cf
20	Kirk	NURSE	447.1588	2004.056	cf
21	certain	NURSE	520.3278	1537.207	c
22	working	NURSE	512.5275	1991.696	cf
23	works (v.)	NURSE	667.3462	1388.53	c
24	Conservative	NURSE	584.1827	1712.559	f
25	working	NURSE	628.3682	1868.643	cf
26	term	NURSE	535.7352	1587.391	cf
27	Conservative	NURSE	612.7336	2026.114	cf
28	working	NURSE	531.6771	1630.5	cf
29	earth (WL)	NURSE	652.9437	1932.65	cf
		Av. NURSE	569.8784	1813.211	
1	board	NORTH	598.4178	900.4774	cb
2	Torquay	NORTH	708.5336	989.6135	b
3	Torquay	NORTH	637.0616	946.1002	cb

4	afford	NORTH	557.5849	902.2865	b
5	born	NORTH	579.9678	876.2777	cb
6	Corpus	NORTH	577.0309	816.0588	b
7	force	NORTH	563.3531	1065.214	b
8	afford	NORTH	679.1212	922.6238	cb
9	force	NORTH	542.0552	830.3683	b
10	courting	NORTH	581.4755	1015.432	b
11	warnings	NORTH	531.1844	836.2056	b
12	morning	NORTH	669.6057	1133.789	b
13	Thorpe	NORTH	538.963	990.0722	b
		Av. NORTH	597.258	940.3476	

G519

	Word	LexSet	F1	F2	AudCat
1	workers	NURSE	426.9286	921.5028	cb
2	worker	NURSE	449.4087	1170.736	cb
3	served	NURSE	624.0855	1162.134	cb
4	worked	NURSE	644.4008	846.4445	b
5	firms	NURSE	501.4357	841.702	cb
6	worked	NURSE	424.7849	1011.09	cb
7	worked	NURSE	400.1147	901.0738	cb
8	worked	NURSE	419.7032	1287.294	cb
9	worked	NURSE	383.8654	963.3276	cb
10	girders	NURSE	663.7266	777.4507	b
11	worst	NURSE	610.844	975.4303	cb
12	firm (n.)	NURSE	589.1352	887.4573	cb
13	worked	NURSE	475.9227	875.3715	b
14	firm (n.)	NURSE	402.5429	931.1667	cb
15	firm (n.)	NURSE	405.1165	922.6067	cb
16	first	NURSE	442.2798	838.0013	cb
17	circumstances	NURSE	421.855	956.9871	cb
18	working	NURSE	428.8558	884.9897	cb
19	works (v.)	NURSE	438.7527	928.6069	cb
20	worked	NURSE	442.51	931.3052	cb
21	firm (n.)	NURSE	482.0954	1025.91	cb
22	work (v.)	NURSE	411.9637	898.4094	b
23	birch	NURSE	466.6416	1048.363	cb
24	person	NURSE	450.7082	1152.626	cb
25	Conservative	NURSE	453.4911	957.3888	b
26	work (v.)	NURSE	440.248	931.1619	cb
27	work (v.)	NURSE	483.6357	970.5211	cb
28	work (v.)	NURSE	418.6855	910.807	cb
29	girders	NURSE	435.518	1135.754	cb
30	worked	NURSE	484.0649	914.1911	cb
31	heard	NURSE	525.8286	924.085	b
32	person	NURSE	432.0593	1062.205	cb
		Av. NURSE	471.2878	967.0656	
1	thirty	THIR-	446.648	1622.974	f
2	thirty	THIR-	507.7261	1651.9	f
3	thirty	THIR-	472.0074	1571.868	f

4	thirty	THIR-	447.2994	1538.974	f
5	thirty	THIR-	393.4269	1051.8	cb
6	thirty	THIR-	557.5706	1563.863	f
7	thirty	THIR-	532.0027	1580.412	f
8	thirteen	THIR-	498.7331	1448.152	cf
9	thirteen	THIR-	459.9365	1414.957	cf
10	thirty	THIR-	530.4103	1539.685	f
11	thirty	THIR-	528.2574	1522.741	f
12	thirty	THIR-	556.3518	1614.498	f
		Av. THIR-	**494.1975**	**1510.152**	
1	born	NORTH	561.4588	825.8033	cb
2	born	NORTH	480.0412	942.5023	cb
3	fourteen	NORTH	450.5007	843.0668	b
4	important	NORTH	601.5579	926.3708	cb
5	morning	NORTH	515.238	743.6477	b
6	towards	NORTH	521.1582	1015.744	cb
7	normal	NORTH	558.6201	977.2831	b
8	sort (n.)	NORTH	481.8899	1049.175	cb
9	morning	NORTH	556.8964	767.124	b
		Av. NORTH	**525.2624**	**898.9686**	

G522

	Word	LexSet	F1	F2	AudCat
1	first	NURSE	661.4858	1018.304	cb
2	Birtley	NURSE	489.1837	1243.654	c
3	Birtley	NURSE	383.1843	920.084	cb
4	first	NURSE	538.3883	1070.915	cb
5	turn	NURSE	511.3159	994.0795	cb
6	Birtley	NURSE	429.4766	1033.49	cb
7	works (n.)	NURSE	413.4271	874.0432	b
8	Birtley	NURSE	454.5655	1132.766	cb
9	Birtley	NURSE	427.0301	992.6446	cb
10	working	NURSE	416.0543	863.5726	b
11	serve	NURSE	558.7155	1106.987	cb
12	turner	NURSE	446.1732	1243.917	cb
13	turners	NURSE	494.7821	1212.222	cb
14	turner	NURSE	453.5547	1170.287	cb
15	learning	NURSE	531.8316	953.3975	cb
16	church	NURSE	548.3509	1088.913	b
17	worth	NURSE	434.6904	1063.738	cb
18	hurt	NURSE	458.1123	1012.448	cb
19	turner	NURSE	513.1911	1101.303	b
20	turner	NURSE	465.33	1634.703	cb
21	learn	NURSE	468.5722	941.1454	cb
22	learn	NURSE	496.3712	1042.791	cb
23	first	NURSE	429.1311	845.8433	cb
24	serving	NURSE	437.0444	1136.024	cb
25	work (n.)	NURSE	466.776	983.6761	b
26	work's	NURSE	512.1297	882.1825	b
27	work's	NURSE	565.2637	905.7212	b

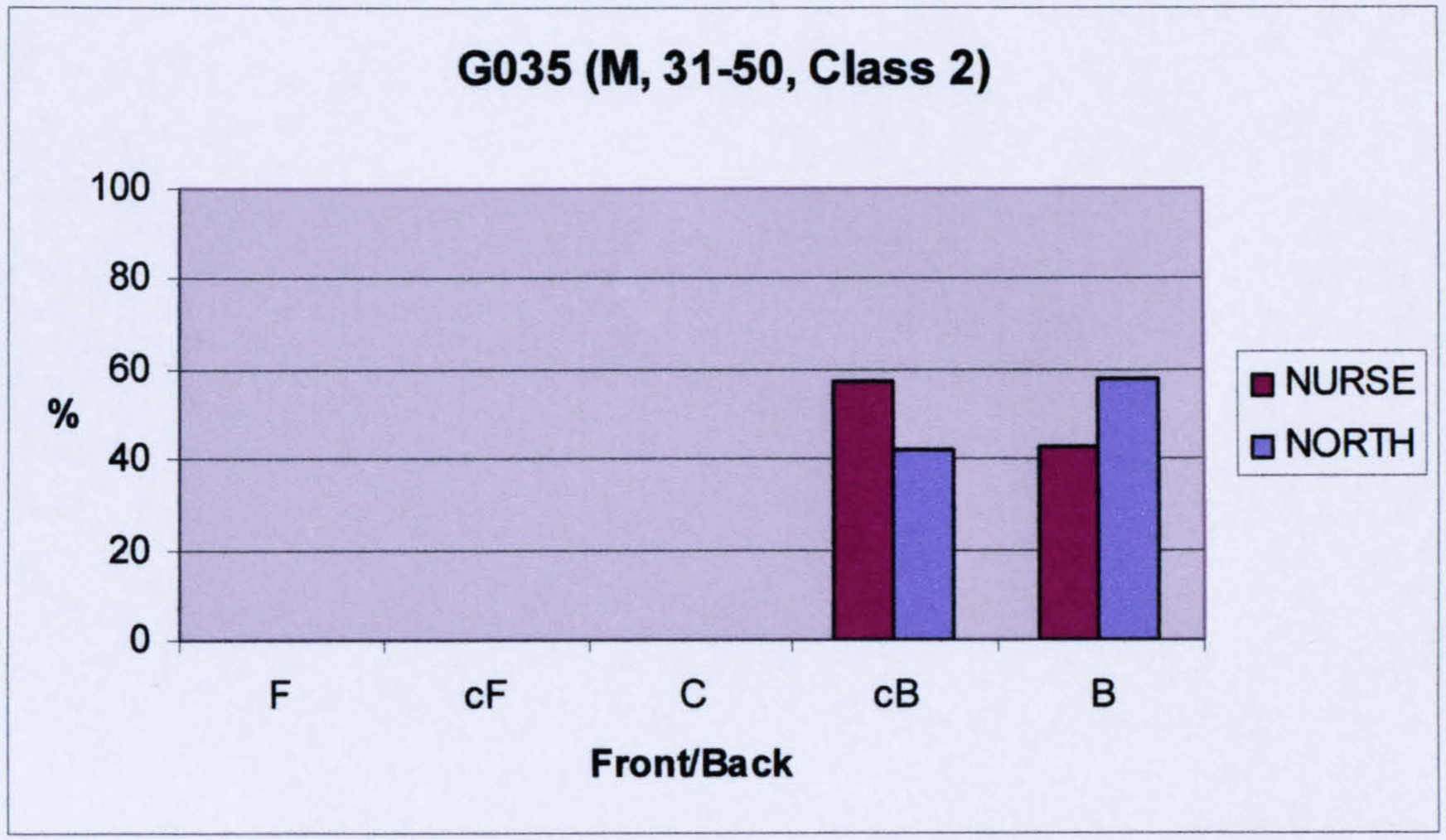
28	work's	NURSE	479.7858	702.8759	b
29	first	NURSE	418.6687	820.0246	b
30	first	NURSE	347.4825	928.8621	b
31	first	NURSE	482.8957	971.816	b
32	first	NURSE	405.0279	855.0692	b
33	Birtley	NURSE	446.1632	1251.216	c
34	first	NURSE	545.492	808.6507	b
35	world	NURSE	557.2618	907.6118	b
36	first	NURSE	515.008	1039.262	b
37	first	NURSE	496.2682	952.2702	cb
38	Birtley	NURSE	384.3966	1129.634	c
39	served	NURSE	468.4754	1181.683	cb
40	hurt	NURSE	443.0445	991.9709	cb
41	hurt	NURSE	488.6525	995.3359	b
42	first	NURSE	455.8674	884.1575	b
43	service	NURSE	438.9484	1281.62	c
44	service	NURSE	395.9934	1173.869	cb
45	service	NURSE	438.2446	1129.74	cb
46	work's	NURSE	448.3918	938.8377	b
47	work (n.)	NURSE	488.4205	997.898	cb
48	first	NURSE	479.0095	826.848	cb
49	first	NURSE	483.9295	951.0727	b
50	service	NURSE	443.0559	1125.706	c
51	service	NURSE	473.2408	1158.783	c
52	service	NURSE	418.9981	1161.613	c
53	first	NURSE	562.945	1139.586	cb
54	first	NURSE	481.0407	944.2363	cb
55	turn	NURSE	554.8218	1222.864	cb
56	dursn't	NURSE	561.0535	1149.328	cb
57	birthday	NURSE	403.0043	847.6589	cb
58	first	NURSE	480.0555	955.982	cb
59	first	NURSE	449.8804	914.7533	b
60	turn	NURSE	435.9519	949.4049	cb
61	nurses	NURSE	633.6671	1192.874	cb
62	nurses	NURSE	555.084	1114.363	cb
63	infirmary	NURSE	515.9031	953.9814	b
64	infirmary	NURSE	622.7182	867.5758	b
65	infirmary	NURSE	433.2603	757.3127	b
66	work (n.)	NURSE	490.6552	1026.546	b
67	turn	NURSE	471.1462	1000.966	cb
68	infirmary	NURSE	535.6204	806.6964	b
		Av. NURSE	479.9068	1021.756	
1	thirteen	THIR	467.9947	1441.289	c
2	thirty	THIR	494.7618	1467.805	c
3	third	THIR	413.9329	1065.036	cb
4	thirteen	THIR	577.7931	1561.254	c
5	thirteen	THIR	481.3541	1614.39	cf
6	thirty	THIR	427.4814	1404.439	c
7	thirty	THIR	464.8024	1631.307	c
8	thirty	THIR	488.4545	1474.032	c

9	thirty	THIR	405.0792	1442.951	c
10	thirty	THIR	500.1606	1445.181	c
11	thirty	THIR	512.9686	1534.515	c
12	thirty	THIR	489.758	1410.418	c
13	thirty	THIR	488.5848	1477.636	c
14	girl	THIR	460.6983	1849.03	f
15	girl	THIR	667.5408	1835.527	f
16	girl	THIR	502.9865	2210.473	f
		Av. THIR-	490.272	1554.08	
1	shortly	NORTH	491.2487	990.202	b
2	forge	NORTH	434.5196	965.45	b
3	morning	NORTH	314.3117	705.2601	b
4	morning	NORTH	401.3096	801.7483	b
5	foreman	NORTH	460.797	844.6235	b
6	forge	NORTH	415.3964	955.5481	cb
7	born	NORTH	430.1161	874.2924	cb
8	mortification	NORTH	494.998	932.3324	b
9	stores	NORTH	473.6784	866.0938	b
10	corner	NORTH	384.031	803.3719	b
11	born	NORTH	588.3823	900.2094	b
12	born	NORTH	442.2454	897.9686	b
13	born	NORTH	412.1583	954.2022	cb
14	fourteen	NORTH	367.9416	684.8786	b
15	morning	NORTH	398.9834	669.2386	b
16	forming	NORTH	425.9336	820.5911	b
17	corporal	NORTH	528.6139	879.4892	b
18	corporal	NORTH	485.3294	894.7569	b
19	born	NORTH	548.0832	1040.719	b
20	afford	NORTH	408.4992	848.1302	b
21	Northampton	NORTH	499.1625	791.0278	b
		Av. NORTH	447.8923	862.8635	

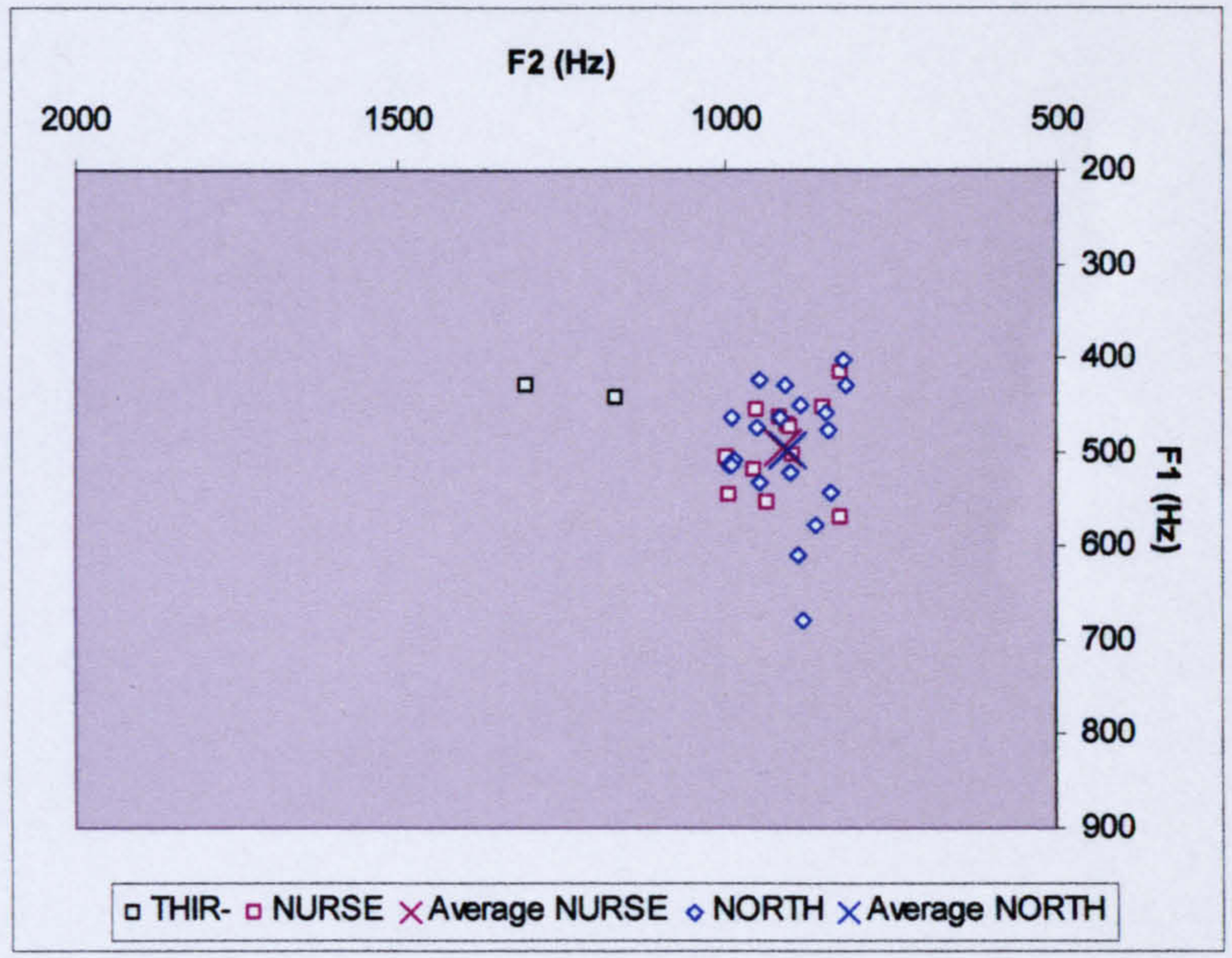
Appendix 12: The Auditory and Acoustic Analyses Compared

G035 (NURSE = 14, NORTH = 19)

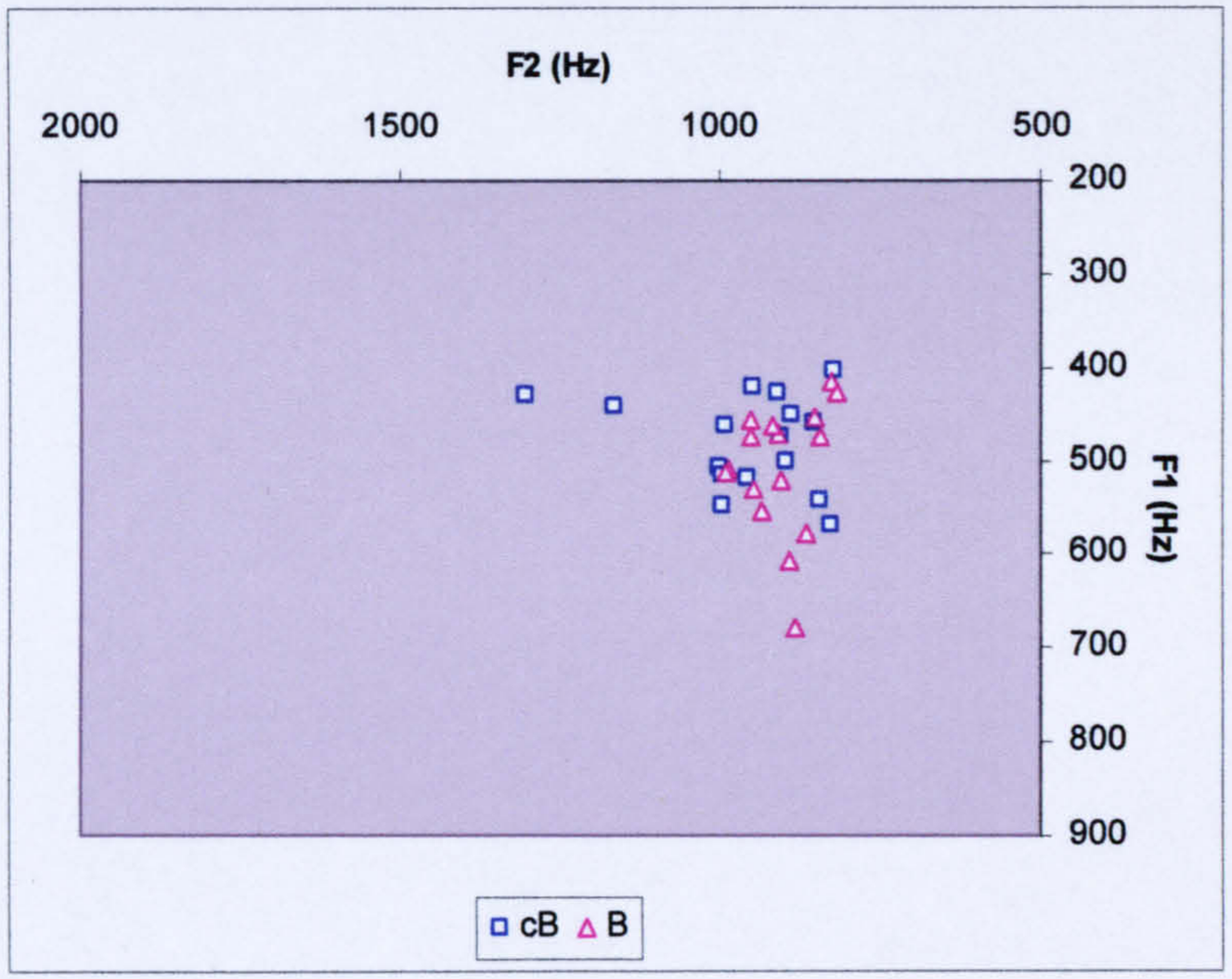
A. Auditory analysis of G035



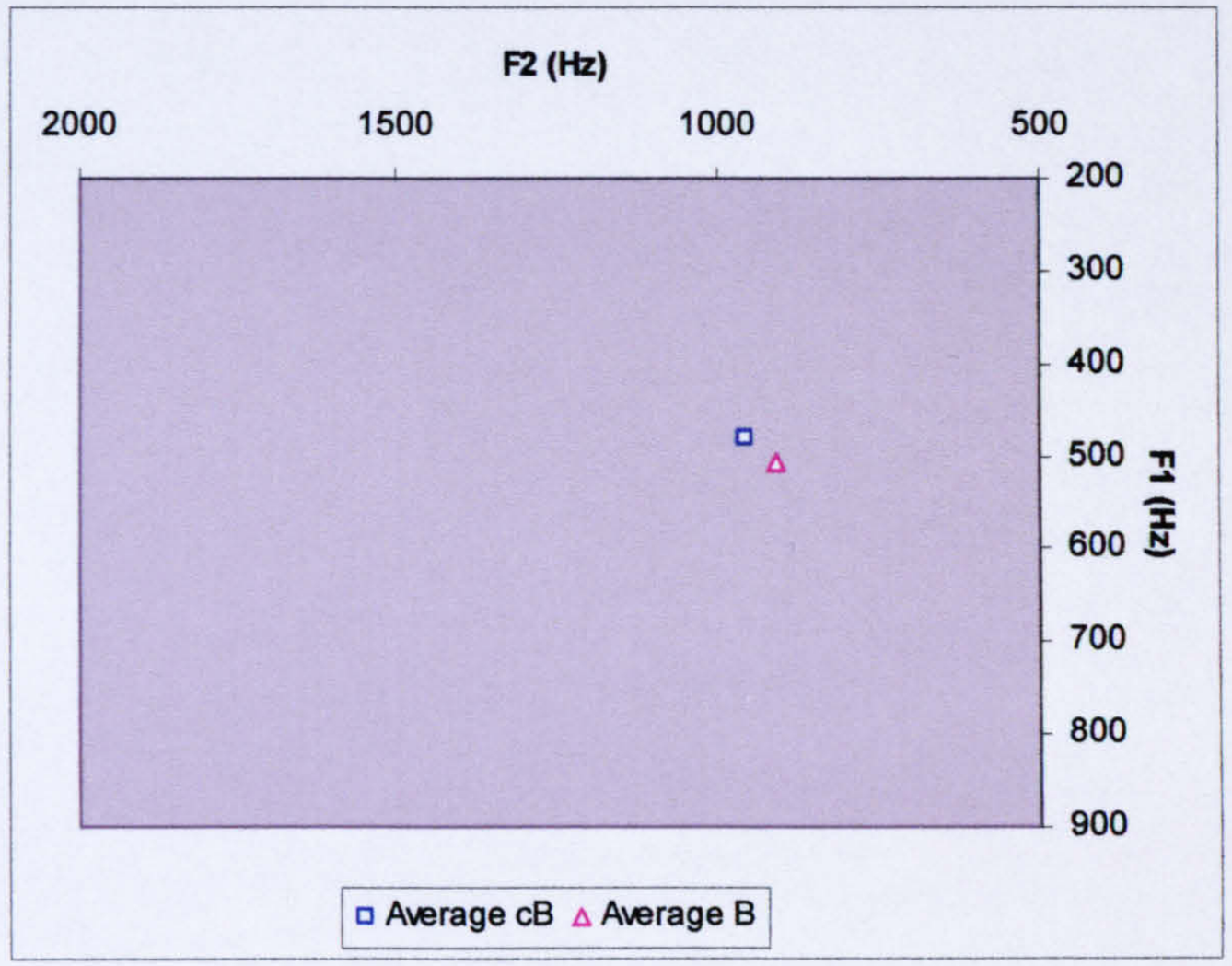
B. Acoustic analysis of G035



C. Auditory categories and acoustic values compared for G035

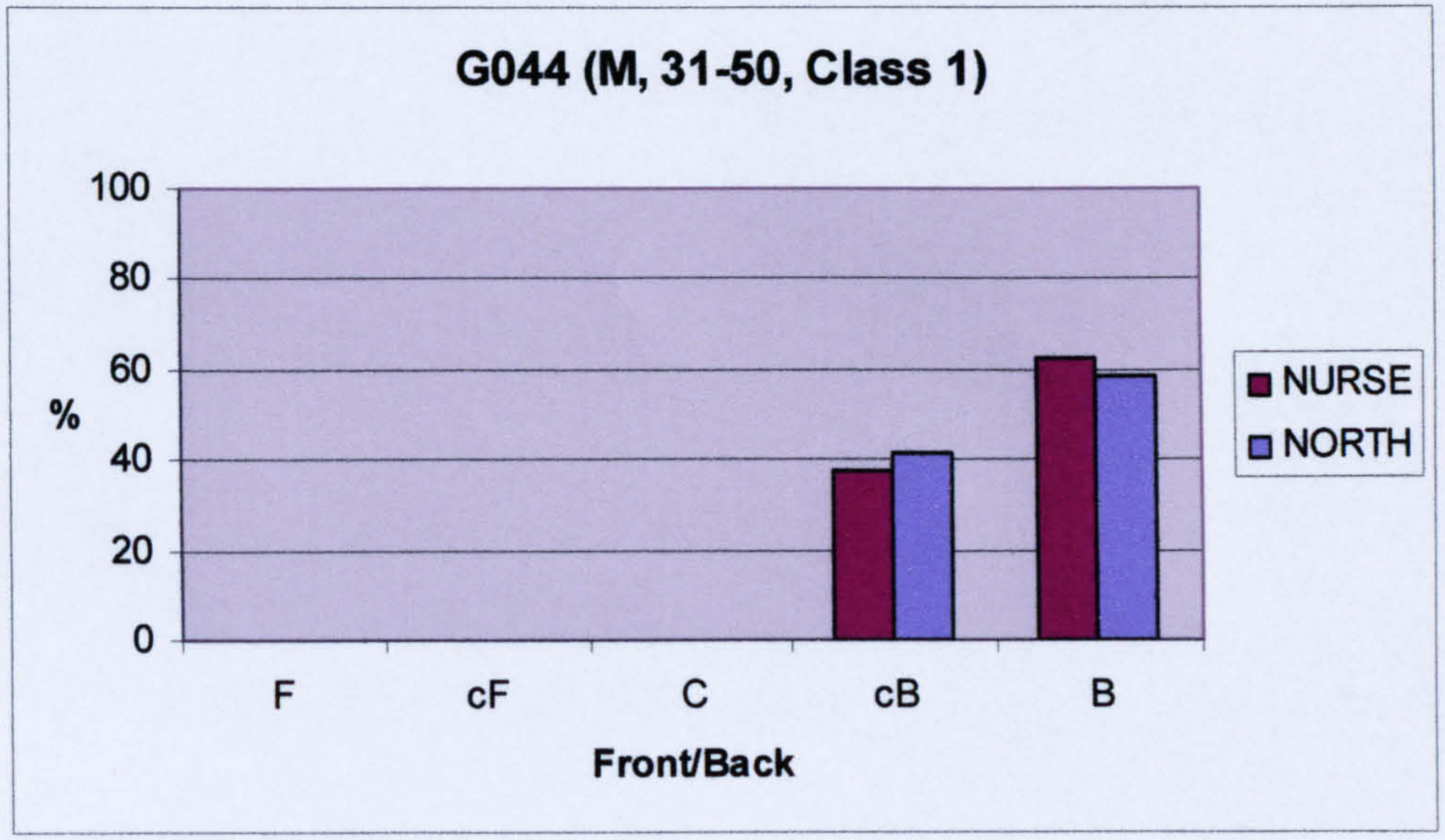


D. Auditory categories and acoustic averages compared for G035

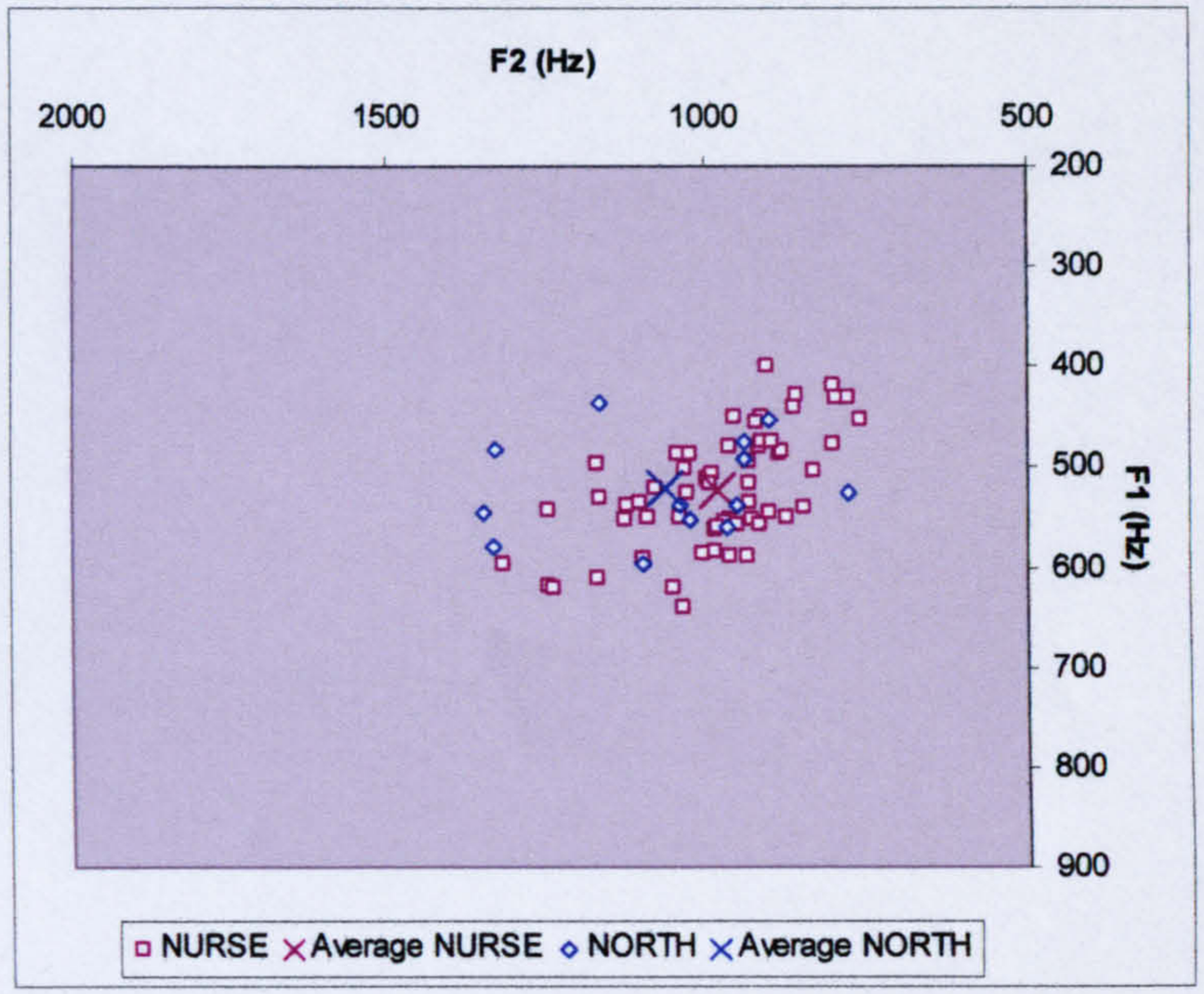


G044 (NURSE = 58, NORTH = 13)

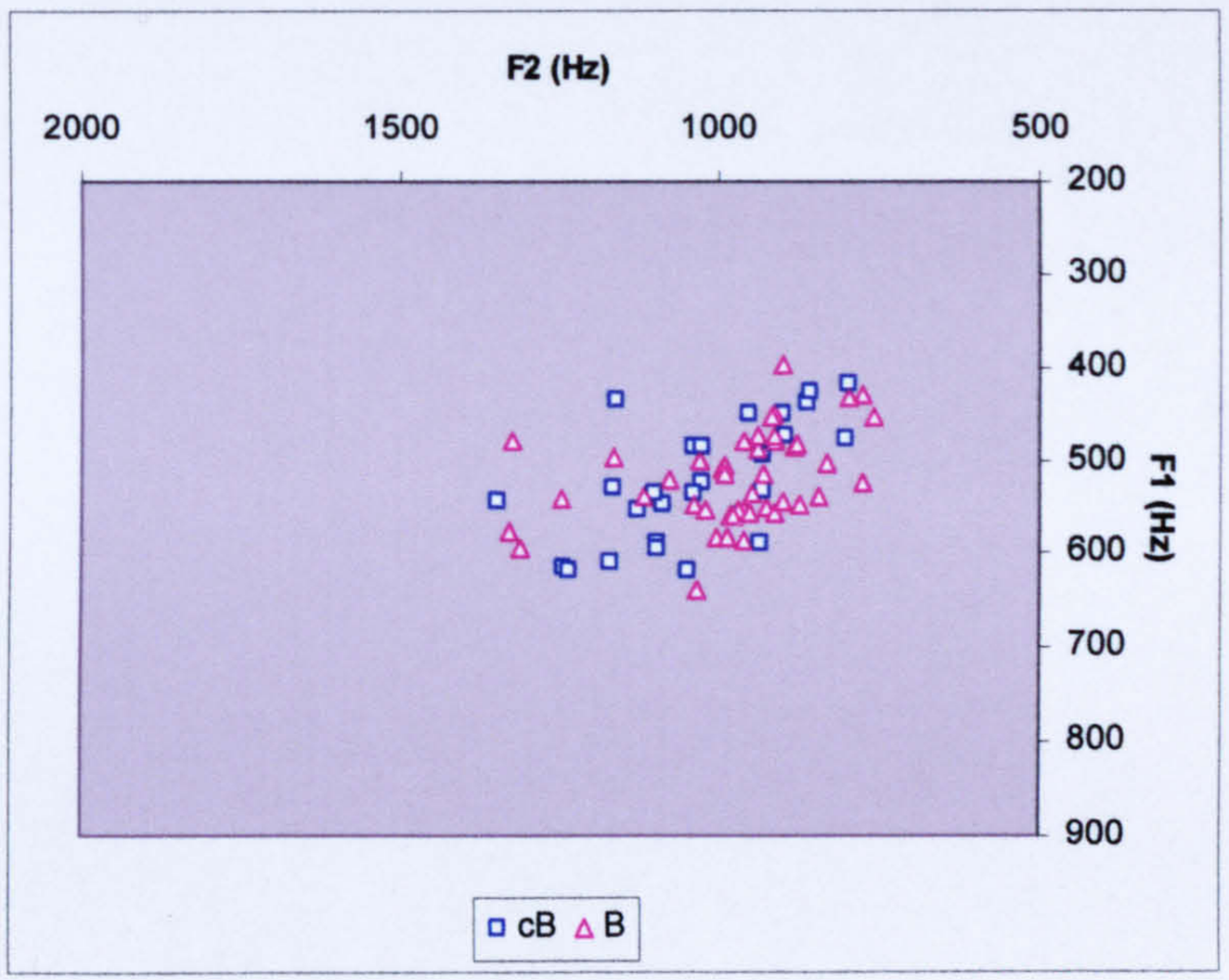
A. Auditory analysis of G044



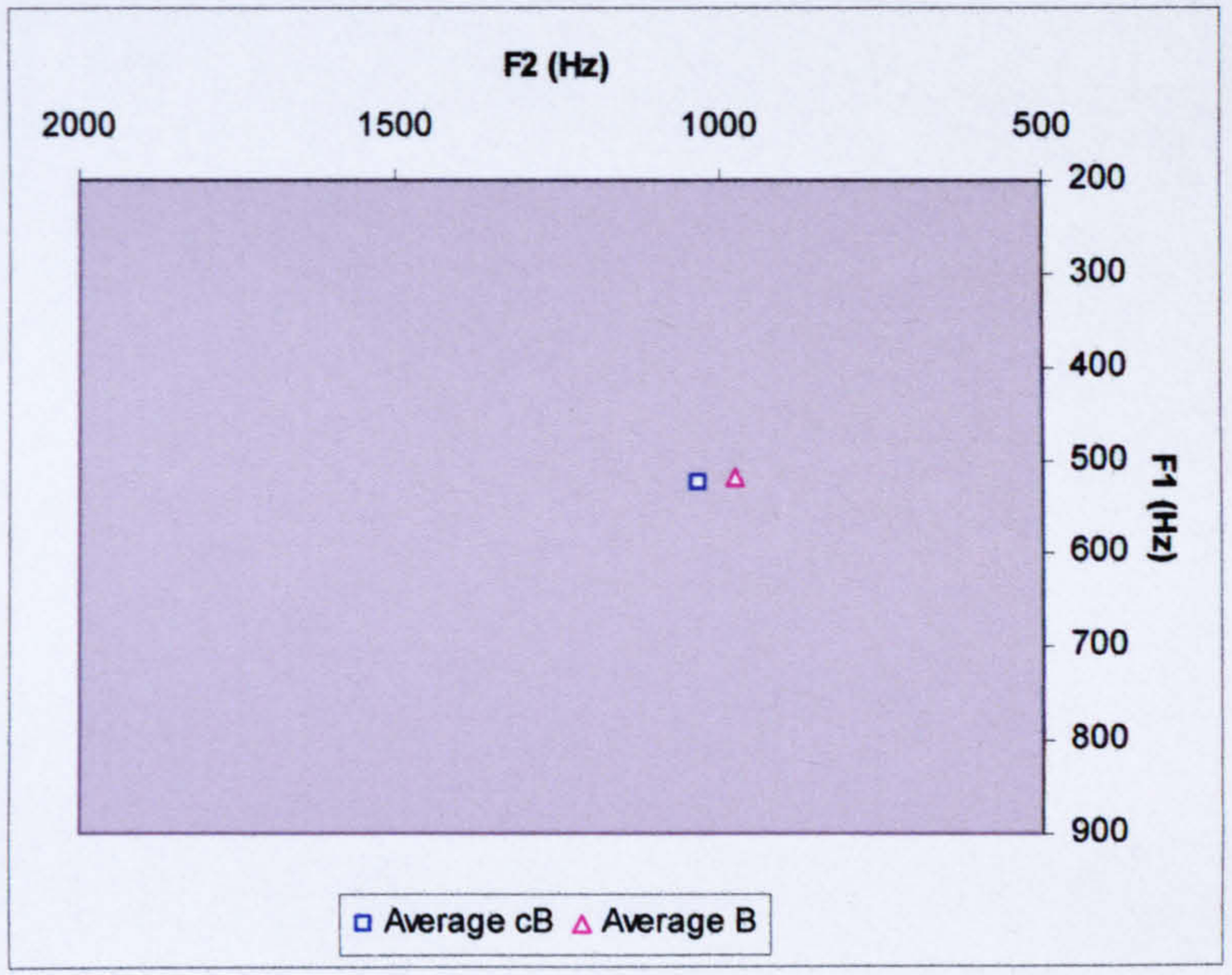
B. Acoustic analysis of G044



C. Auditory categories and acoustic values compared for G044

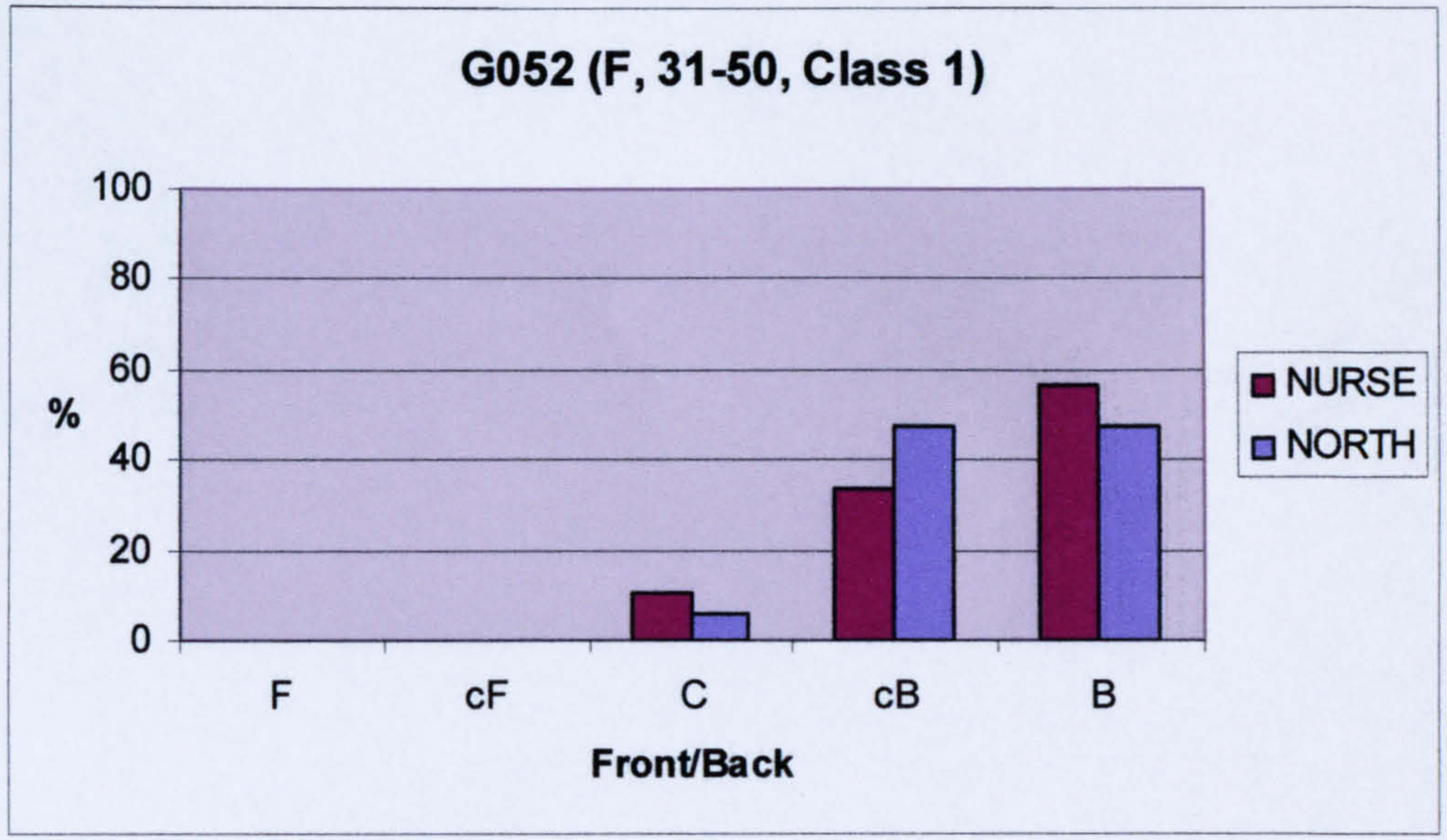


D. Auditory categories and acoustic averages compared for G044

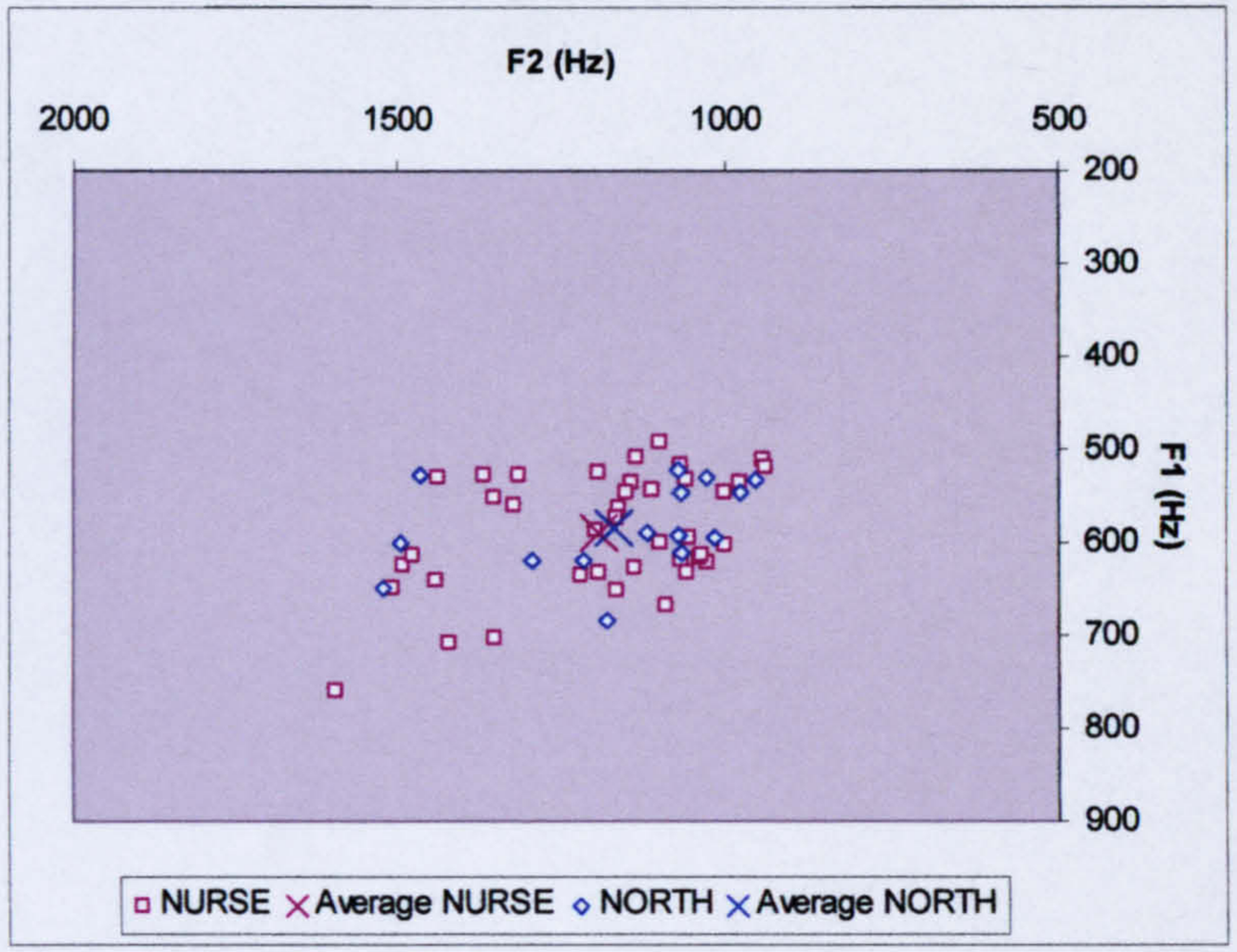


G052 (NURSE = 40, NORTH = 15)

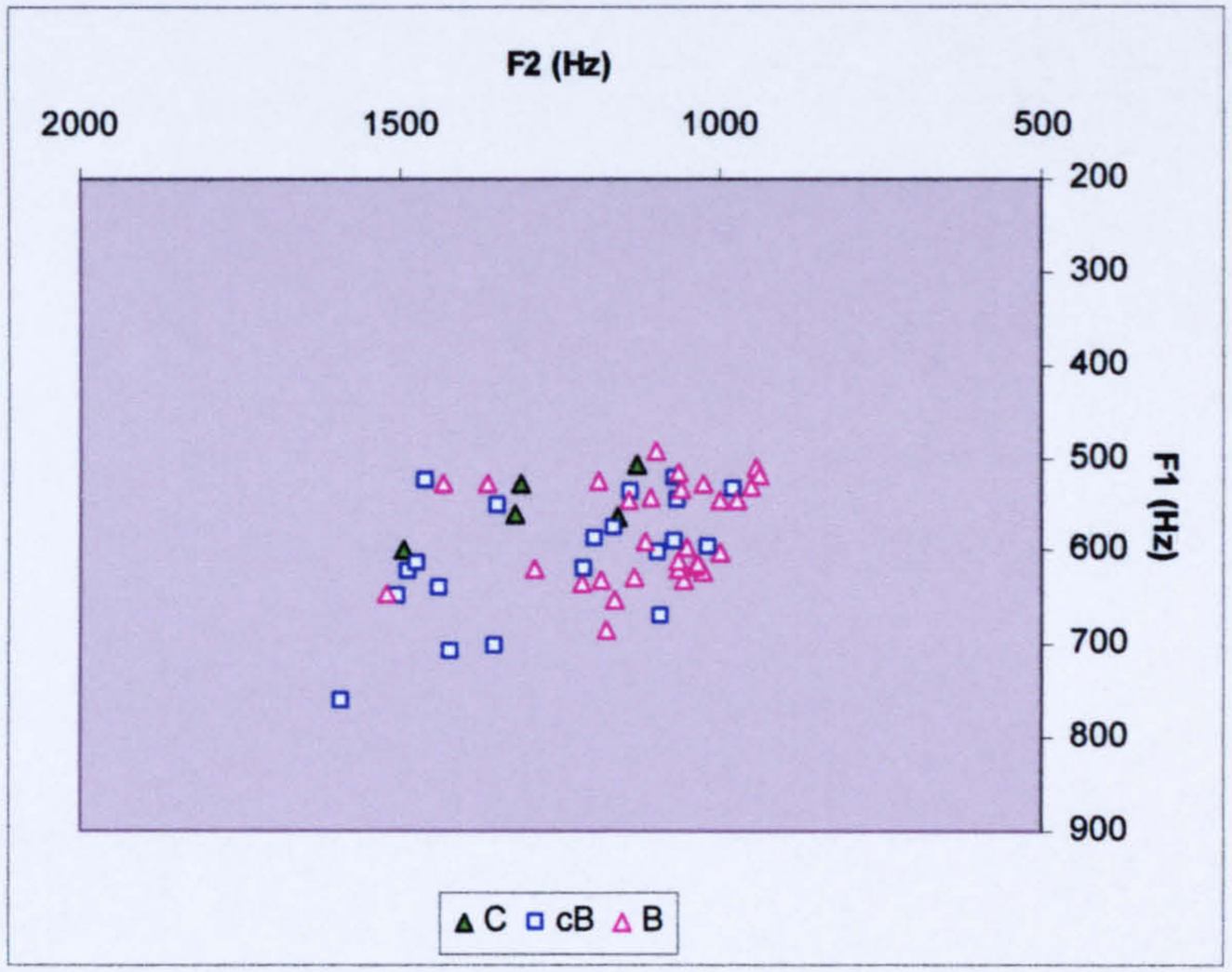
A. Auditory analysis of G052



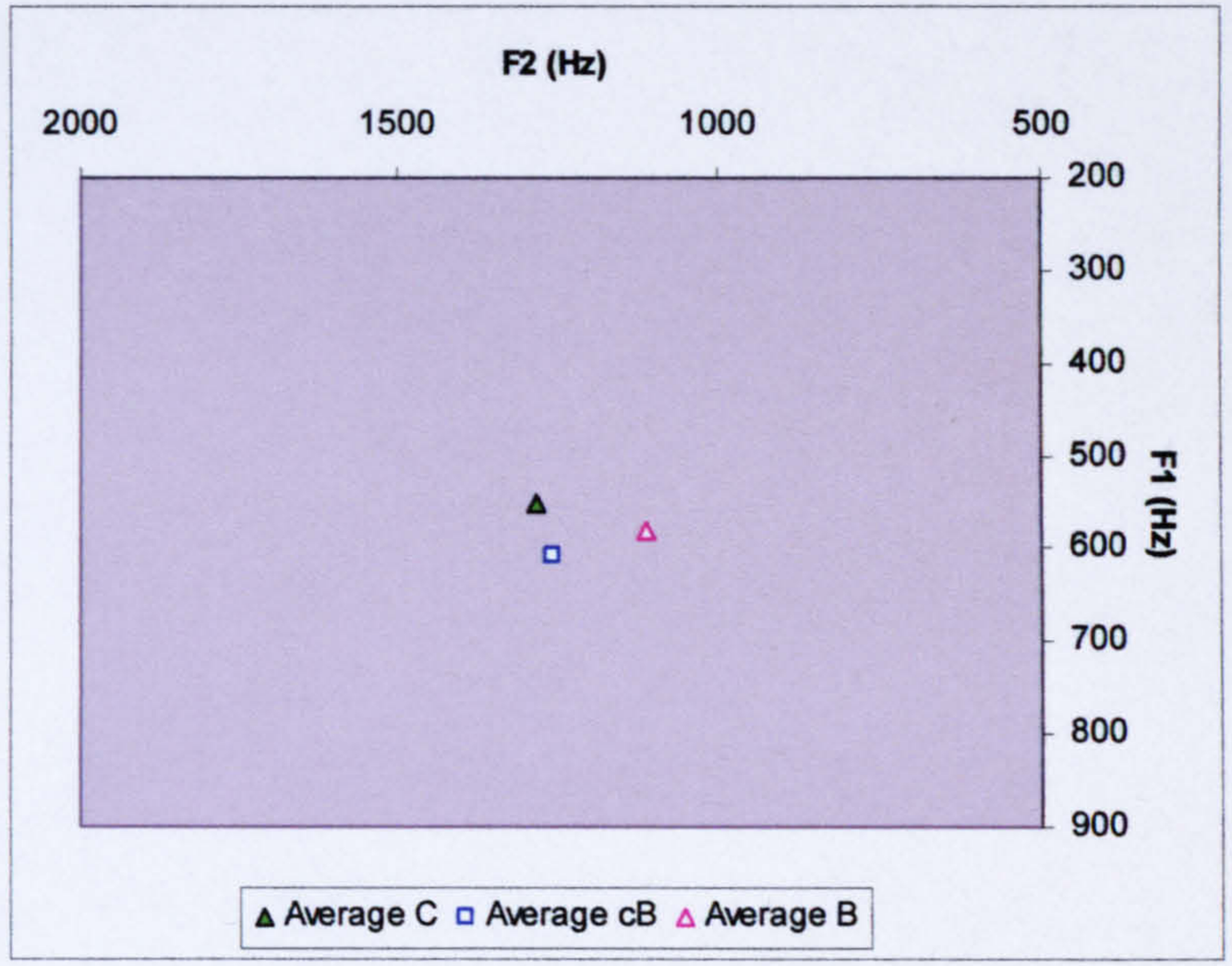
B. Acoustic analysis of G052



C. Auditory categories and acoustic values compared for G052

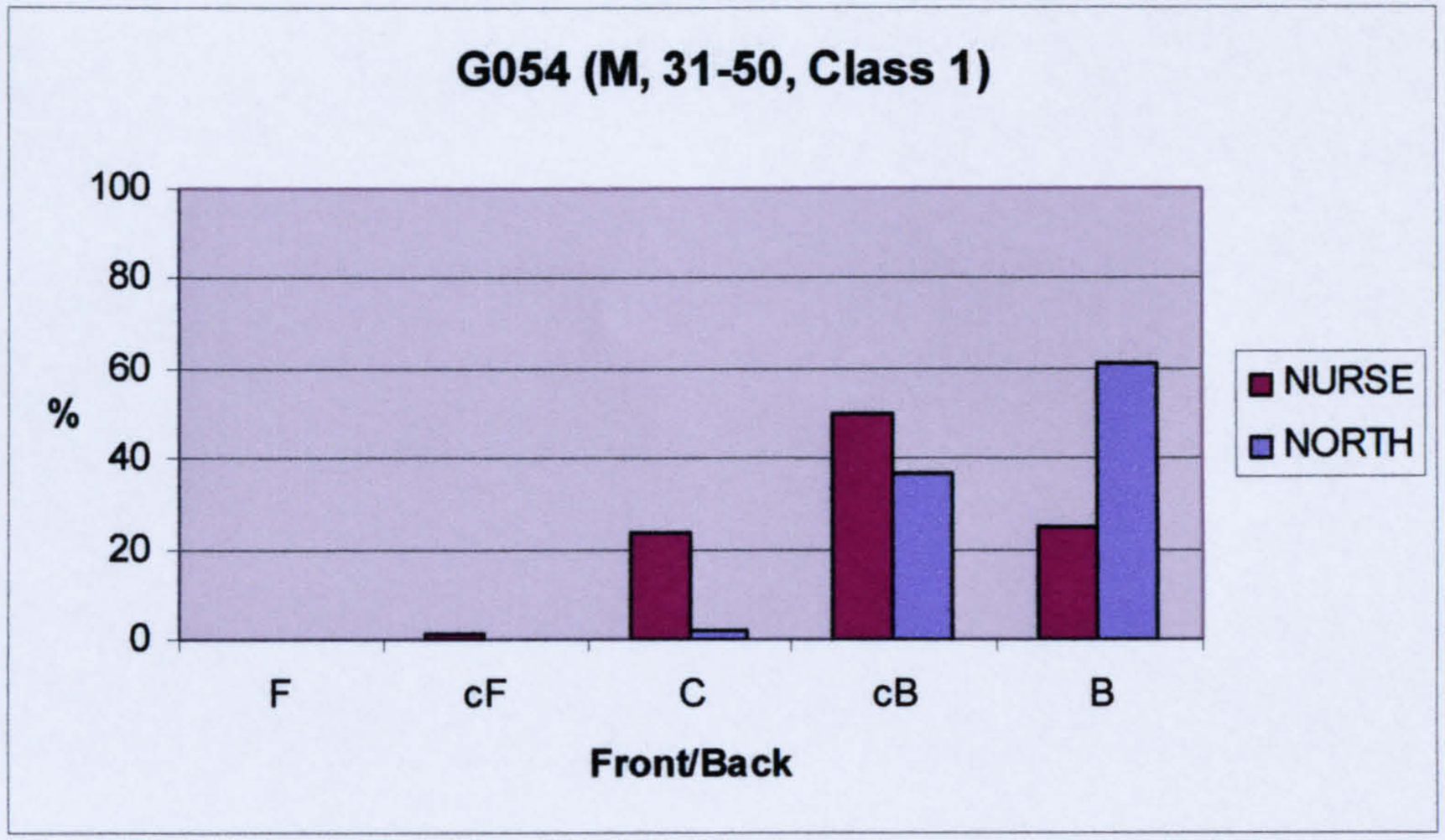


D. Auditory categories and acoustic averages compared for G052

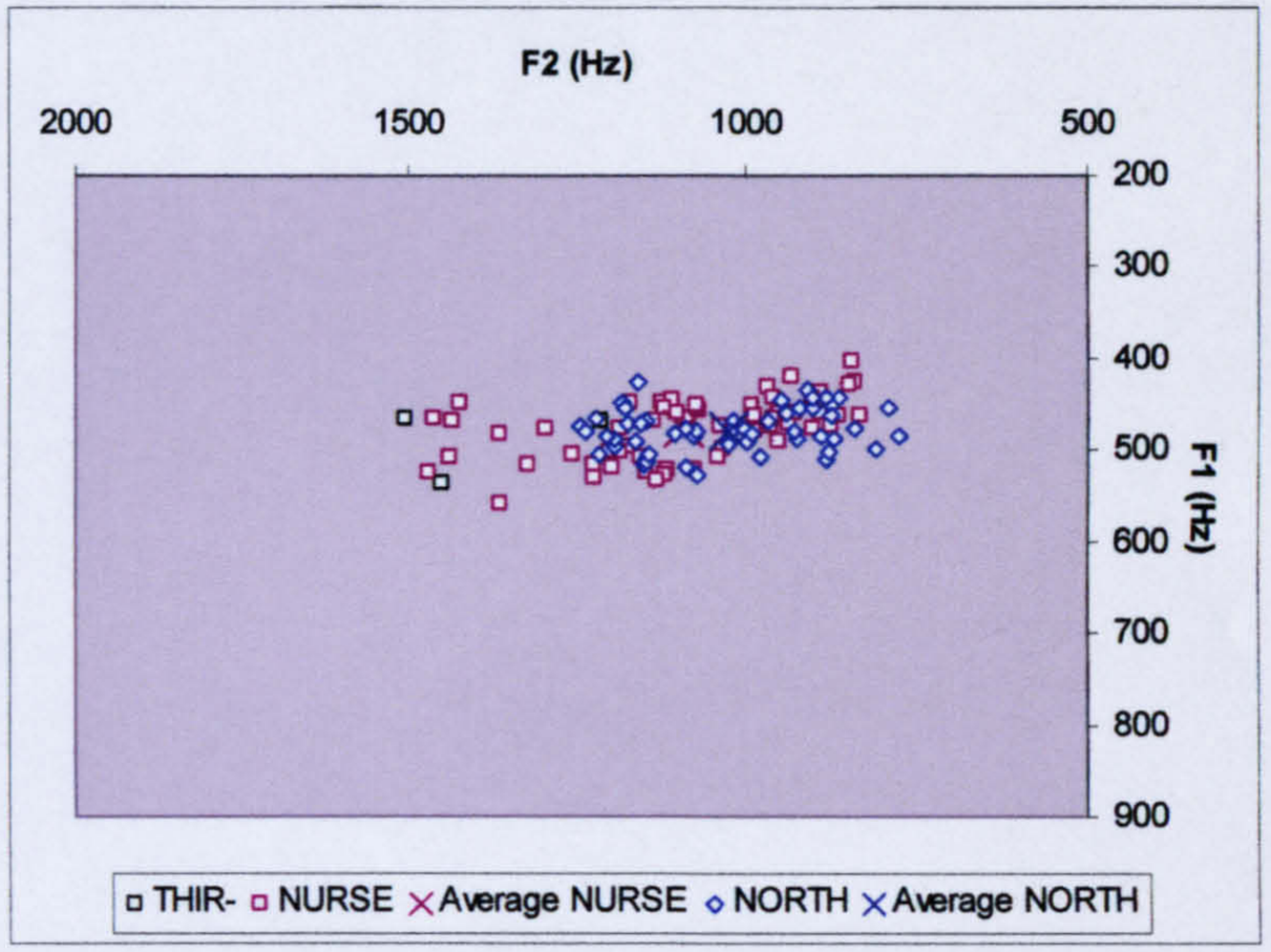


G054 (NURSE = 63 (3 THIR-), NORTH = 52)

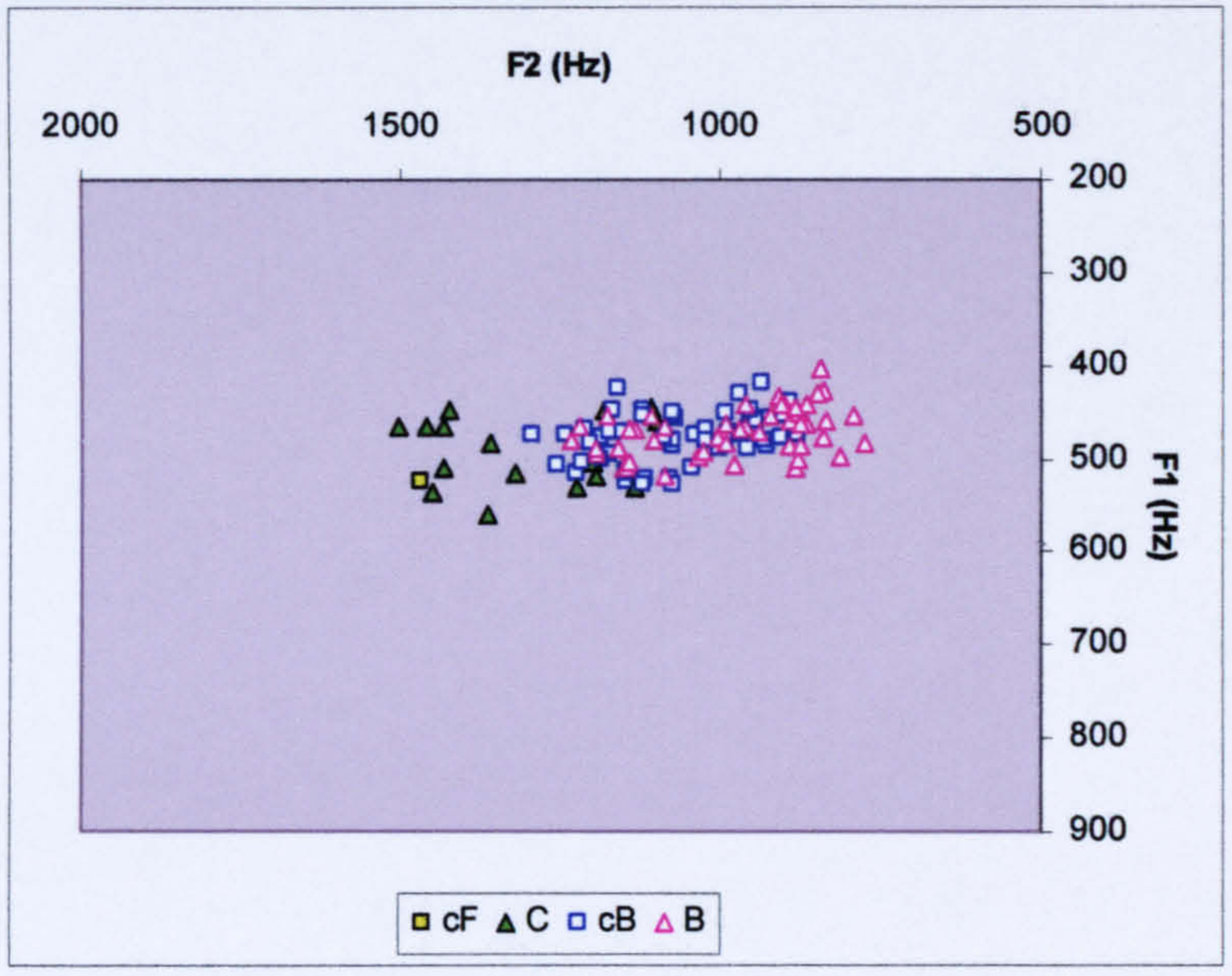
A. Auditory analysis of G054



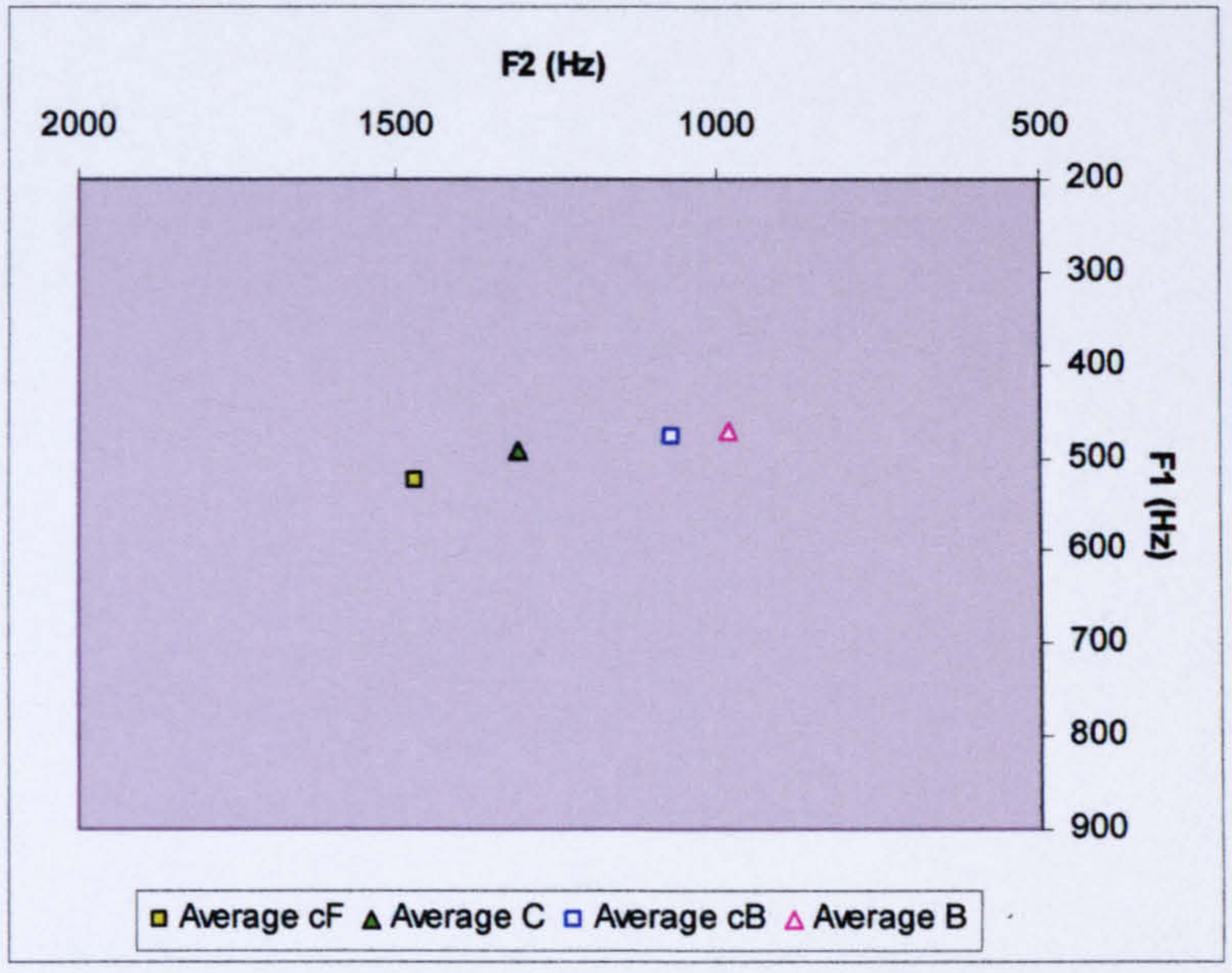
B. Acoustic analysis of G054



C. Auditory categories and acoustic values compared for G054

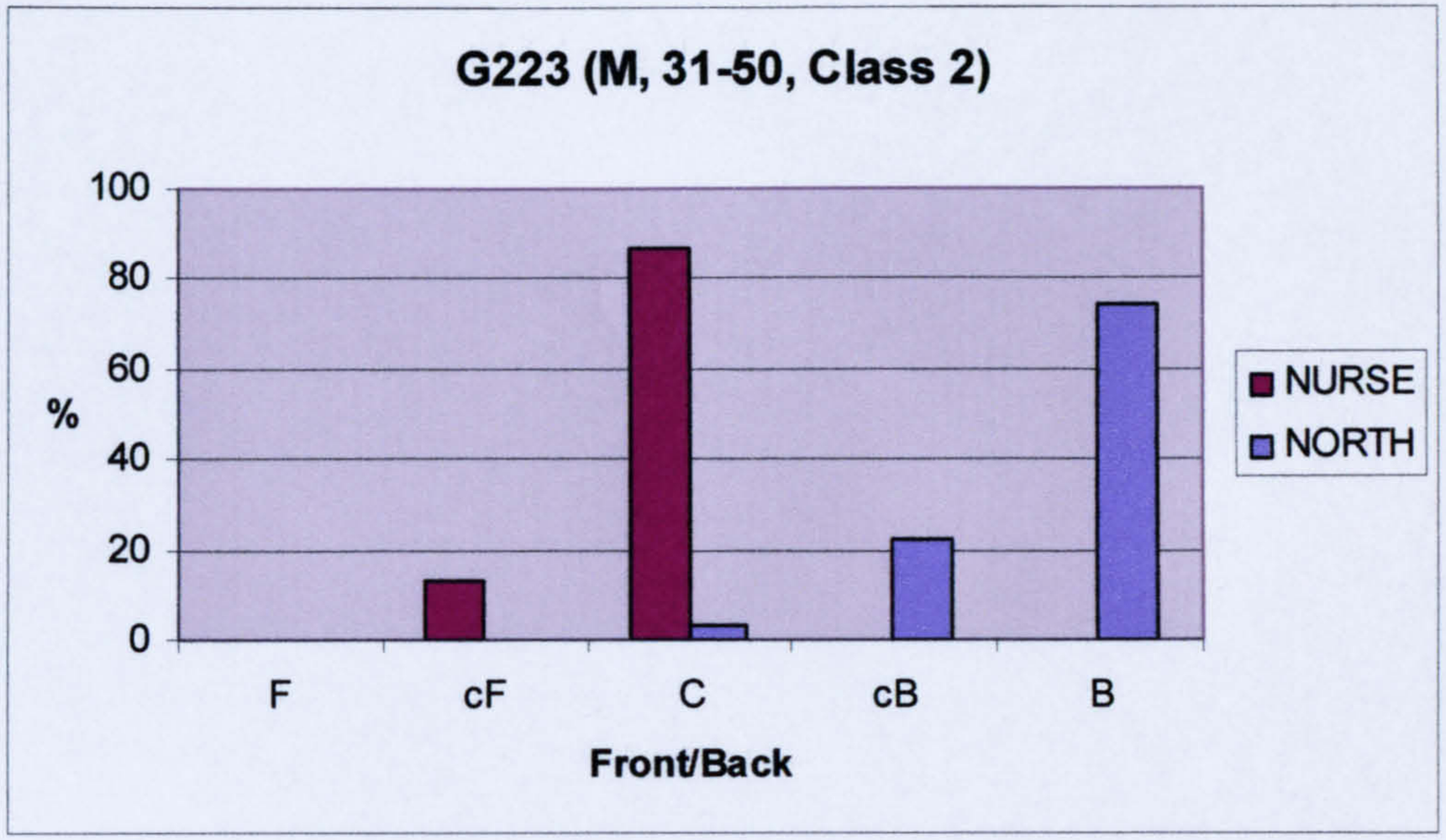


D. Auditory categories and acoustic averages compared for G054

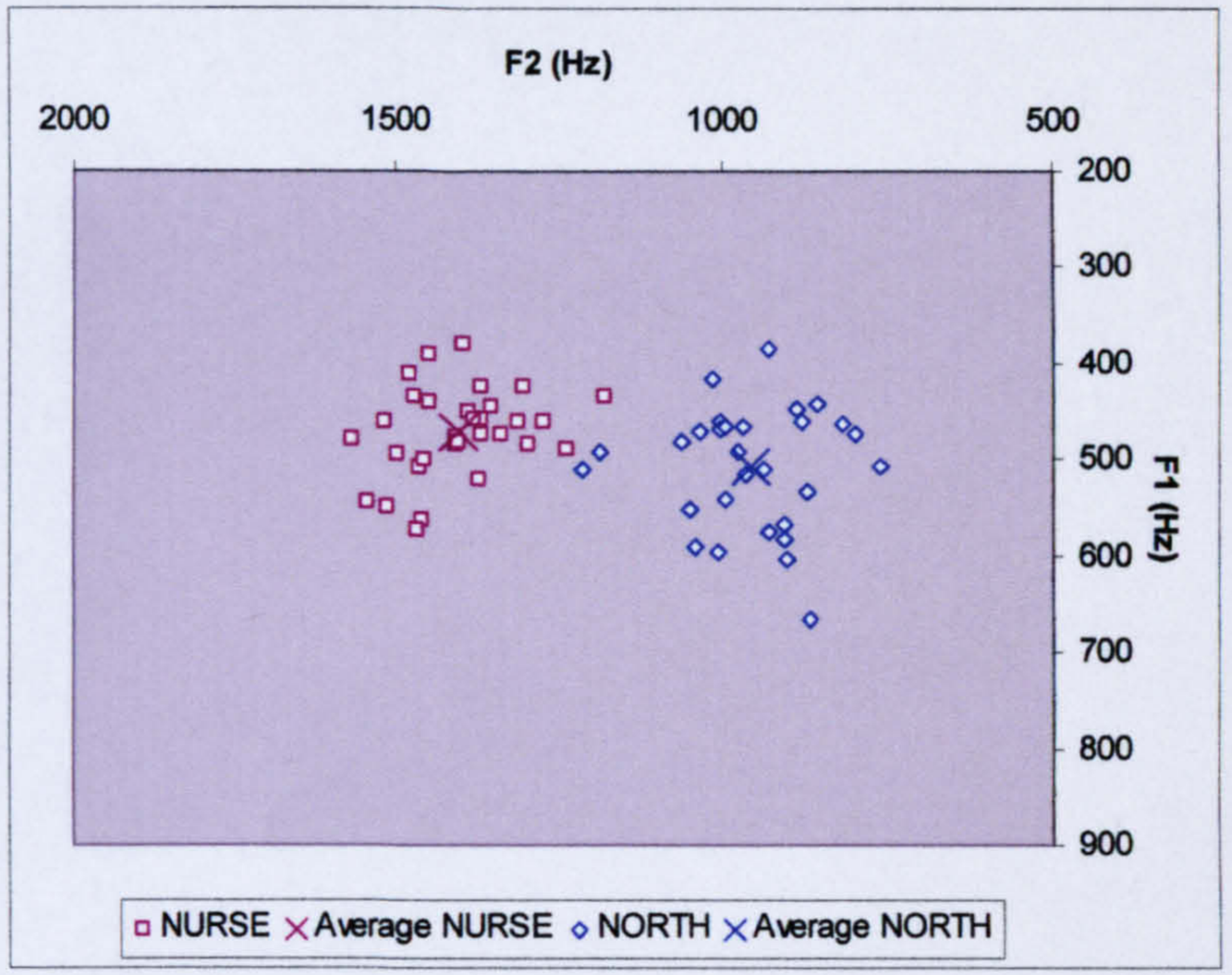


G223 (NURSE = 31, NORTH = 29)

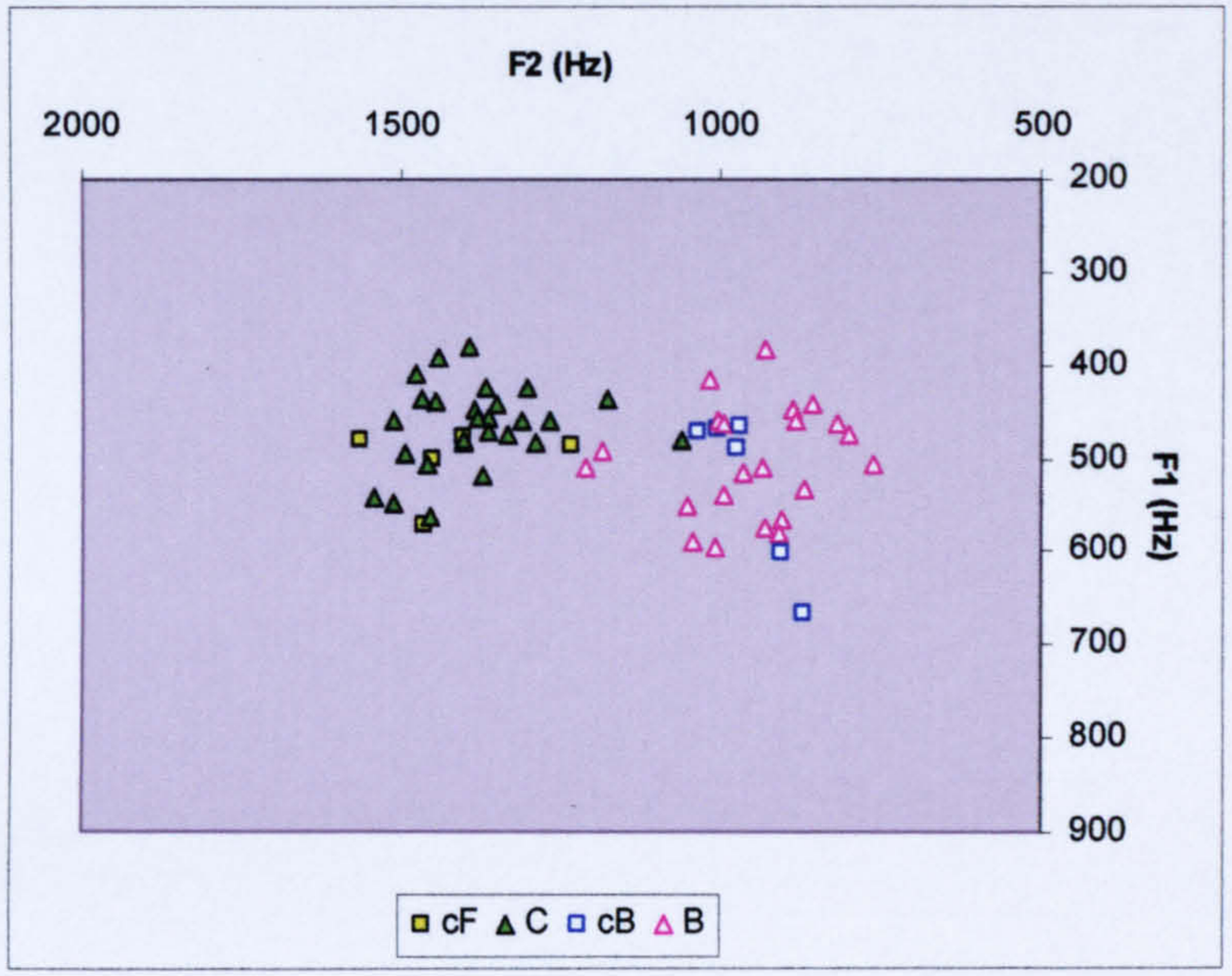
A. Auditory analysis of G223



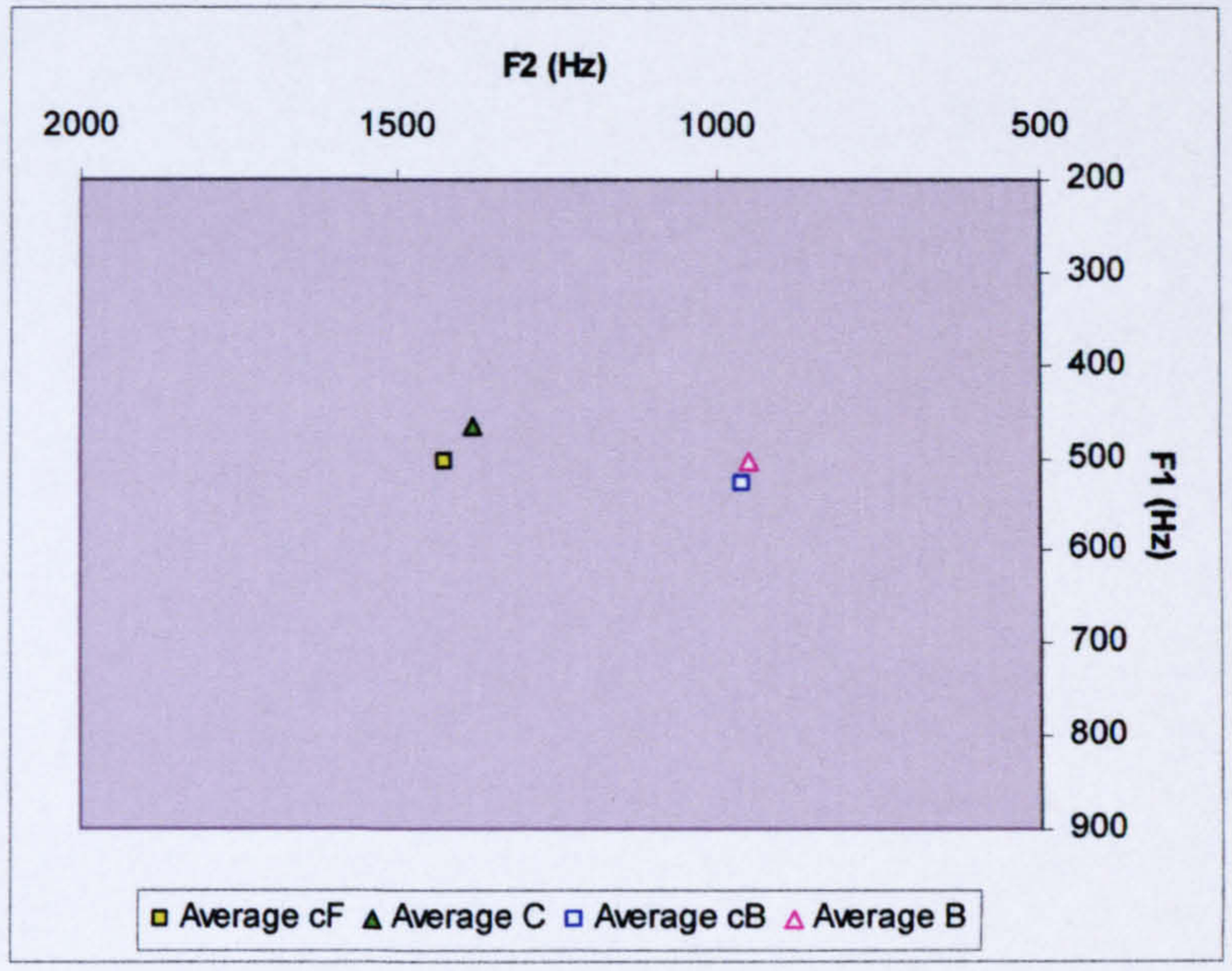
B. Acoustic analysis of G223



C. Auditory categories and acoustic values compared for G223

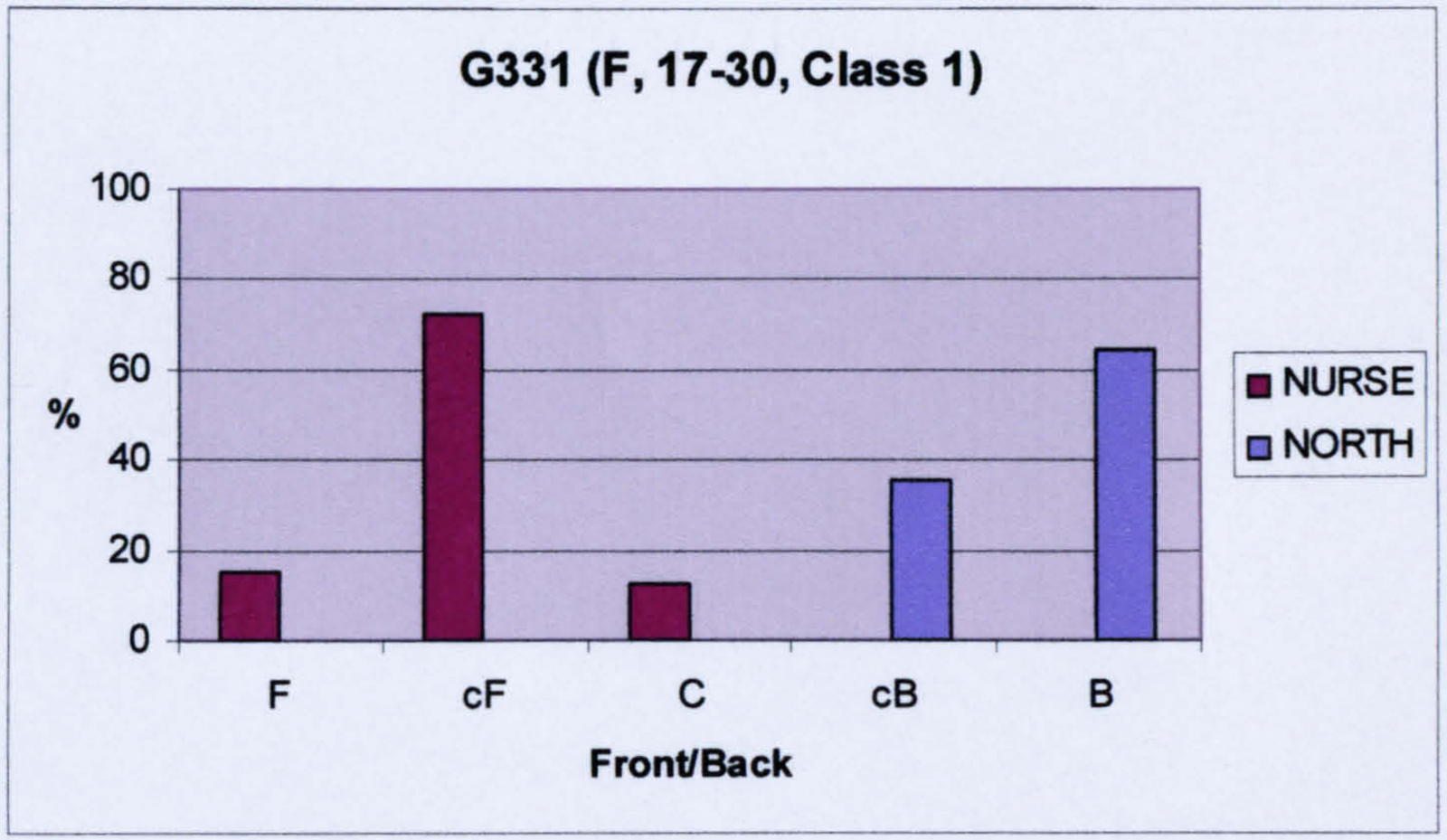


D. Auditory categories and acoustic averages compared for G223

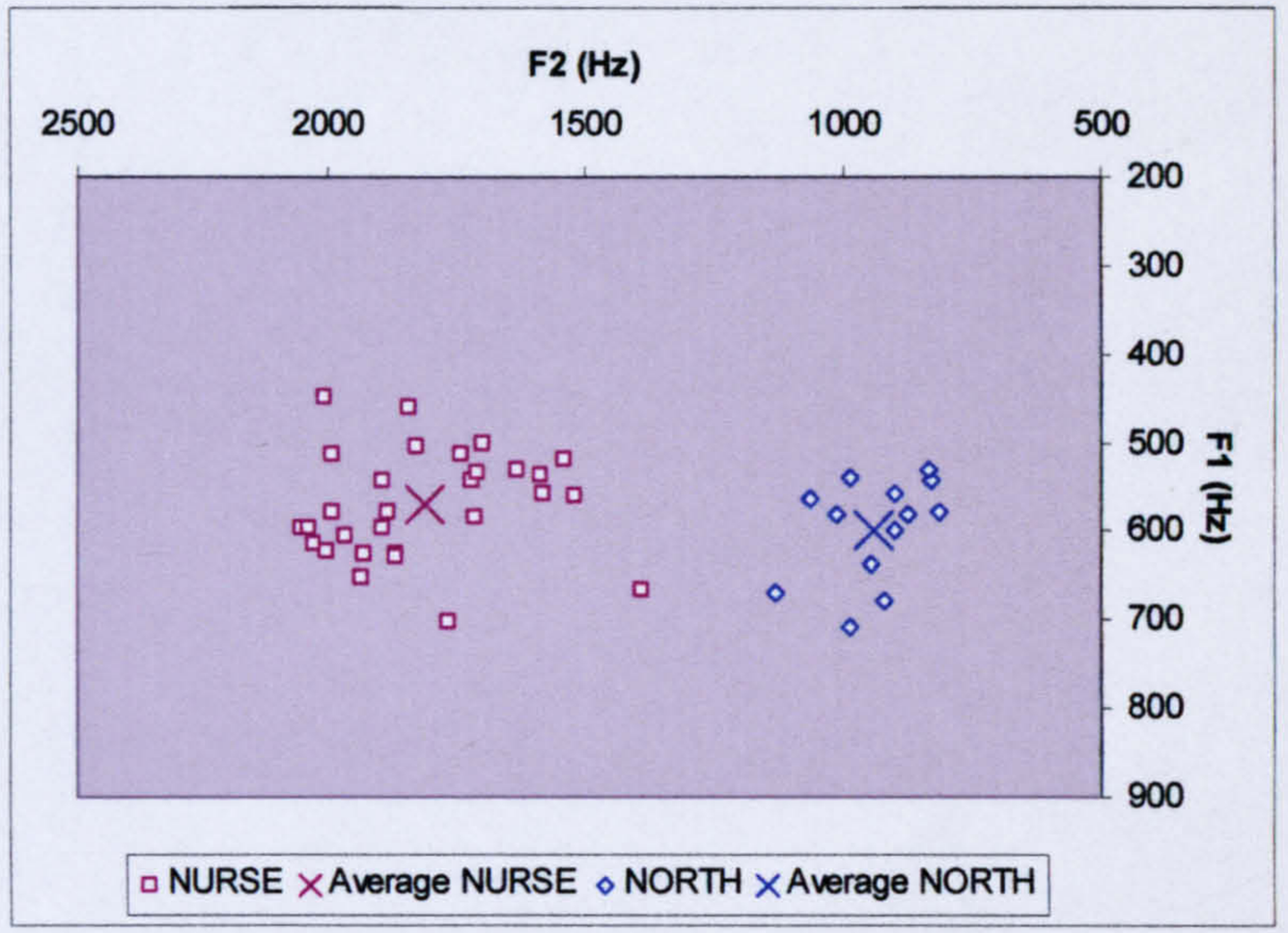


G331 (NURSE = 29, NORTH = 13)

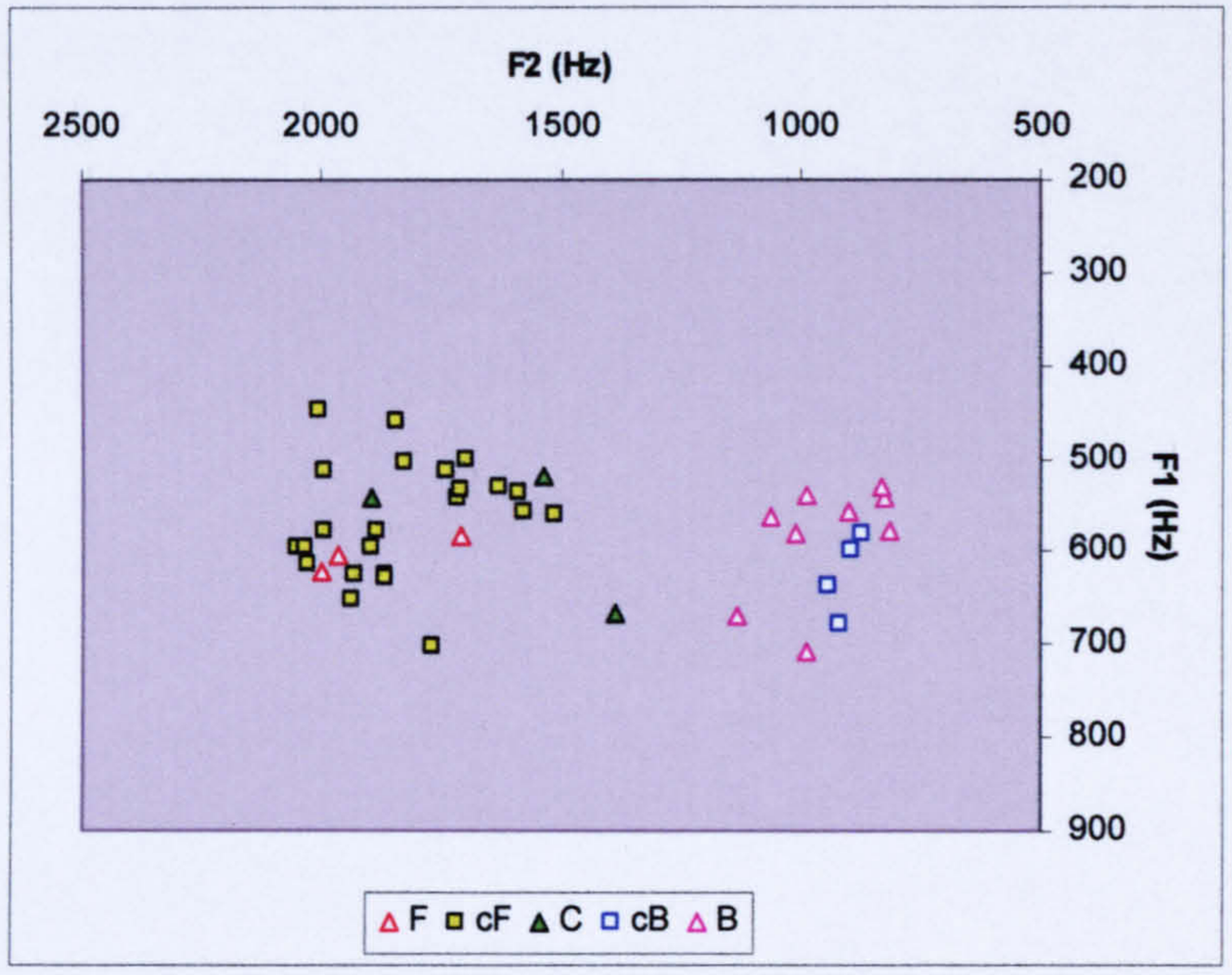
A. Auditory analysis of G331



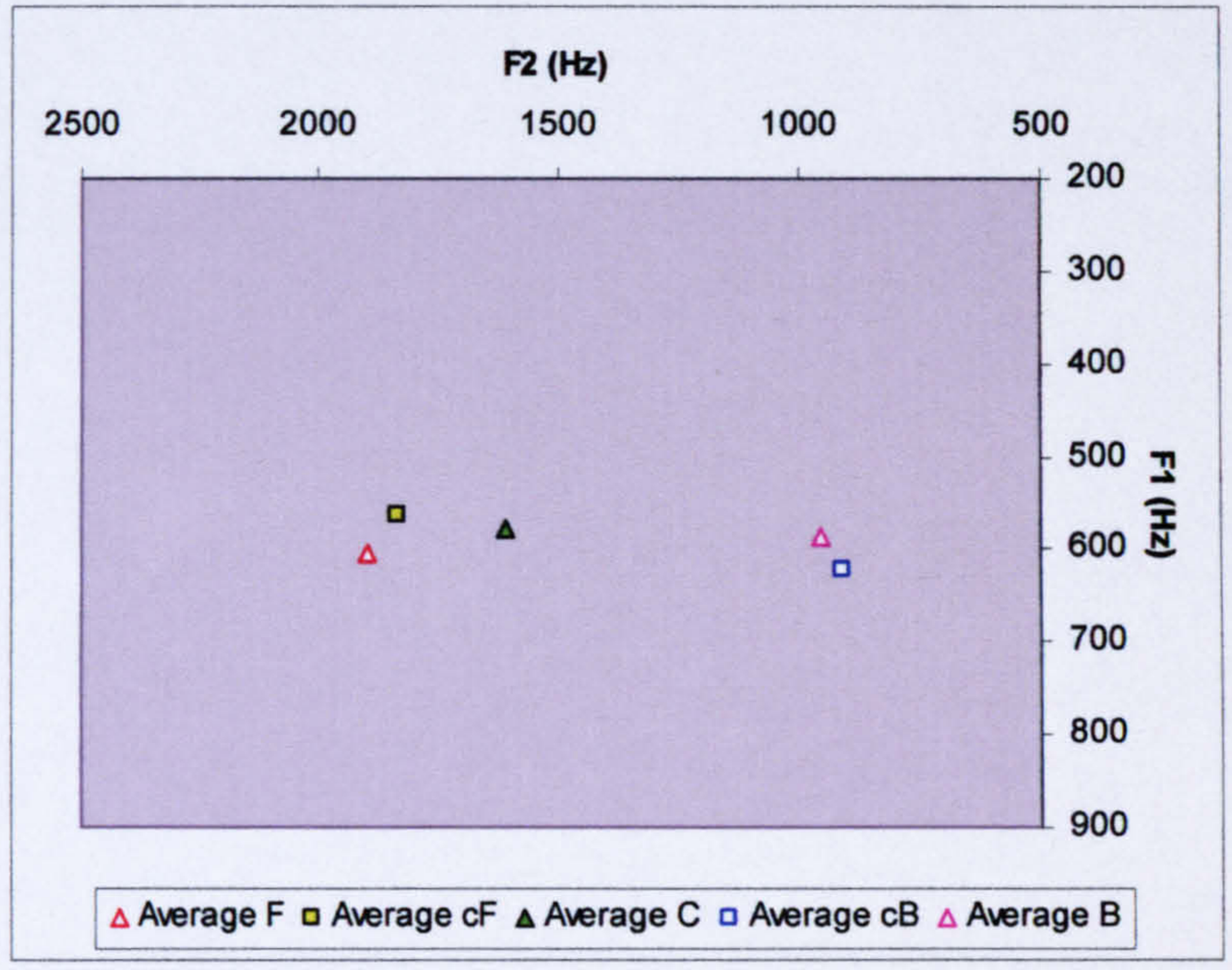
B. Acoustic analysis of G331



C. Auditory categories and acoustic values compared for G331

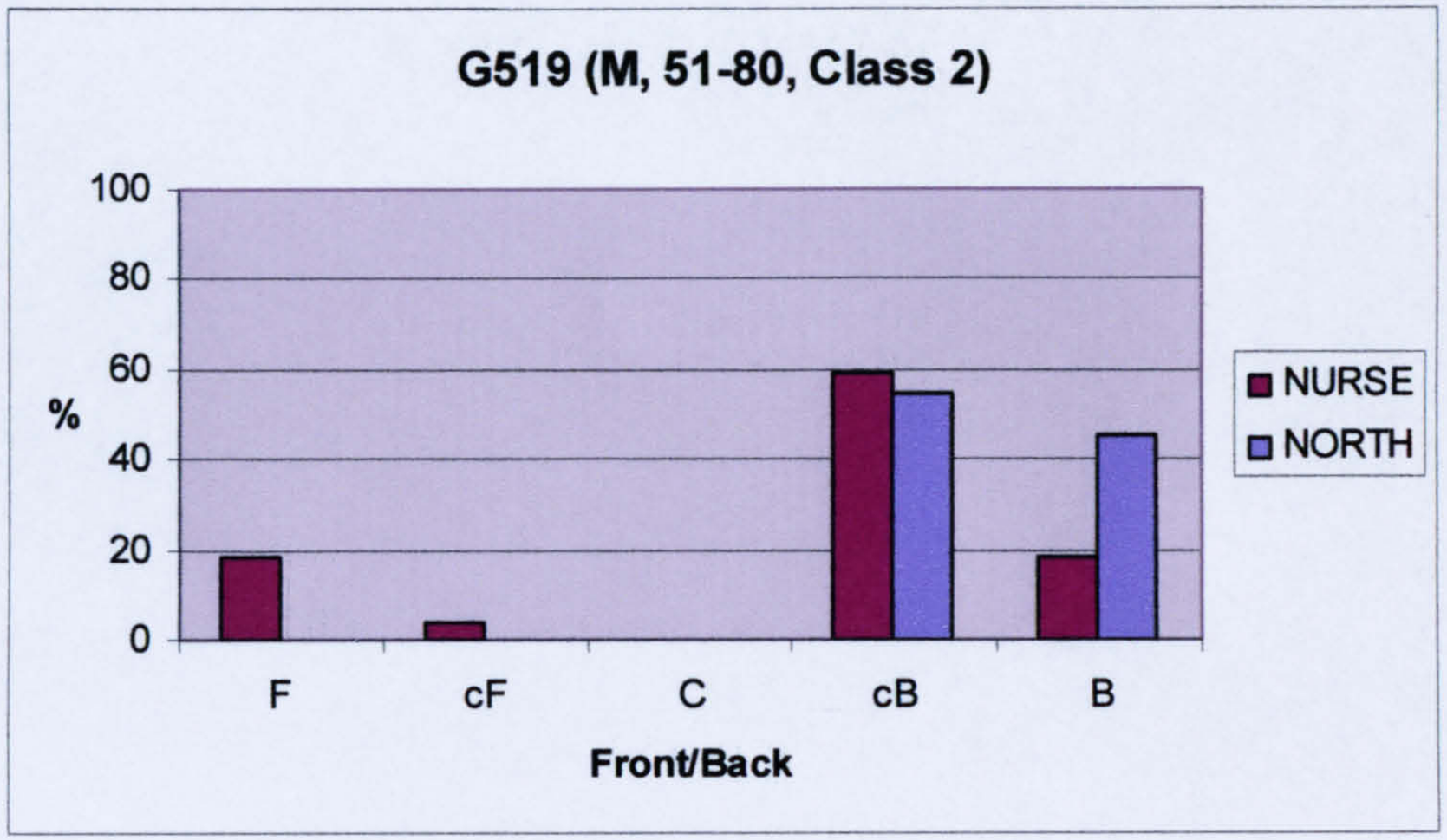


D. Auditory categories and acoustic averages compared for G331

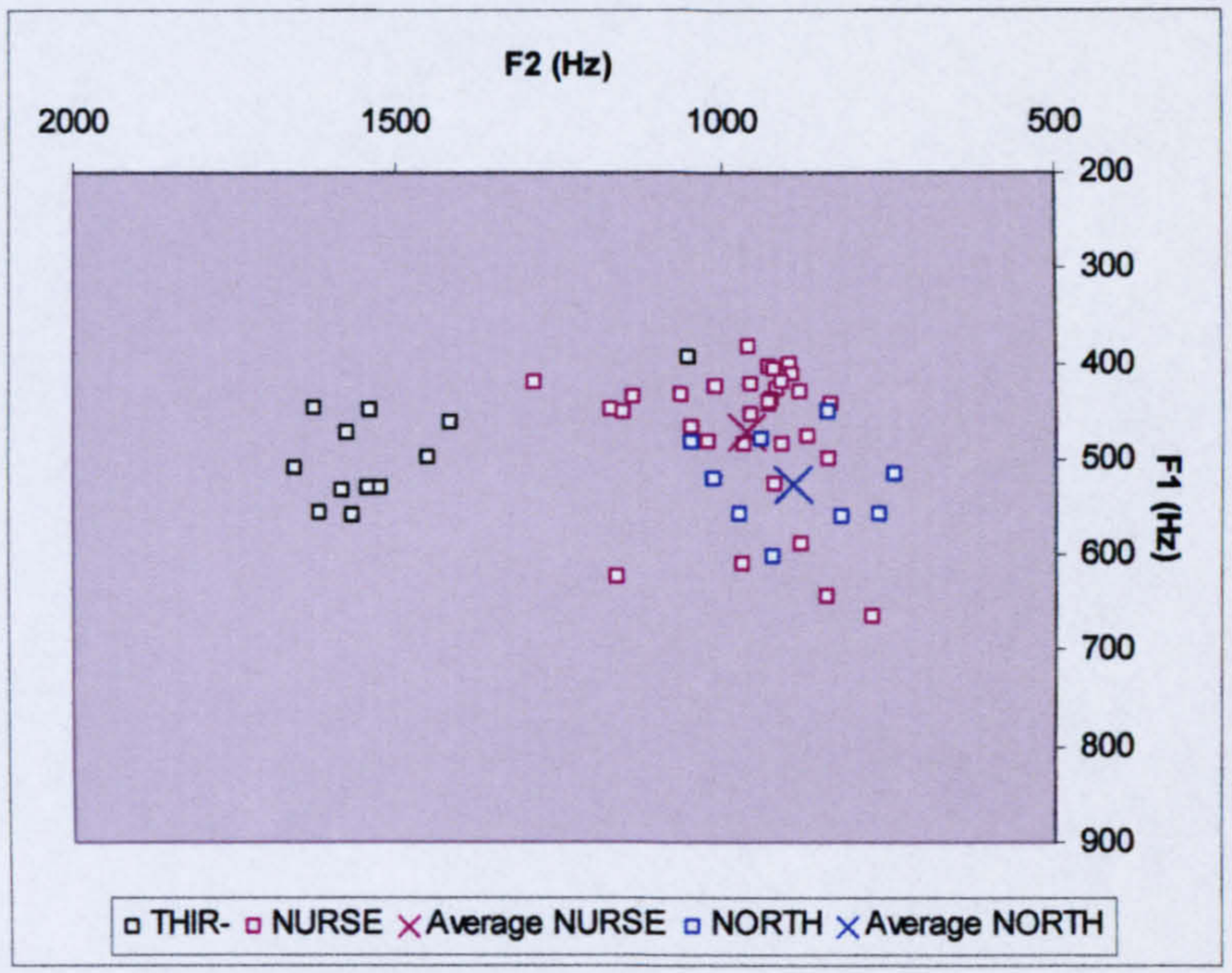


G519 (NURSE = 44 (12 THIR-), NORTH = 9)

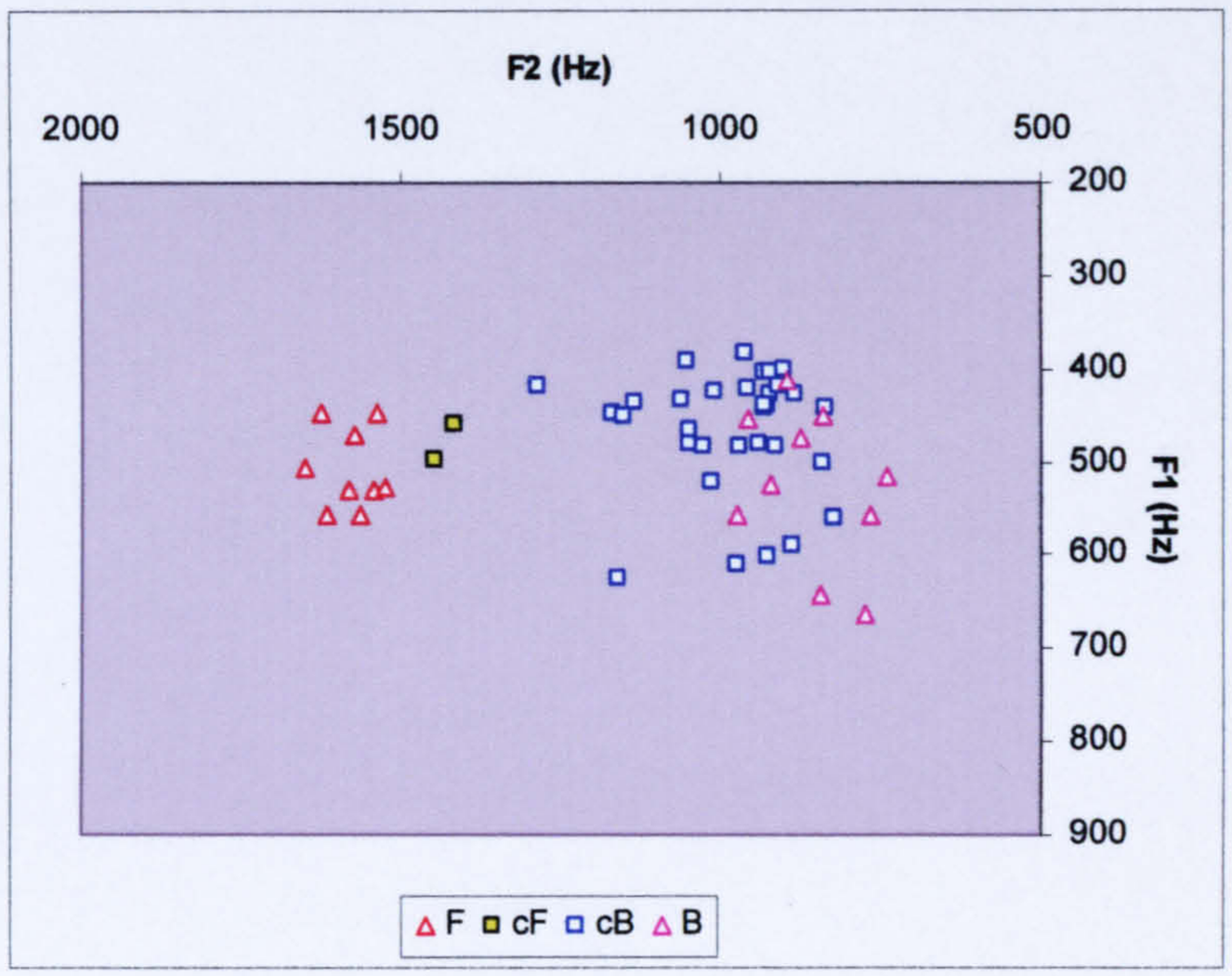
A. Auditory analysis of G519



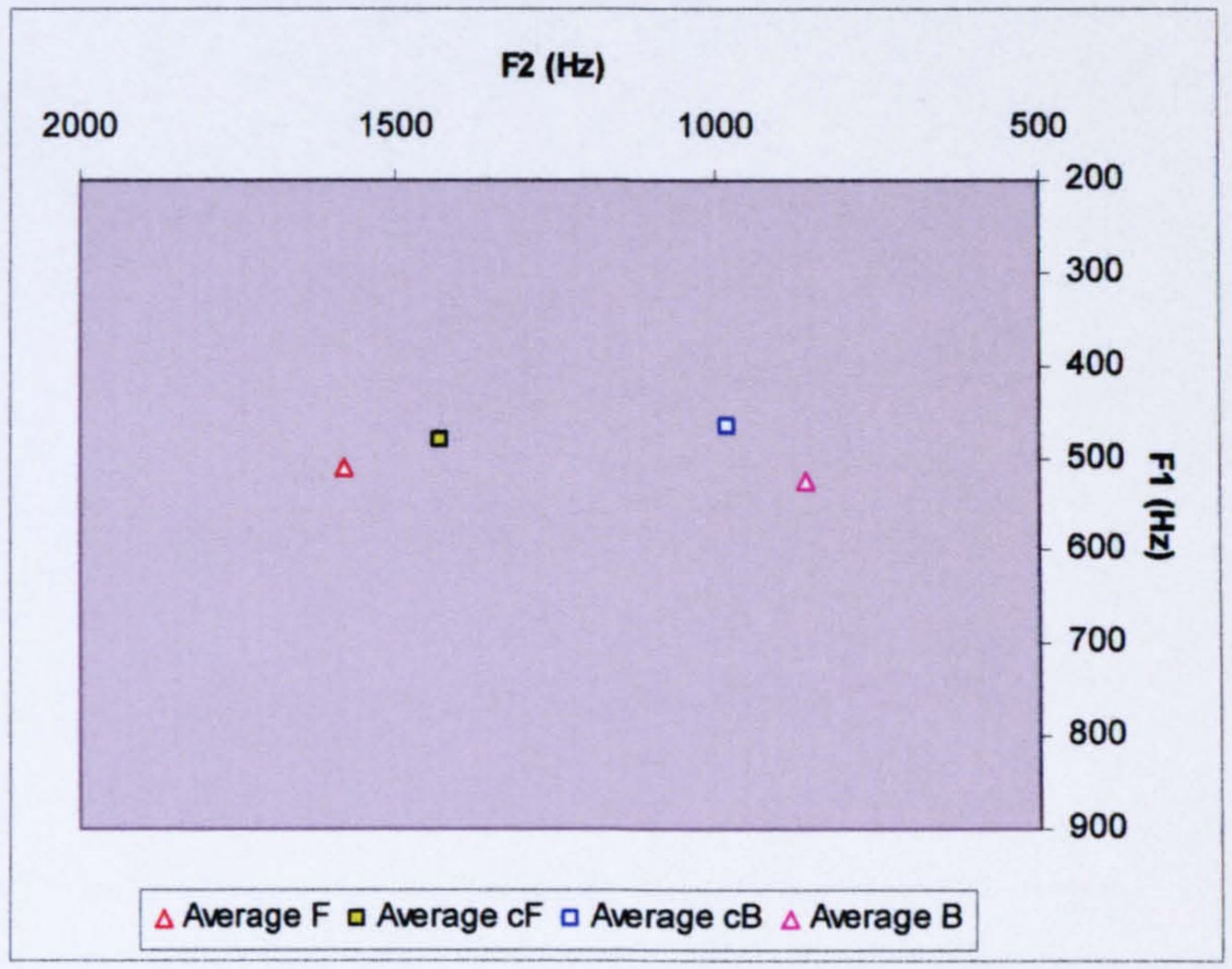
B. Acoustic analysis of G519



C. Auditory categories and acoustic values compared for G519

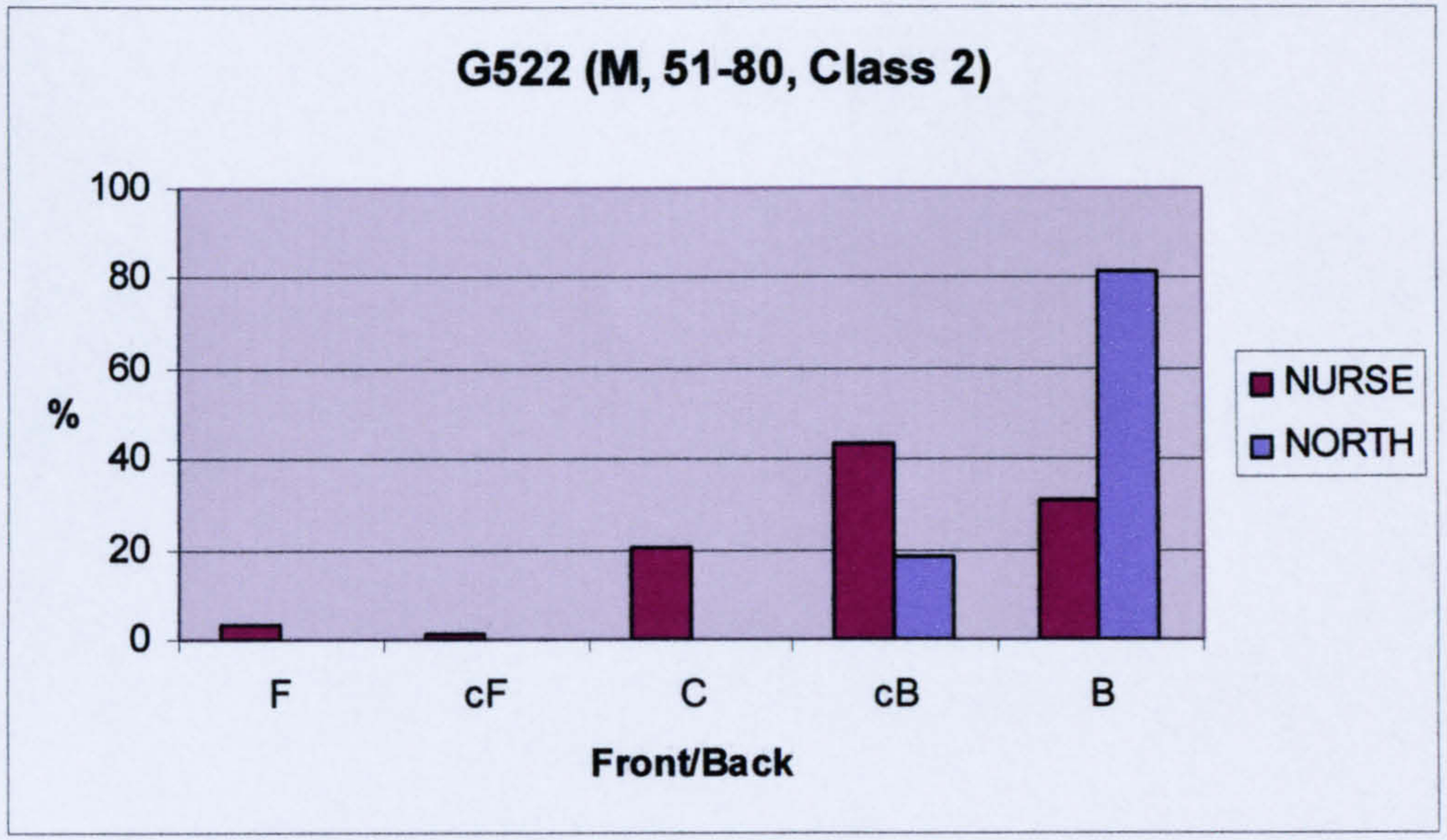


D. Auditory categories and acoustic averages compared for G519

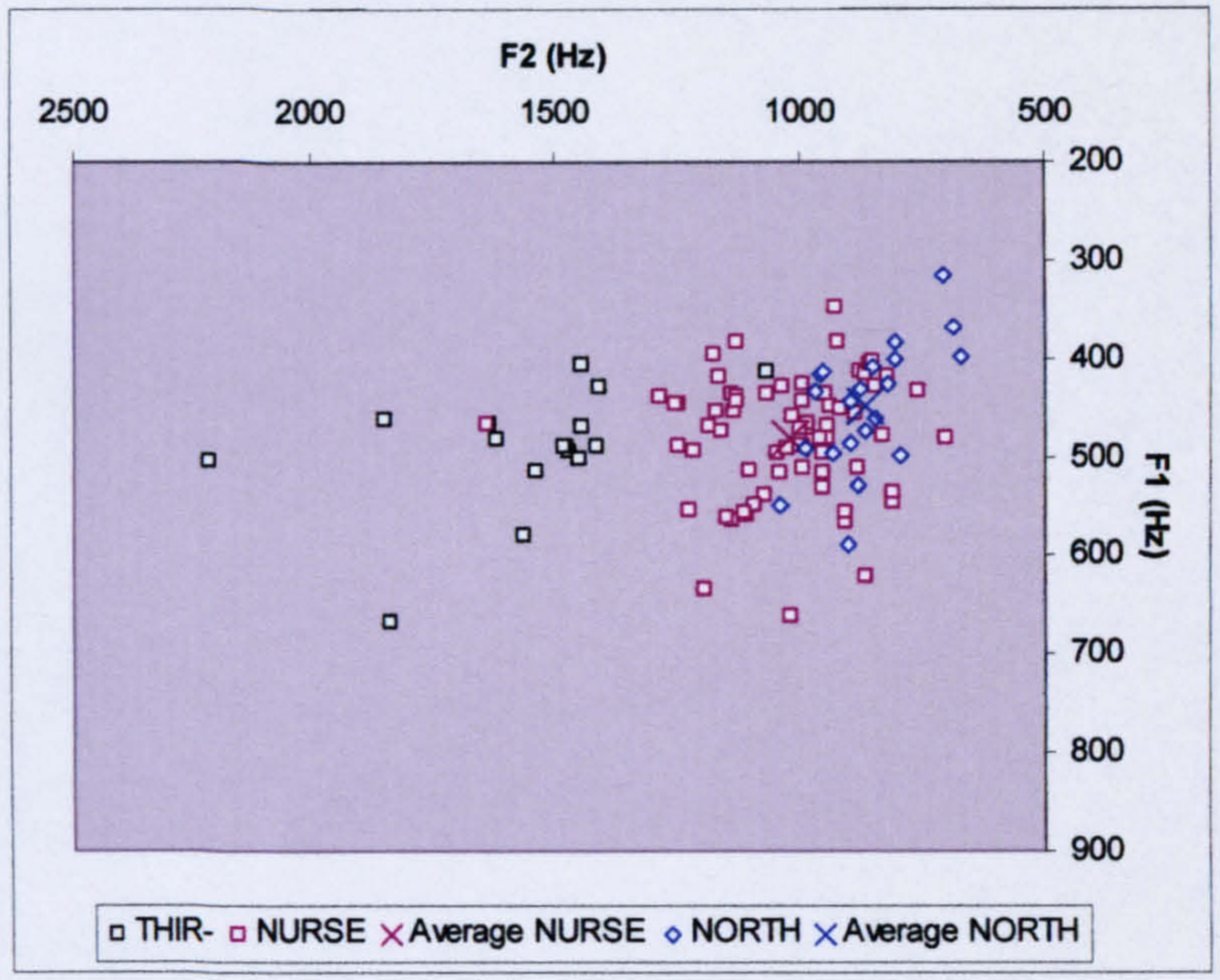


G522 (NURSE = 84 (16 THIR-), NORTH = 21)

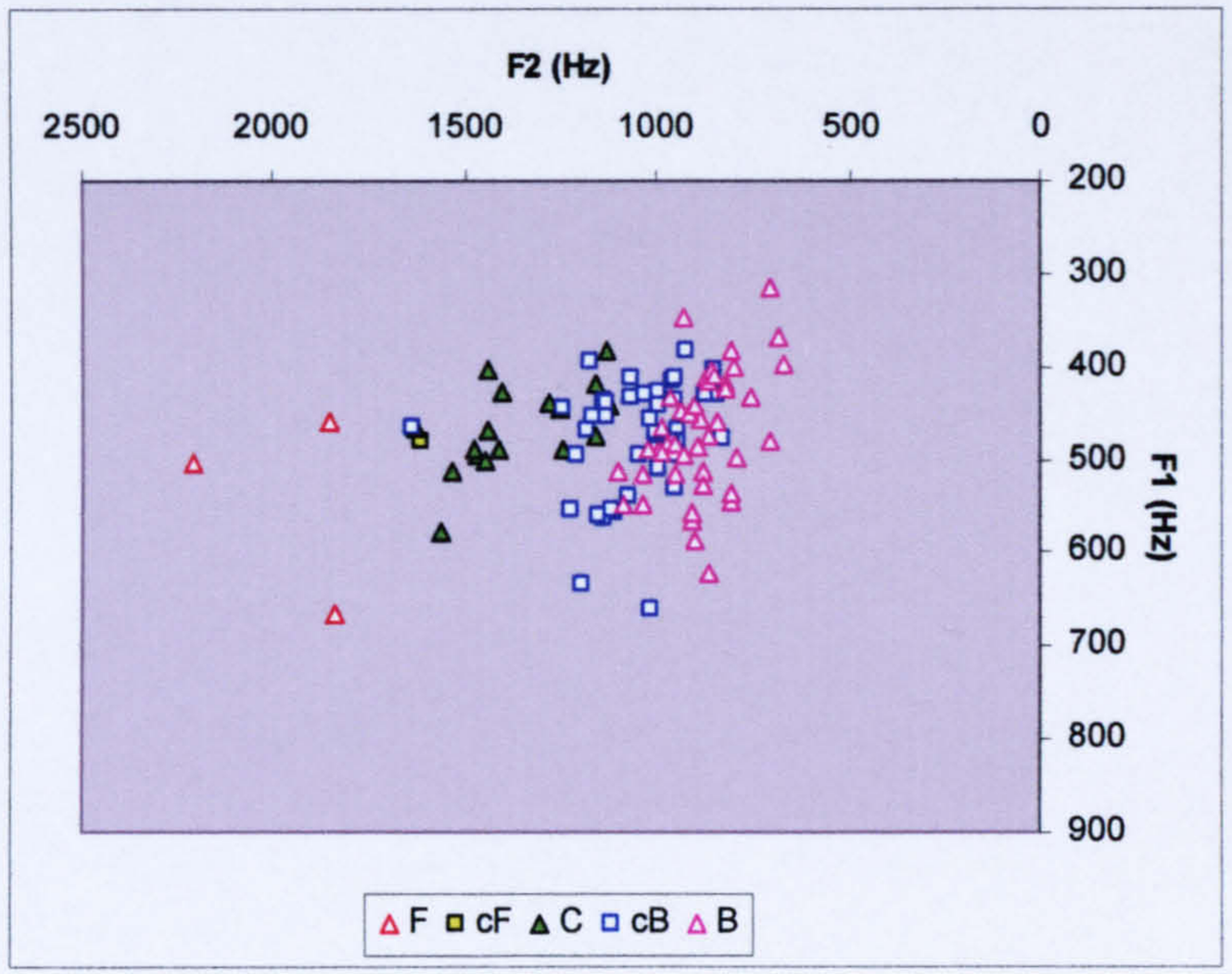
A. Auditory analysis of G522



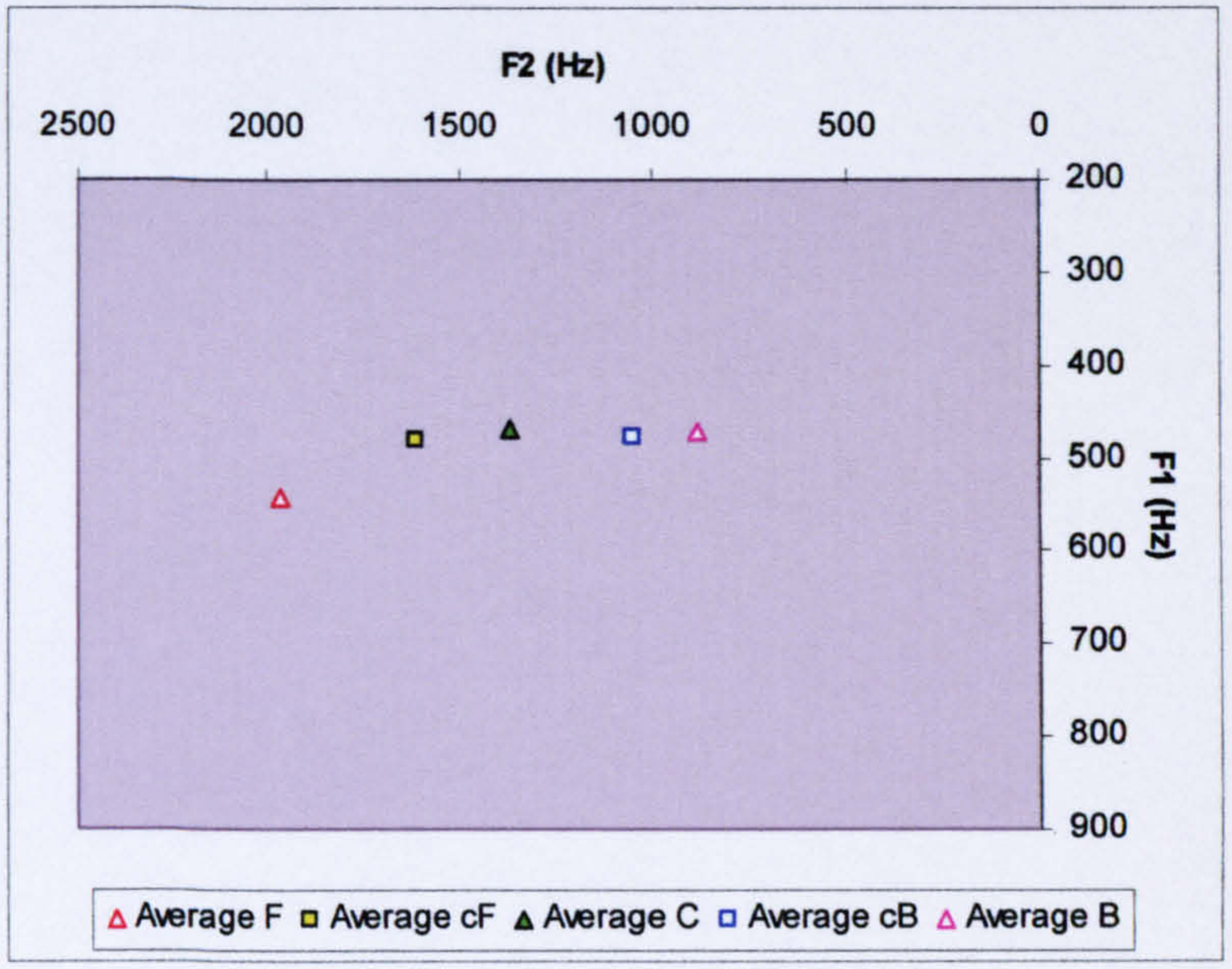
B. Acoustic analysis of G522



C. Auditory categories and acoustic values compared for G522



D. Auditory categories and acoustic averages compared for G522



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