

## Special issue on phonological mergers in English

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### Introduction: what are mergers and can they be reversed?

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#### 1 Introduction to phonological mergers

In his foundational book on accents of English, Wells (1982: 374–5) describes the apparent merger of the vowels in the NURSE and NORTH lexical sets in Tyneside English (‘Geordie’) 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*).’ This is only half the story, though. Wells (1982: 375) fills out this description with the following qualification:

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.

In other words, a vocalic merger appears to have developed in Tyneside English, and although this merger was still characteristic of ‘broad’ speakers in 1982, the merger seems to be disappearing from the dialect, being replaced, without error, by the phonological distinction which is characteristic of other varieties of English. Wells considers this apparent reversal of the NURSE–NORTH merger to be unexpected; how is it, he asks, that speakers of Tyneside English have reintroduced the distinction between the two vowels so successfully, when reversals of this kind are typically unsuccessful? Solving *Wells’s problem* is far from straightforward, but the introduction to this special issue of *English Language and Linguistics* seeks to suggest some solutions. These solutions require us to determine exactly what kind of linguistic situation lies behind Wells’s brief description, and to understand what is really meant by the term ‘merger’.

It will be seen that the issues which are highlighted underlie the research reported in all of the articles in this volume and are central to research on mergers and on language variation and change in general.

### *1.1 What are mergers?*

Looking at the issue from a purely structural viewpoint, the term ‘merger’ refers to two distinct, though closely related things.<sup>1</sup> Firstly, it refers to a kind of phonological change, whereby the distinction between two or more phonological categories is collapsed because of a loss of phonetic differentiation (see Martinet 1952 and Hoenigswald 1960: 90–1 for classic definitions). Thus, if we have two phonemes, A and B, A and B merge if A moves into the phonetic space of B, if B moves into the phonetic space of A, or if A and B move into a single new phonetic space, C. Note that mergers can also be partial, as a result of conditioned change (A and B become the same only in particular phonological environments) or as a result of irregular or incomplete change (A and B become the same in a set of the possible words only, but not strictly according to phonological environment). Secondly, ‘merger’ refers to synchronic states where one or more varieties of a language are characterised by a lack of a phonemic distinction which is found in other varieties, historical or contemporary, and which was, in one form or another, characteristic of earlier forms of the language. Thus, some varieties of Tyneside English have the NURSE–NORTH merger (other varieties of English do not), but this is not simply a case of /ɔ:/ and /ɜ:/ merging historically, as the terms NURSE and NORTH might suggest (Maguire 2008). Likewise, Scottish Standard English typically has the FOOT–GOOSE merger (otherwise only typical of Ulster English), not because of a historical merger of /ʊ/ and /u:/ but rather as a result of the failure of Scottish speakers to make a contrast between /ʊ/ and /u:/ when they learned English in the seventeenth century. So to talk about the NURSE–NORTH and FOOT–GOOSE mergers in these cases is useful from a comparative, synchronic perspective, but inaccurate from a historical perspective. These and other mergers can only be understood when both diachronic and synchronic aspects are taken into consideration.

Thus far we have talked about phonological mergers affecting ‘phonemes’ in ‘Geordie’ or ‘English’ or some other linguistic variety. But these are abstract concepts which require a considerable amount of unpacking in order for us to understand what mergers actually involve. What exactly is a ‘phoneme’, for instance, and where do phonemes actually exist? Whether we take the view that phonology is an abstract mental system only indirectly related to speech (see, for example, Hale & Reiss 2008), or that it is a malleable cognitive state closely related to speech production and perception (see, for example, Bybee 2001), phonology is a property of individual speaker/hearer grammars. Saying that something is a phoneme in Tyneside English is just a shorthand way of saying that some/many/all speakers in the Tyneside area have that category as part of their phonologies – the phoneme belongs to individual grammars, not to

<sup>1</sup> We use the term ‘merger’ in this introduction to refer specifically to phonological merger.

‘varieties’, ‘accents’, ‘dialects’ or ‘languages’ (which are convenient labels, not single entities). This means that ‘merger as a synchronic state’ is a property of the phonologies of individuals and that ‘merger as change’ is change in the phonologies of individuals or between generations of individuals. Conceived of in this way, the whole question of what a merger is takes on a new complexion. We might expect different speakers within the same ‘speech community’ (another abstract concept) to have different phonologies, and this means that ‘varieties’ characterised by particular phonological mergers may include some speakers who don’t have them as part of their phonology. Consequently, we shouldn’t say (other than for descriptive convenience) that the NURSE–NORTH merger is a feature of Tyneside English; instead, the merger is (or was) a feature of the phonology of some people in or from Tyneside. Thus, some mergers, conceived of as properties of speech communities, accents or languages, are variable, since some individuals have them and others do not.

But variation doesn’t stop there. Consider again the example of the FOOT–GOOSE merger, this time in Mid-Ulster English (MUE, the native variety of the first author). In this variety, the vowel in the GOOSE lexical set is /ʊ/, whilst the vowel in the FOOT lexical set is *either* /ʊ/ or /ɔ̃/. The STRUT lexical set only has /ɔ̃/, never /ʊ/ (see Harris 1985: 150–5 for details). That is, *goose* is pronounced [gʊs], *foot* is pronounced [fʊt] or [fɔ̃t], and *strut* is pronounced [strɔ̃t] (or [strɔ̃t]). In other words, WM has the FOOT–GOOSE merger as part of his phonology, but only variably so, and he can easily tell that members of FOOT form one set and members of GOOSE another. So is this a merger at all? It certainly is (variably so, of course) at the phonetic level: the [ʊ] in FOOT and the [ʊ] in GOOSE are not distinguishable from each other. At the phonological level, however, things are more complicated. What we have here is not just variation within the phonology of an individual, but also a mismatch between that speaker’s production and perception; even when FOOT and GOOSE have the same phoneme and are pronounced with the same vowel, they are perceived as phonologically different. This is a consequence of intra-speaker variation, but inter-speaker variation can also lead to a mismatch between production and perception for merging individuals exposed to the speech of non-merging speakers. Research on the ongoing NEAR–SQUARE merger in New Zealand English (NZE) has shown that even when speakers have lost the distinction between the two vowels in their production, they retain some knowledge of the distinction as a result of exposure to the speech of non-merging speakers in the same speech community (see, for example, Warren & Hay 2005, Hay *et al.* 2006, and Hay *et al.* this volume). This knowledge allows merging speakers to identify tokens produced by non-merging speakers correctly, suggesting that even when speakers never produce a distinction, the distinction may constitute a part of their phonological knowledge.

The kind of categorical intra-speaker variation involved in the FOOT–GOOSE ‘merger’ in Mid-Ulster English is not the only way in which something that looks and sounds like a merger might not be a merger after all. Let’s look again at Mid-Ulster English, this time at the MEAT and MATE lexical sets (i.e. the sets of words which had ME /e:/ and /a:/ respectively). In most varieties of English, these two sets have different vowels (e.g. /i:/ and /e:/). In traditional forms of MUE, they are both produced with what

seems like the same vowel (a high-mid front vowel, [e], or a diphthong [ɪə]), and this apparent identity is reflected in spellings and rhymes, and in speakers' belief that the two sets are pronounced the same (see Harris 1985: 241–8 for a detailed account). When the pronunciations of the two sets are analysed in detail, however, there is a small but statistically significant phonetic difference between them. In other words, they are variably merged in a much subtler, continuous fashion than FOOT and GOOSE, to the point where the distinction between them goes unnoticed (but is nevertheless maintained) by speakers of the variety. This is the situation called *near merger* (see Labov 1994: 349–70 for discussion and other examples), and it is another instance where production and perception are out of step – speakers produce a distinction they can't perceive.

The different kinds of merger and merger-like situations described above are, as was noted at the beginning of this introduction, the result of language change. As might be expected, the differences between them are a result of the different ways in which those changes happened. Three types of change leading to merger or merger-like situations have been identified (see, for example, Harris 1985: 297–302 and Labov 1994: 321–3): *merger by drift* (or *approximation*), *merger by transfer* and *merger by expansion*. Each of these types of development leads to specific kinds of pattern and predicts something about the result of the change.

In merger by drift, the phonetic space of the changing phoneme (or phonemes) moves gradually towards the phonetic space of another phoneme, presumably during the lifespan of speakers and between generations, and all instances of the changing phoneme(s) are affected (environmental conditioning excepted). The point at which the phonemes merge (in production at least) comes when there is no statistical difference between their pronunciations. As merger by drift is phonetically gradual, a stage in the change equivalent to near merger is gone through and, indeed, near mergers develop in exactly the same way (whether they will eventually lead to complete phonetic merger is another question). This means that for mergers which have developed by drift, the possibility remains that the change is not (yet) complete. It is also possible that different members of the speech community will be at different stages in the gradual change (as is the case with the NURSE–SQUARE merger in NZE). This means that speakers may be exposed to patterns which are different than their own, leading to a potential mismatch between their production and perception of the merger/distinction.

In merger by transfer, individual lexical items are transferred directly to a new phonemic (and phonetic) target, again during the lifespan and at acquisition, potentially over a considerable period of time. The point at which the two lexical sets merge is reached when all of the relevant lexical items are produced with only the target phoneme. Even before then, we can talk of partial merger if some lexical items have changed completely and are invariably found with the new phoneme. As merger by transfer is targeted (to a pre-existing phoneme), near merger is not possible (it would not make sense to transfer words from one phoneme to another but to miss the target slightly). Furthermore, since merger by transfer is lexically gradual, there must be a period in which the merger is partial (some words have changed, others have not) and during

which the merger is variable, between speakers and within the speech of individuals. Speakers will be at different stages in the change, and individuals may transfer words from one phoneme to the other but won't instantly forget, or even stop using, the old value. Again, this will lead to a mismatch between production and perception, as speakers will be surrounded by others who have different patterns and may have phonological representations which have changed during their own lifetimes.

In merger by expansion, there is a sudden collapse, presumably at acquisition, of the distinction between two neighbouring phonemes, such that the phonetic space previously occupied by the two phonemes is now used for a single, unified phoneme. The phoneme in any given word can, as a result, be pronounced in any part of this phonetic space, regardless of its historical pronunciation. As merger by expansion is abrupt, lexically and phonetically, there are no intermediate stages in the change. This means that speakers who have failed to acquire the distinction and who use the whole phonetic space for a single phoneme exist alongside speakers who have two phonemes in the same phonetic space (see Labov 1994: 322–3 for the case of a father and son who are different in precisely this way). As with the other kinds of merger, this co-existence of different systems may lead to a mismatch between production and perception for some speakers.

It can be seen from the foregoing discussion that not all mergers are the same. At one end of the spectrum, we have mergers which are typical of all speakers of a language all of the time and in all relevant words and environments. At the other extreme, we have complete phonetic and phonological distinction between two phonemes for all speakers. In between, we have various degrees of merger: inter-speaker variability, intra-speaker variability, partial merger, near merger, and merger in production but not perception. When we think about mergers in this way, it is clear that Wells's statement that 'the merger of NURSE and NORTH was never categorical' can mean a variety of things, and that many phenomena that we call mergers are equally non-categorical. The consequences of this for the disappearance of mergers from linguistic varieties is discussed in the next section.

### 1.2 *Can mergers be reversed?*

The core of *Wells's problem* is that the apparent merger of NURSE and NORTH appears to be disappearing from Tyneside English – i.e. the merger is being reversed. But why is the reversal of such a merger considered to be problematic? Labov (1994: 311–13) spells out the issues: since phonological merger involves loss of information (speakers with the merger have no way of knowing which words in the merged set had original phoneme A and which words in the merged class had original phoneme B), and since the linguistic sign is arbitrary (there is no natural association between linguistic forms and meaning), there are no linguistic/phonological means of reversing a merger. Labov (1994: 311) summarises this in GARDE'S PRINCIPLE: *Mergers are irreversible by linguistic means*, and notes that this principle is not only based on theoretical concerns but also rests on the empirical observation that 'at no known time in the history of

languages has such a reversal been accomplished by enough individual speakers to restore two word classes for a given language as a whole' (Labov 1994: 312–13). Note that Labov doesn't state that speakers won't try to reverse mergers (in fact, various social pressures mean that they sometimes try to). Rather, he argues, if they do try they won't succeed; at the very best, the merger will be reversed with a degree of hypercorrection (i.e. error), as speakers struggle in vain to work out which words have which of the unmerged phonemes.

Labov's characterisation of the impossibility of reversal of mergers seems sensible (reversal of merger does seem to be rare), but it is not without problems. Most acutely, given the discussion of the nature of mergers in the previous section, Labov's characterisation of mergers is highly structural and abstract (despite his discussion of mergers featuring a large amount of concrete, speaker-specific data). Labov talks about mergers being characteristic of 'languages' and of speakers having no 'linguistic means' of working out which words belonged to which of the unmerged classes. As the discussion above suggests, however, the locus of merger is not 'languages' (nor 'accents' or 'dialects'), but individual phonological systems. Would Labov's empirical observation stand if it was rephrased 'at no known time in the history of languages has such a reversal been accomplished by any speaker, resulting in the successful restoration of a phonemic distinction in their phonology'? Remember, though, that this need not only refer to change within a speaker's lifetime; it could also apply to acquisition, where a speaker learns a distinction not found in the phonology of (some of) the previous generation. And 'linguistic means' is a rather blurry concept if we accept that intra- and inter-speaker variability have a direct impact on our phonological knowledge (potentially resulting in a mismatch between production and perception). Suddenly the hypothesis that mergers cannot be reversed in speech communities is less secure.

Take, for example, the situation known as 'swamping' (see Thomas 2006), whereby a speech community characterised by a particular phonological merger is swamped, demographically, by speakers who do not have the merger (perhaps as a result of immigration). The result of this swamping is that speakers, particularly during language acquisition, are exposed to both the merging and the non-merging systems. Depending upon the demographics of the situation and the social meaning of the variant systems, it is possible that the merged system could begin to disappear, without hypercorrection, as children learn the distinction which is now present in their community.

We can even apply this scenario of change to less extreme sociolinguistic situations. Most obviously, speakers with a variable merger (such as the FOOT–GOOSE variable merger in Mid-Ulster English) have access to both the merged and unmerged systems and it is not hard to imagine how such speakers could reverse the merger given the right social conditions. WM could, for example, just use /ɔ/ in FOOT, and the FOOT–GOOSE merger would disappear from his speech (although not from his phonological knowledge). This is an unlikely scenario because /ɔ/ in FOOT is stigmatised as old-fashioned and countrified in his variety, but it is perfectly possible from a linguistic perspective (WM frequently avoids the FOOT–STRUT identity in his speech for precisely

this reason). The same goes for reversal of near mergers, which involve variable phonetic identity and non-identity (in this case, of a much more subtle kind) of two distinct phonemes, and it is not surprising that near mergers have been implicated in the reversal of a number of apparent mergers (see Labov 1994: 371–91). Inter-speaker variation could, plausibly, have a similar effect, even without the dramatic population changes involved in dialect swamping. When children grow up in a community where there are both merging and non-merging speakers, the potential exists for them to internalise both systems, even if only one of the systems surfaces in their production (see the discussion of the mismatch between production and perception above). The social meaning of the merged and non-merged systems will be instrumental in their propagation, and changes in social meaning will have a direct impact on the survival or disappearance of the merger in such a situation. So the applicability of HERZOG'S PRINCIPLE (Labov 1994: 313), that *mergers expand at the expense of distinctions*, may be compromised when the merger involved is, or becomes, heavily stigmatised.

### 1.3 Wells's problem revisited

We are now in a position to suggest some solutions to Wells's problem. The apparent NURSE–NORTH merger is being reversed in Tyneside English, and this is being done without hypercorrection. Wells suggests that the merger was either 'not categorical', or that speakers have been 'unusually successful' in reversing this merger. But what might 'not categorical' mean in this context? If we interpret 'not categorical' to mean that there is/was intra-speaker variability of a near merger of NURSE and NORTH, then the reversal of the apparent merger becomes unproblematic, since (intra-speaker) variable mergers and near mergers involve speakers having access to both the merged system and the unmerged system. However, Watt (1998a, 1998b), Watt & Milroy (1999) and Maguire (2008) suggest that, for some speakers in Tyneside at least, complete merger in production was typical. We could also interpret 'not categorical' to mean that the merger is not a feature of the phonology of all speakers in the speech community, which would not be at all surprising, since the merger is not a feature of more standard varieties of English, and given that the Tyneside conurbation has been a magnet for immigrants from areas where the merger is not a feature. In that case, learners of Tyneside English are exposed, from the start, to merging and non-merging systems, and have been since at least the middle of the nineteenth century (when the city expanded rapidly as a result of large-scale immigration from other parts of Britain and from Ireland). It is quite likely that the NURSE–NORTH merger was only ever a feature in the phonologies of some speakers of Tyneside English (recordings of some speakers born at the end of the nineteenth century show no evidence of it – see Maguire 2008), so that it was far from categorical in the speech community. This being the case, the disappearance of this highly localised and stigmatised feature from Tyneside English is not so mysterious after all (see Watt 1998a, Milroy 2004 and Maguire 2008 for further discussion of disappearance of merger under such circumstances). The fact that no hypercorrection of NORTH has been recorded doesn't mean that some speakers in the past with the

merger didn't take part in this change, however. Either they were able to 'turn off' the merger successfully because they had knowledge of the non-merging system which also existed in their speech community, or such instances of hypercorrection were uncommon and have simply never been recorded (since they may have happened in the nineteenth century as the two systems, merging and non-merging, became established in Tyneside English).

All of the articles in this special issue of *English Language and Linguistics* approach mergers from the viewpoints outlined in this introduction, and illustrate the importance of understanding what the term 'merger' actually means when applied to speakers and hearers.

## 2 Introduction to this volume

This special issue emerged from a workshop at the conference of the International Society for the Linguistics of English in June 2011. The aim of the workshop was to bring together researchers working on phonological mergers in different varieties of English and from a number of different perspectives (e.g. phonetics and phonology, variationist sociolinguistics, psycholinguistics). The overarching questions were (1) What is a merger, and how do we know? (2) How do mergers (and splits) develop? (3) How are mergers evaluated by speakers? and (4) What can mergers tell us about phonology?

Each article in this special issue deals with at least one of these questions, bringing evidence from the USA, Canada, England and New Zealand. In particular, the mergers in focus are: COT–CAUGHT (cf. LOT–THOUGHT) (in Hawaii (Hay, Drager & Thomas), Charleston (Baranowski), San Francisco (Hall-Lew) and in Canadian English (Nycz)); PIN–PEN (in Charleston (Baranowski)); NURSE–SQUARE (in the north-west of England (Watson & Clark)); and ELLEN–ALAN (in New Zealand (Hay, Drager & Thomas)).

In the contribution by Hay, Drager & Thomas, the relationship between a phonological merger in speech production and perception is squarely in focus. In previous work on the NEAR–SQUARE merger in New Zealand English, Hay *et al.* (2010) found that even speakers who produce merged tokens of NEAR and SQUARE can accurately distinguish between the two lexical sets in perception (even though participants report that they are guessing), suggesting a mismatch between the perception and production of mergers in progress. However, the relationship between participants' behaviour in speech perception and production tasks was variable to some extent. Hay *et al.* (2010) suggested that differences in the behaviour of individuals could be due to some individuals having single phoneme representations for the sounds in both lexical sets and others having two phonological categories. In the contribution to this volume, Hay *et al.* attempt to access phoneme-level information more directly by using nonsense words as experimental stimuli. Nonsense words have never been encountered before and so speakers/listeners cannot access lower-level episodic memories associated with them during linguistic tasks; this means that in order to make sense of these words, they must access more abstract phonological



categories. Focusing on two different mergers in two varieties of English (the ELLEN–ALLAN merger in New Zealand English and the COT–CAUGHT merger in Hawaii), this article addresses the question: do real words and non-words differ in their influence on vowels undergoing merger?

Baranowski's sociolinguistic investigation examines whether vowel mergers, like most other so-called changes from below, (i) show a curvilinear effect of social class (i.e. a pattern in which change originates from the interior of the social hierarchy (Labov 2001)) and (ii) are led by female speakers (Labov 2001: 292). Baranowski focuses on two mergers in progress in Charleston, South Carolina – the COT–CAUGHT merger and the PIN–PEN merger. Using a combination of auditory and acoustic phonetic analyses, Baranowski presents a detailed empirical account of the status of these two mergers in the speech of around 100 speakers (aged 8–90) representing the entire socioeconomic spectrum of the city.

Directly addressing the question concerning listeners' evaluation of mergers, Watson & Clark's contribution asks 'how salient is the NURSE–SQUARE merger?' When exploring salience below the word level, it is difficult to know whether listeners are sensitive to a particular sound, because sounds always occur in combination with other sounds in the speech signal. In an effort to overcome this problem, Watson & Clark employ an experimental approach which exposes listeners to audio stimuli containing carefully controlled instances of NURSE and SQUARE, occurring at specific points in a larger discourse. Listener reactions to these audio stimuli were logged in real time on a moveable slider. Watson & Clark argue that this technique can be used to shed light not only on the social evaluation of phonological mergers, but also on the nature of salience in general.

The extent to which a phonological merger is salient is a relevant concern in work on the acquisition of mergers and, indeed, splits, as discussed in the article by Nycz. Different theoretical models of phonology make different predictions about the likely behaviour of speakers undergoing phonological mergers and splits. Nycz reviews predictions from two opposing camps in theoretical phonology: the abstractionist view (beginning with structuralism, the Prague School, generativist phonology and Optimality Theory) and the phonetically rich view (chiefly developed by proponents of Exemplar Theory). One of the major differences between these two camps is the extent to which they predict word-specific effects. The abstractionist view is that mergers and splits may show gradual phonetic shift but this should be lexically abrupt, i.e. mergers and splits should show regular Neogrammarian sound change. The phonetically rich view predicts exactly the opposite, i.e. lexically specific phonetic change. Moreover, the phonetically rich view suggests that the lexical variation we will see in sound change, especially phonetically gradual sound change, will often be related to lexical frequency: frequently encountered lexical items will change more quickly. Nycz explores the speech of native Canadians with the COT–CAUGHT merger who have moved to New York City and surrounding regions (an area where the COT and CAUGHT vowels remain robustly distinct).

The final contribution to this special issue deals with a rare phenomenon which occasionally occurs during mergers in progress known as 'flip-flop' (Labov *et al.* 1972).

In cases of flip-flop, some speakers may develop a phonological system in which the merging vowels seem to move past each other and end up with opposing qualities, essentially switching but maintaining the previous vowel distinction. Hall-Lew first investigates changes in the COT–CAUGHT merger in the Sunset district of San Francisco and then focuses in more detail on the flip-flop pattern displayed by two women from this community. Hall-Lew is especially concerned with understanding more about the social characteristics of the two speakers who use these innovative pronunciations in an effort to understand more about the type of speaker who is likely to flip-flop.

Taken together, these articles show that the research agenda established by linguists such as John Harris, Marvin Herzog, James Milroy, Marianna Di Paolo and, especially, William Labov, continues to stimulate new thinking and methods of analysis. Macaulay (1978: 142) 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”.’ That, of course, is exactly what the study of mergers is all about, and the research in this volume is further indication that the study of mergers cuts right to the heart of what it is we are doing as linguists, forcing us to confront, head-on, questions about the nature of language, both in the individual and in society at large.

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